MonAvenir
CONSEIL SCOLAIRE CATHOLIQUE

2024-120 ÉÉC Notre Dame

400 Cumberland Ave,
Hamilton, ON L8M 2A2

Washroom Renovation Project

AMRA J
ARCHITECTS INC.

Pages

INTRODUCTORY INFORMATION

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REFERENCES

1. MonAvenir Conseil Scolaire Catholique Contractor Procedure Manual

1.1. SUMMARY OF WORK

1.1.1. Work of this Contract comprises the following:

1.1.1.1. Renovation of existing classrooms to replace millwork

1.1.1.2. Washroom painting

1.2. WORK RESTRICTIONS

1.2.1. Restrictions on Use of Premises:

1.2.1.1. Limit use of premises for Work, for storage, and for access to allow;

1.2.1.1.1. Owner occupancy.

1.2.1.1.2. Partial Owner occupancy – daycare use.

1.2.1.1.3. Work by other contractors.

1.2.1.1.4. Public usage.

1.2.1.2. Coordinate use of premises under direction of Owner.

1.2.2. Work Sequence:

1.2.2.1. Schedule and construct Work in stages to accommodate Owner's continued use of premises during construction.

1.2.3. Partial Owner Occupancy:

1.2.3.1. Schedule designated portions of Work for Owner's use prior to Substantial Performance of the Work.

1.2.4. Restricted Hours of Work in Occupied Facilities

1.2.4.1. Work may not be performed during hours Monday to Friday in accordance with local by-laws.

1.2.4.2. Allow for hours of work restrictions in construction progress schedule.

1.2.5. Noisy Work Restrictions in Occupied Facilities:

1.2.5.1. Schedule excessively noisy work to avoid disturbance to building occupants. Avoid excessive noise-generating work Monday to Friday from 12:00 PM to 2:00 PM (nap timer for daycare).

1.2.5.2. Use powder actuated devices only with Consultant’s written permission.

1.2.6. Maintaining Life Safety Systems in Occupied Facilities:

1.2.6.1. Maintain operational life safety systems and public access to exits in occupied areas during all stages of the Work.

1.2.6.2. Determine nature and exact locations of existing fire and smoke sensors prior to the commencement of the Work. Avoid direct or indirect jarring while working in adjacent areas and exercise caution to avoid triggering these devices.

1.2.6.3. Be responsible for costs incurred by Owner on account of false fire alarms activated as a result of the execution of the Work without adequate precautions.

1.2.7. Coordination With Other Contractors:

1.2.7.1. Coordinate work with the work of other contractors that will be on site during the time of this contract. The work by other contractors includes installation of owner’s supplied equipment, as noted on drawings and schedules.

1.2.7.2. Coordination includes:

1.2.7.2.1. Scheduling work to avoid interference and maintain spatial separation of operations and avoid “Constructor” issues related to MOL safety regulations.

1.2.7.2.2. Erect construction tape to identify separate work areas.

1.2.7.2.3. Construction schedule to identify the work by other contractors.

1.2.7.2.4. Obtain necessary shop drawings from other Contractors and proceed to co-ordinate details for installation. Owner’s separate equipment Contractor will be responsible to expedite equipment delivery, receive, unload, install, make connections, and test specified equipment, and be responsible for warranty.

1.2.7.2.5. Cooperation with other contractors allowing them appropriate space, access to their work area, site access, parking, etc.

1.2.7.3. Co-ordinate work with that of other Contractors. If any part of work under this Contract depends for its proper execution or result upon work of another Contractor, report promptly to Consultant, in writing, any delays or defects which may interfere with proper execution of Work.

1.2.7.4. Assume full responsibility for protection and safekeeping of equipment installed under separate Contract.

1.3. SUBSTITUTION PROCEDURES

1.3.1. In this Section “Substitution” means a Product, a manufacturer, or both, not originally specified in Contract Documents by proprietary name but proposed for use by Contractor in place of a Product, a manufacturer, or both, specified by proprietary name.

1.3.2. Substitution Procedures:

1.3.2.1. Contractor may propose a Substitution wherever a Product or manufacturer is specified by proprietary name(s), unless there is accompanying language indicating that Substitutions will not be considered.

1.3.2.2. Contractor may propose a Substitution wherever a Product or manufacturer is specified by proprietary name(s) and accompanied by language such as "or equal", "or approved equal", or other similar words. Do not construe such language as an invitation to unilaterally provide a Substitution without Owner and Consultant’s prior acceptance in writing. Do not order or install any Substitution without a Supplemental Instruction or Change Order.

1.3.2.3. Consultant may recommend acceptance of a Substitution if satisfied that:

1.3.2.3.1. The proposed substitute Product is the same type as, is capable of performing the same functions as, interfaces with adjacent work the same as, and meets or exceeds the standard of quality, performance and, if applicable, appearance and maintenance considerations, of the specified Product,

1.3.2.3.2. The proposed substitute manufacturer has capabilities comparable to the specified manufacturer, and

1.3.2.3.3. The Substitution provides a benefit to the Owner.

1.3.2.4. If Contractor fails to order a specified Product or order a Product by a specified manufacturer in adequate time to meet Contractor’s construction schedule, Consultant will not consider that a valid reason to accept a Substitution.

1.3.2.5. If Consultant recommends and Owner accepts a Substitution, the change in the Work will be documented in the form of either a Supplemental Instruction or Change Order.

1.3.2.6. If a Substitution is accepted in the form of a Supplemental Instruction or Change Order, Contractor shall not revert to an originally specified Product or manufacturer without Consultant’s prior written acceptance.

1.4. CONTRACT MODIFICATION PROCEDURES

1.4.1. Abbreviations and Acronyms:

1.4.1.1. CCO: Contemplated Change Order.

1.4.1.2. CD: Change Directive.

1.4.1.3. CO: Change Order.

1.4.1.4. RFI: Request for Interpretation

1.4.2. Definitions:

1.4.2.1. Definitions of terms in accordance with CCA 16, except as otherwise provided in this Section.

1.4.2.2. Overhead: means all direct and indirect costs associated with management, supervision, insurance, bonding, as-built preparation and warranty, administration and supervision at the Place of Work (including the provision of and maintaining office coordination, office costs, supervision, site trailer, telephone service, and long-distance charges) vehicle expense, courier, insurance and small tools and general office supplies as required for the performance of the Work."

1.4.2.3. Office costs: include project site office accounting, office supplies, and utilities

1.4.2.4. Small tools: any tool or equipment piece with a replacement value less than $1,000.

1.4.2.5. Job Costs: are costs that are not included in overhead costs and are restricted to the following: permit costs, material handling, cartage and freight costs, clean-up and disposal costs related to the modification, engineering fees, commissioning costs, financing costs.

1.4.2.6. Impact costs: will be assessed sedately at the completion of the contract, in view of the cumulative impact of all changes and other delays in completing the work.

1.4.2.7. Profit: is calculated on net costs including overhead but does not include VAT.

1.4.3. Reference Documents:

1.4.3.1. CCA 16 – 1992 - Guidelines for determining costs associated with performing changes in work.

1.4.4. Contract Modification Procedures:

1.4.4.1. Promptly and not later than 14 calendar days after becoming aware of circumstances which may require a change in work or other directions, give written notice to Consultant outlining such circumstances and requesting proposed change. Do no work in affected area, or that would prevent Consultant from properly evaluating circumstances and proposed change, without obtaining written acceptance. Consultant will act promptly to give Contractor appropriate instructions so Work is not unreasonably delayed.

1.4.4.2. Advise Consultant in writing of any contradictions, discrepancies, omissions or errors discovered or revealed. Do not proceed before obtaining clarifications and directions from Consultant in writing. Failure to follow this results in Contractor assuming full responsibility for resulting circumstances and costs.

1.4.4.3. The Owner may, in accordance with the General Conditions of the contract, initiate a change to the contract scope of work, Contract Time, or other modification that may impact the Contract Price. These modifications will be issued to the Contractor, by the Consultant, using appropriate instruction.

1.4.5. Change Order and Change Directive:

1.4.5.1. Any variation in the Contract involving a change in total amount of Contract Price or in Contract Time shall be initiated through Consultant in form of a CCN or CD describing work proposed under variation and requesting a quotation from Contractor.

1.4.5.2. CCNs or CDs will be issued electronically as PDF to Contractor. Printed copies of these documents, including referenced drawings and schedules, if required, are the responsibility of the Contractor. Should the Contractor require electronic drawing files (Revit, AutoCAD, etc.), these files to be requested from Consultant and shall be at Contractor's cost.

1.4.5.3. Immediately inform relevant Subcontractors and Suppliers of proposed change.

1.4.5.4. Upon receipt of a CCN by Contractor and where specifically directed by Consultant, suspend all work affected by proposed change until a CO is issued, or until CCN is cancelled.

1.4.5.5. Upon receipt of a CD, begin work described therein as soon as possible and prepare a quotation for the work.

1.4.5.6. Return 1 copy of the CCN or CD with a quotation for the work and indication of the impact of the proposed work on the construction schedule.

1.4.5.7. Include work described in CCN and other work caused, however incidental it may be, by proposed change. Once CO is issued by MonAvenir CSC Project Manager, no further claims for extra costs or time extensions will be accepted.

1.4.5.8. If quotation received is unacceptable, Consultant will request clarification and consultation in order to reach an acceptable quotation, or issue alternate instructions.

1.4.5.9. When Consultant deems quotation acceptable, it will prepare a CO with recommendations to the Owner for approval. Work can proceed only following approval of the CO and execution by the MonAvenir CSC Project Manager.

1.4.6. Schedule Of Labour Rates:

1.4.6.1. Prior to the first application for payment, submit for the Consultant's review a schedule of labour rates for all trades and classifications of trades, such as journeymen, apprentices, and foremen that will be employed in the Work. Provide a breakdown of payroll burden component of labour rates.

1.4.6.2. Labour rates shall reflect the salaries, wages, and benefits paid to personnel in the direct employ of the Contractor, Subcontractors, and sub-Subcontractors, stated as hourly rates, that will be used when:

1.4.6.2.1. Preparing price quotations for CO, and

1.4.6.2.2. Determining the cost of work attributable to Change Directives.

1.4.6.3. Labour rates stated in the schedule of labour rates shall be consistent with rates that will actually be paid, and payroll burden costs that will actually be incurred, in the normal performance of the Work, during regular working hours. Labour rates shall not include any additional overhead and profit component.

1.4.6.4. Where collective agreements apply, the labour rates shall not exceed those established by collective agreement.

1.4.6.5. Obtain the MonAvenir CSC Project Manager's written acceptance of the schedule of labour rates before submitting the first Change Order quotation.

1.4.6.6. Accepted schedule of labour rates will be used solely for evaluating Change Order quotations and cost of performing work attributable to Change Directives.

1.4.6.7. The Contractor may request amendments to the accepted schedule of labour rates if changes in the labour rates that will actually be paid, or payroll burden cost that will actually be incurred, in the normal performance of the Work can be demonstrated. Obtain the MonAvenir CSC Project Manager's written acceptance of such changes.

1.4.7. Schedule of Equipment Rates:

1.4.7.1. Prior to the first application for payment, submit for the Consultant's review a schedule of equipment rates for Contractor owned Construction Equipment.

1.4.7.2. Equipment rates shall reflect the rates that will be used when:

1.4.7.2.1. Preparing price quotations for CO, and

1.4.7.2.2. Determining the cost of work attributable to Change Directives.

1.4.7.3. Equipment rates stated in the schedule shall be consistent with local equipment rental market rates and shall not include any additional overhead and profit component.

1.4.7.4. Obtain the MonAvenir CSC Project Manager's written acceptance of the schedule of equipment rates before submitting the first Change Order quotation.

1.4.7.5. Accepted schedule of equipment rates will be used solely for evaluating Change Order quotations and cost of performing work attributable to Change Directives.

1.4.7.6. The Contractor may request amendments to the accepted schedule of equipment rates if changes in local equipment rental market rates can be demonstrated. Obtain the MonAvenir CSC Project Manager's written acceptance of such changes.

1.4.8. Valuation of Changes Based on Agreed Unit Prices:

1.4.8.1. The Consultant may, at the outset of the Contract or at any other time, request the Contractor to submit unit prices anticipated to be required in valuing changes in the Work.

1.4.8.2. The Contractor shall submit such unit prices promptly upon request.

1.4.8.3. The unit prices shall be valid for a specified duration.

1.4.8.4. The unit prices shall exclude all fees for overhead and profit and shall be subject to the percentage fees specified in this Section under Fees for Overhead and Profit – Change Orders.

1.4.8.5. The Consultant will evaluate the Contractor's quoted unit prices and, if accepted by the Owner in writing, the agreed unit prices shall be used to value subsequent proposed changes in the Work wherever they are applicable.

1.4.9. Method of Contract Price Adjustment - Change Orders:

1.4.9.1. Unless otherwise agreed, the adjustment of the Contract Price on account of a proposed change in the Work shall be based on a quotation for a fixed price increase or decrease to the Contract Price regardless of the Contractor's actual expenditures and savings.

1.4.10. Change Order Procedures:

1.4.10.1. Upon issuance by the Consultant to the Contractor of a proposed change in the Work, and unless otherwise requested in the proposed change or unless otherwise agreed:

1.4.10.1.1. Submit to the Consultant a fixed price quotation for the proposed change in the Work within 7 calendar days after receipt of the proposed change in the Work.

1.4.10.1.2. If requested in the proposed change, provide a detailed breakdown of the price quotation including the following to the extent applicable, with appropriate supporting documentation:

1.4.10.1.2.1. Estimated labour costs, including hours and applicable hourly rates based on the accepted schedule of labour rates.

1.4.10.1.2.2. Estimated Product costs, including Supplier quotations, estimated quantities and unit prices.

1.4.10.1.2.3. Estimated Construction Equipment costs.

1.4.10.1.2.4. Enumeration of all other estimated costs included in the price quotation.

1.4.10.1.2.5. Estimated credit amounts for labour and Products not required on account of the proposed change.

1.4.10.1.2.6. Fees, not exceeding the applicable percentages for overhead and profit as specified in this Section.

1.4.10.1.2.7. Where applicable, Subcontractor quotations, also including a detailed breakdown of all of the above.

1.4.10.1.3. Include in the quotation the increase or decrease to the Contract Time, if any, for the proposed change, stated in number of calendar days.

1.4.10.1.4. Include in the quotation the number of calendar days for which the quotation is valid.

1.4.10.1.5. The quotation will be evaluated by the Consultant and the Owner and, if accepted by the MonAvenir CSC Project Manager, be documented in the form of a signed Change Order.

1.4.11. Fees for Overhead and Profit – Change Orders:

1.4.11.1. Where the Contractor's price quotation for a Change Order results in a net increase to the Contract Price, the Contractor's entitlement to a fee for overhead and profit in the quotation shall be as follows, as applicable:

1.4.11.1.1. For work to be performed by the Contractor's own forces: 10%

1.4.11.1.2. Contractor's mark-up on Subcontractor's work: 5%

1.4.11.1.3. Subcontractor's mark-up on its own work: 10%

1.4.11.2. Where the Contractor's or a Subcontractor's price quotation for a Change Order results in a net decrease in price before adjustment for fees for overhead and profit, such a price quotation shall be for the net decrease without any adjustment for fees for overhead and profit.

1.4.12. Method of Contract Price Adjustment - Change Directives:

1.4.12.1. Unless the Owner and the Contractor reach an earlier agreement on the adjustment to the Contract Price by means of a Change Order that cancels the Change Directive, the adjustment in the Contract Price for change carried out by way of a Change Directive shall be determined as specified in the General Conditions of Contract after the change in the Work is completed.

1.4.13. Change Directive Procedures:

1.4.13.1. If a Change Directive is issued for a change in the Work for which a proposed change was previously issued, but no Change Order has yet been signed, the Change Directive shall cancel the proposed change and any Contractor quotations related to that change in the Work.

1.4.13.2. When proceeding with a change in the Work under a Change Directive, keep accurate records of daily time sheets for labour and Construction Equipment, and invoices for Product and Construction Equipment costs. Submit such records to the Consultant when requested, until the Change Order superseding the Change Directive is issued.

1.4.14. Fees for Overhead and Profit – Change Directives:

1.4.14.1. The Contractor's entitlement to a fee for overhead and profit on the Contractor's expenditures and savings attributable to a Change Directive shall be in accordance with the fee scheduled specified for a Change Order, in this Section.

1.4.14.2. Where a Change Directive results in net savings on account of work not required to be performed and a net decrease in the Contractor's or Subcontractor's cost, the net savings to

the Contractor or Subcontractor shall be calculated without any adjustment for fees for overhead and profit.

1.4.14.3. When a Change Directive is ultimately recorded as a Change Order, there shall be no additional entitlement to fees for overhead and profit beyond those specified in this article.

1.5. REQUEST FOR INTERPRETATION (RFI)

1.5.1. Significance of an RFI:

1.5.1.1. An RFI shall not constitute notice of claim for a delay.

1.5.1.2. An RFI does not become part of the Contract Documents.

1.5.2. Submittal procedures:

1.5.2.1. Consultant shall not respond to an RFI except as submitted on this form.

1.5.2.2. Where RFI form does not provide sufficient space for complete information to be provided thereon, attach additional sheets as required.

1.5.2.3. Submit with RFI form necessary supporting documentation.

1.5.2.4. Submit RFIs sufficiently in advance of affected parts of the Work so as not to cause delay in the performance of the Work. Costs resulting from failure to do this will not be paid by the Owner.

1.5.2.5. RFIs shall be submitted only to the Consultant.

1.5.2.6. RFIs shall be submitted only by Contractor. RFIs submitted by Subcontractors or Suppliers shall not be accepted.

1.5.2.7. Number RFIs consecutively in one sequence in order submitted.

1.5.2.8. Submit one distinct RFI per RFI form.

1.5.3. RFI log:

1.5.3.1. Maintain log of RFIs sent to and responses received from the Consultant, complete with corresponding dates.

1.5.3.2. Submit updated log of RFIs at each progress meeting for discussion .

1.5.4. Consultant review:

1.5.4.1. Consultant’s response shall be given in the space provided on the form. When a change to the Contract scope of work, or cost, or time is required, appropriate instructions will be given by the Owner via the Consultant.

1.5.4.2. Only the Consultant shall respond to RFIs. Responses to RFIs received from entities other than the Consultant shall not be considered.

1.5.4.3. Allow 5 Working Days for review of each RFI by the Consultant.

1.5.4.4. In the event that an RFI is complex or will require additional time to complete a response than in the 5 Working Days schedule, the Consultant will respond with partial information available and follow up with further instructions as appropriate. The Consultant and the Contractor, acting reasonably, will jointly prepare an estimate of the time necessary for processing a complete response. The Contractor shall accommodate such necessary time at no increase in the Contract Time and at no additional cost to the Owner.

1.5.4.5. If, at any time, the Contractor submits a large enough number of RFIs such that the Consultant cannot process these RFIs within 5 Working Days, the Consultant, will confer with the Contractor within 1 Working Day of receipt of such RFIs, and the Consultant and the Contractor, acting reasonably, will jointly prepare an estimate of the time necessary for processing same as well as an order of priority between the RFIs submitted. The Contractor

shall accommodate such necessary time at no increase in the Contract Time and at no additional cost to the Owner.

1.5.4.6. Consultant will undertake a review of the Contract Documents to determine that the matter in question relating to the interpretation of the Contract Documents cannot be resolved by direct reference to the Contract Documents. Describe this review in detail on the RFI form. RFI submittals that lack a detailed review description, or where the detail provided is insufficient, in the sole opinion of the Consultant, shall not be reviewed by the Consultant and shall be rejected.

1.6. SUPPLEMENTAL INSTRUCTIONS (SI)

1.6.1. The Consultant may issue Supplemental Instructions to provide clarifications to the Contract Documents, provide additional information, or make minor variations in the Work not involving adjustment in the Contract Price or Contract Time.

1.6.2. If the Contractor considers a Supplemental Instruction to require an adjustment in Contract Price or Contract Time, the Contractor shall promptly notify the Consultant and the Ownerin writing and shall not proceed with any work related to the Supplemental Instruction pending receipt of a Change Order, a Change Directive, or, in accordance with the dispute resolution provisions of the General Conditions of Contract, a Notice in Writing of a dispute and instructions to proceed.

1.6.3. Supplemental Instructions are part of the Contract Documents.

1.7. PAYMENT PROCEDURES

1.7.1. Schedule of Values:

1.7.1.1. Prior to the first application for payment, submit for Consultant's review an initial schedule of values. Modify the initial schedule of values if and as requested by Consultant. Obtain Consultant's written acceptance of the initial schedule of values prior to the first application for payment.

1.7.1.2. Together with the first and all subsequent applications for payment, submit updated versions of the schedule of values to indicate the values, to the date of application for payment, of work performed and Products delivered to Place of the Work.

1.7.1.3. Provide the schedule of values in an electronic spreadsheet format based on the format provided and content described in CCDC 24 – 2022, A Guide to Model Forms and Support Documents. Include the following:

1.7.1.3.1. Mobilization and start-up.

1.7.1.3.2. General site expenses.

1.7.1.3.3. Each and every Trade Subcontractor, indicating the specification Sections in which their work is included.

1.7.1.3.4. As-built Drawings broken down by Architectural, Structural, Mechanical and Electrical disciplines (minimum 0.5% of Contract Price).

1.7.1.3.5. Project closeout, comprising separate sums for:

1.7.1.3.5.1. Manuals, operating instructions, and warranties.

1.7.1.3.5.2. Maintenance materials.

1.7.1.3.5.3. Commissioning and training/demonstration for Owner's staff.

1.7.1.4. Provisions for approved Change Orders, allowances, and assignable contracts so that the breakdown amounts indicated in the schedule of values aggregate to the current total Contract Price. Also provide for indicating the estimated value of Change Directives within the schedule of values, separately from the current total Contract Price.

1.7.1.5. For each item in the work breakdown structure, provide as a minimum the following information, under headings as indicated:

1.7.1.5.1. Breakdown Amount: A dollar amount, including an appropriate pro rata portion of Contactor's overhead and profit.

1.7.1.5.2. Performed to Date: The value of Work performed and Products delivered to Place of the Work up to the date of the application for payment, stated as a percentage of the Contract Price and in dollars.

1.7.1.5.3. Previously Performed: The value of Work performed and Products delivered to the Place of the Work for which payment has been previously certified, stated in dollars.

1.7.1.5.4. Current Period: The value of Work performed and Products delivered to Place of the Work for which Contractor is currently applying for payment, stated in dollars.

1.7.1.5.5. Balance to Complete: The value of Work not yet performed and Products not yet delivered to Place of the Work, stated in dollars.

1.7.2. Cash Flow Projection:

1.7.2.1. Prior to the first application for payment submit, for Consultant's review, a forecast of approximate monthly progress payments for each month of the Contract Time.

1.7.2.2. Submit revised cash flow forecasts when required due to significant changes in rate of progress of the Work or significant changes in the Contract Price or when requested by Consultant.

1.7.3. Workers' Compensation Clearance:

1.7.3.1. Submit proof of workers' compensation clearance with each application for payment.

1.7.4. Statutory Declarations:

1.7.4.1. Submit a statutory declaration in the form of CCDC 9A – Statutory Declaration of Progress Payment Distribution by Contractor with each application for payment except the first.

1.7.5. Payment for Products Stored Off Site:

1.7.5.1. Owner may, due to extraordinary circumstances and at Owner's sole discretion, make payments for Products delivered to and stored at a location other than Place of the Work, subject to:

1.7.5.1.1. A request submitted by Contractor in writing, with appropriate justification, and

1.7.5.1.2. Whatever conditions Owner or Consultant may establish for such payments, as required to protect Owner's interests.

1.8. PROJECT MEETINGS

1.8.1. Establish acceptance and need for hybrid meetings, with in person and virtual attendance.

1.8.2. If required, establish procedures and provide suitable facilities and equipment to facilitate videoconferencing. Provide internet and wireless connections, camera, microphone, screen equipment.

1.8.3. Definitions:

1.8.3.1. Attendance: shall mean in-person, not remote, online, or virtual.

1.8.3.2. Hybrid meetings: in situations where it has been agreed to in advance by Owner and Consultant, shall mean virtual and/or in person attendance.

1.8.4. Construction Start Up Meeting:

1.8.5. Promptly after Contract award, Consultant will establish the time and location of a construction start-up meeting to review and discuss administrative procedures and responsibilities. Consultant will notify Contractor at least 5 Working Days before the meeting.

1.8.6. Senior representatives of Owner, Consultant, subconsultants, and Contractor, including Contractor's project manager and site superintendent, and major Subcontractors, shall be in attendance.

1.8.7. Consultant will chair the meeting and record and distribute the minutes.

1.8.8. Agenda will include following:

1.8.8.1. Appointment of official representatives of Owner, Contractor, Subcontractors, Consultant, and subconsultants.

1.8.8.1.1. List of major Subcontractors and Suppliers.

1.8.8.2. Project communications.

1.8.8.2.1. Discuss the need for hybrid meetings, situations where these are applicable, and administrative procedures.

1.8.8.2.2. Designation of responsible personnel. Contact information, distribution procedures.

1.8.8.3. Contract Documents for construction purposes.

1.8.8.3.1. Building Permit status

1.8.8.3.2. Issued for convenience set of drawings and specifications

1.8.8.4. Procedures for maintaining as-built documents. Need for electronic files.

1.8.8.5. Administrative procedures for digital document management.

1.8.8.6. Documents at the site.

1.8.8.7. Contractor's use of premises. Office, keys, work and storage areas; Owner's requirements (storage, deliveries, path of construction activities, vehicle parking, by foot, carts, use of elevator(s), washrooms, bin location)

1.8.8.8. Owner-supplied Products.

1.8.8.9. Assignable contracts.

1.8.8.10. Work restrictions.

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1.8.8.16. Construction progress meetings.

1.8.8.17. Construction progress schedule,

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1.8.8.17.2. Tentative construction progress schedules.

1.8.8.17.3. On-site construction date

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1.8.8.17.5. Major equipment and Product deliveries and priorities.

1.8.8.18. Submittals schedule and procedures.

1.8.8.19. Compatibility matrix.

1.8.8.20. Quality requirements, including testing and inspection procedures.

1.8.8.21. Contractor’s mobilization.

1.8.8.22. Temporary utilities.

1.8.8.23. Existing utility services.

1.8.8.24. Construction facilities, controls, temporary hoarding, dust partitions, parking, hours, noisy work, interruption of services, smoking, and construction aids.

1.8.8.25. Project sign.

1.8.8.26. Temporary controls.

1.8.8.27. Field engineering and layout of work.

1.8.8.28. Site safety, Construction Safety Plan.

1.8.8.29. Site security.

1.8.8.30. Cleaning and waste management.

1.8.8.31. Closeout procedures and submittals.

1.8.8.32. Commissioning.

1.8.8.33. Publication to be used for publishing certificate of substantial performance.

1.8.8.34. Other items.

1.8.9. Construction Progress Meetings:

1.8.9.1. Schedule regular construction progress meetings to occur every 2 weeks for the duration of the Work. Contractor shall prepare meeting agendas and chair the meetings.

1.8.9.2. Consultant also reserves right to call additional special emergency site meetings on short notice without any cost to Owner.

1.8.9.3. Arrange for and provide physical space for meetings.

1.8.9.4. Record in the meeting minutes significant decisions and identify action items and action dates by attendees or the parties they represent.

1.8.9.5. Distribute copies of minutes within 3 Working Days after each meeting to meeting attendees and any affected parties who may not be in attendance.

1.8.9.6. Ensure representatives of Contractor, Contractor's consultants, Subcontractors and Suppliers attending meetings are qualified and authorized to act on behalf of entity each represents.

1.8.9.7. Ensure relative information is available to allow meetings to be conducted efficiently.

1.8.9.8. Agenda for each meeting shall include the following, as a minimum:

1.8.9.8.1. Approval of minutes of previous meeting.

1.8.9.8.2. Work progress since previous meeting.

1.8.9.8.3. Field observations, including any problems, difficulties, or concerns.

1.8.9.8.4. Construction progress schedule. Identify delays and potential delays during all stages of Work. Review of off-site fabrication, delivery schedules

1.8.9.8.5. Corrective measures and procedures to regain projected schedules.

1.8.9.8.6. Quality standards.

1.8.9.8.7. Submittals schedule. Status of shop drawings.

1.8.9.8.8. Review of mock-up and sample installation requirements and schedules.

1.8.9.8.9. Pending changes and substitutions.

1.8.9.8.10. Proposed changes in the Work.

1.8.9.8.11. Requests for information.

1.8.9.8.12. Site safety issues.

1.8.9.8.13. Other business.

1.8.10. Preinstallation Trade Meetings:

1.8.10.1. In addition to specified requirements for preinstallation meetings in individual specification Sections, Contractor or Subcontractor may request a meeting prior to starting work.

1.8.10.2. Arrange for such meeting of all parties associated with trade as designated in Contract Documents or as requested by Consultant.

1.8.10.3. Presided over by Contractor, include MonAvenir CSC Project Manager, Consultant who may attend, include Subcontractor performing work of trade involved, Testing Company's Representative and Contractor's consultants of applicable discipline.

1.8.10.4. Record meeting minutes and distribute within 3 Working Days.

1.8.10.5. Agenda to include the following:

1.8.10.5.1. Appointment of subcontractor and installer representatives for respective work.

1.8.10.5.2. Review of existing conditions and affected work and testing thereof as required.

1.8.10.5.3. Review of installation procedures and requirements.

1.8.10.5.4. Review of environmental and site condition requirements, including lighting and ventilation.

1.8.10.5.5. Schedule of the applicable portions of the Work.

1.8.10.5.6. Schedule of submission of submittals, samples, mock-ups, and items for Consultant’s consideration.

1.8.10.5.7. Requirements for Temporary Work including signage, caution tape or suitable barricades.

1.8.10.5.8. Requirements for notification for reviews. Allow a minimum of 48 hours’ notice to Consultant for review of the Work.

1.8.10.5.9. Requirements for inspections and tests, as applicable. Schedule and undertake inspections and tests.

1.8.10.5.10. Delivery schedule of specified equipment.

1.8.10.5.11. Special safety requirements and procedures.

1.8.11. Owner, Consultant and Contractor (OCC) Meetings:

1.8.11.1. Purpose: To review policy, financial status and schedule.

1.8.11.2. Period: monthly, or as requested, on a mutually acceptable schedule.

1.8.11.3. Attendees:

1.8.11.3.1. MonAvenir CSC Project Manager.

1.8.11.3.2. Consultant(s).

1.8.11.3.3. Contractor.

1.8.11.4. Chair: Consultant.

1.8.11.5. Consultant shall prepare minutes recording decisions, comments, instructions required and a report on Schedule. Consultant will distribute minutes to each participant within 5 Working Days.

1.9. CONSTRUCTION PROGRESS DOCUMENTATION

1.9.1. Construction Progress Schedule:

1.9.1.1. Schedule Format and Content:

1.9.1.1.1. Prepare schedule in the form of a Critical Path Method (CPM) Gantt chart using Procore, Microsoft Project 365 or other appropriate scheduling software as acceptable to Consultant and MonAvenir CSC Project Manager.

1.10. SUBMITTALS PROCEDURES

1.10.1. Administrative Requirements:

1.10.1.1. Submit submittals as requested by the Contract Documents, as specified herein, and in accordance with the submittals schedule prepared in accordance with Section 01 32 00 – Construction Progress Documentation.

1.10.1.2. Submit specified submittals to Consultant for review. Submit with reasonable promptness and in orderly sequence so as to not cause delay in the Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time or for Product substitutions or other deviations from the Drawings and Specifications.

1.10.1.3. In addition to submittals specifically requested by the Contract Documents, submit other submittals as may be reasonably requested by the Consultant, or as are required to coordinate the Work and to provide the Owner with choices available, within the scope of Contract Documents.

1.10.1.4. Determine which Shop Drawings the local Building Department or other authorities having jurisdiction will require for its approval. Provide submittals in format required, pay fees for permits and approvals if required. Submit confirmation of these approvals.

1.10.1.5. Do not proceed with work affected by a submittal, including ordering of Products, until review by Consultant is complete.

1.10.1.6. Present Shop Drawings, Product data, and samples in SI metric units. Where items or information is not produced in SI Metric units, converted values are acceptable.

1.10.1.7. Do not propose Substitutions or deviations from Contract Documents via Shop Drawing, Product data and sample submittals.

1.10.1.8. Contractor’s responsibility for deviations in submittal from requirements of Contract Documents is not relieved by Consultant’s review of submittal. Accepted submittals that include any deviations from the Contract Documents, whether intended or overlooked, do not constitute a change in the Contract Documents. Any deviation from the Contract Documents must be documented.

1.10.1.9. Keep copies of reviewed submittals at the Place of the Work in an organized condition. Only submittals that have been reviewed by the Consultant and are marked with Consultant’s review stamp, as applicable, are permitted at the Place of the Work.

1.10.1.10. The Work shall conform to reviewed submittals subject to the requirements of this section. Remove and replace materials or assemblies not matching reviewed submittals at no increase in the Contract Time and at no additional cost to the Owner.

1.10.1.11. Accompany submittals with a transmittal information including:

1.10.1.11.1. Date.

1.10.1.11.2. Project title and number.

1.10.1.11.3. Contractor's name and address.

1.10.1.11.4. Identification of each submittal item and quantity.

1.10.1.11.5. Other pertinent data.

1.10.1.12. Submittals not meeting specified requirements will be returned without comments for resubmission.

1.10.2. Shop Drawings:

1.10.2.1. Submit 1 copy digitally in pdf format of Shop Drawings to Consultant using the Onware document management system.

1.10.2.2. Lettering on Shop Drawings shall be not less than 3 mm (1/8") high.

1.10.2.3. Electronic files will be made available for the production of shop drawings upon request. Refer to Section 00 63 69 - Electronic Release Form, including fees payable to Consultant for the use of the electronic documents.

1.10.2.4. Reproduction of construction Drawings to serve as background for Shop Drawings is not permitted.

1.10.2.5. Shop Drawings size shall be multiple of 213 mm and 275 mm (8-1/2" and 11") excluding 38 mm (1-1/2") binding margin and not larger than 838 mm x 1117 mm (33" x 44"). Leave minimum 150 mm x100 mm (6" x 4") clear space for Consultant's comments.

1.10.2.6. Upon completion of review by Consultant, 1 marked set of Shop Drawings will be returned to Contractor in digital format for reproduction and distribution.

1.10.2.7. Shop Drawings shall include:

1.10.2.7.1. Date and revision dates.

1.10.2.7.2. Project title and number.

1.10.2.7.3. Name and address of:

1.10.2.7.3.1. Subcontractor.

1.10.2.7.3.2. Supplier.

1.10.2.7.3.3. Manufacturer.

1.10.2.7.4. Fabrication and erection dimensions.

1.10.2.7.5. Plans, sections, elevations, arrangements and sufficient full size details which indicate complete construction, components, methods of assembly as well as interconnections with other parts of the Work.

1.10.2.7.6. Design calculations for items that require design calculations.

1.10.2.7.7. Clear definition of the division of responsibility for the work described thereon. No Products, items or equipment, or description of work, shall be indicated to be supplied, or work to be done, "By Others" or "By Purchaser". Shop Drawings marked with either of these phrases shall be rejected without having been reviewed by the Consultant.

1.10.2.7.8. Location and type of exposed anchors, attachments and locations and types of fasteners, including concealed reinforcements to accept mounted fasteners.

1.10.2.7.9. Adhesives, joinery methods and bonding agents.

1.10.2.7.10. Kinds and grades of materials, their characteristics relative to their purpose, detailed description of finishes and other fabrication information.

1.10.2.7.11. Configurations, types and sizes required; identify each unit type on drawing and on Product.

1.10.2.7.12. Descriptive names of equipment and mechanical and electrical characteristics when applicable.

1.10.2.7.13. Data verifying that superimposed loads will not affect function, appearance and safety or work shown on shop drawings, as well as other interconnected work.

1.10.2.7.14. Assumed design loadings, dimensions of elements and material Specifications for load-bearing members.

1.10.2.7.15. Proposed chases, sleeves, cuts and holes in structural members.

1.10.2.7.16. Wall thicknesses of metals.

1.10.2.7.17. Location and types of welds. For structural welds use AWS symbols and clearly show net weld lengths and sizes.

1.10.2.7.18. Materials, gauges, and sizes being supplied including connections, attachments, reinforcement, anchorage and locations of exposed fastenings.

1.10.2.7.19. Installation instructions and details for Products to be installed by separate Subcontractors, including function of each part.

1.10.2.7.20. A list of Products covered by, or included on, the shop drawing. List of Products shall be complete and show manufacturer's name, Product name, generic description, standard certification where specified, manufacturer's complete installation data and precautions against wrong installation, operation and maintenance.

1.10.2.7.21. Refer to individual sections of the Specifications for more particular requirements for Shop Drawings.

1.10.2.7.22. Compatibility statement: Include with each Shop Drawings a statement that each Product and material indicated on the Shop Drawings is compatible with each Product and material with which it comes into contact.

1.10.3. Product Data Sheets:

1.10.3.1. Submit 1 copy digitally in pdf format for all Product data sheets to Consultant using the Onware document management system.

1.10.3.2. Submit Product data sheets as called-for by the Contract Documents or as the Consultant may reasonably request where shop drawings will not be prepared due to a standardized manufacture of a Product. Manufacturers' catalogue cuts will be acceptable in such cases, providing that they are 213 mm x 275 mm (8-1/2" x 11") originals, and that they indicate choices including sizes, colours, model numbers, options and other pertinent data, including installation instructions. Submissions showing only general information are not acceptable.

1.10.3.3. Upon completion of review by Consultant, 1 marked set of Product data sheets will be returned to Contractor in digital format for reproduction and distribution.

1.10.3.4. Product data submittals shall include safety data sheets (SDS) for all controlled Products.

1.10.3.5. Where a submittal includes information not applicable to the Work, clearly identify applicable information and strike out non-applicable information.

1.10.4. Samples:

1.10.4.1. Definition: A sample is a separated part of a Product or an assembly and is an illustrative or typical example of that Product or assembly.

1.10.4.2. Submit a minimum of 3 samples unless a greater number is specified.

1.10.4.3. Deliver samples to Consultant’s office with expenses, including carrying costs, prepaid, unless otherwise instructed.

1.10.4.4. Identify each sample with:

1.10.4.4.1. Project name and Project number.

1.10.4.4.2. Contractor’s name

1.10.4.4.3. Subcontractor’s name

1.10.4.4.4. Supplier’s name

1.10.4.4.5. Product’s generic name

1.10.4.4.6. Product manufacturer's name

1.10.4.4.7. Product's trade or brand name

1.10.4.4.8. Product's model number

1.10.4.4.9. Date of submission.

1.10.4.5. The purpose of samples is to establish an acceptable quality or quality range for the Products to be incorporated into the Work.

1.10.4.6. Provide samples required by and as described in Contract Documents for Consultant's review. Provide samples additional to those specified as the Consultant may request for Consultant's review.

1.10.4.7. Review samples obtained from Subcontractors and Suppliers before submitting them to Consultant. Contractor represents by the act of reviewing that he has checked and co-ordinated each sample against the requirements of Contract Documents.

1.10.4.7.1. Confirm review of each sample (including resubmission) by applying a stamp to the sample or to a tag permanently attached to the sample. Have the stamp contain Contractor's name and the date and the signature of Contractor's authorized representative.

1.10.4.7.2. Consultant will reject samples not stamped, dated or signed by Contractor and will require them to be resubmitted.

1.10.4.8. Where a required colour, pattern or texture has not been specified, submit full range of available Products meeting other specified requirements.

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

1.10.4.10. Notify Consultant in writing of any deviations in samples from requirements of Contract Documents.

1.10.4.11. Revise and resubmit samples rejected by Consultant.

1.10.4.12. Revise and resubmit samples for approval of colours, patterns, direction of grain, sheen, graphics, details and for quality of finish as many times as may be necessary.

1.10.4.13. Submit final reviewed samples to Authorities Having Jurisdiction, wherein authorities require samples.

1.10.4.14. Consultant's review is for conformity to the design concept only. Consultant's review or approval does not mean the Consultant accepts responsibility for the detail design inherent within the samples. Review or approval does not relieve Contractor from the responsibility of meeting the requirements of Contract Documents.

1.10.4.15. Consultant selection from samples is not intended to change the Contract Price or Contract Time. If a selection would affect the Contract Price or Contract Time, notify Consultant in writing prior to proceeding with the Work.

1.10.4.16. Reviewed and accepted samples will establish the standard against which installed Work will be reviewed.

1.10.5. Engineered Judgements:

1.10.5.1. When an engineered judgement is required by authorities having jurisdiction, such engineered judgement shall be prepared as an engineered submittal in accordance with this Section.

1.10.6. Contractor's Review of Submittals:

1.10.6.1. Review submittals for conformity to Contract Documents before submitting to Consultant. Submittals shall bear stamp of Contractor and signature of a responsible official in

Contractor's organization indicating in writing that such submittals have been checked and coordinated by Contractor. Review shall be performed by qualified personnel who have detailed understanding of those elements being reviewed and of the conditions at the Place of the Work proposed for installation.

1.10.6.2. Check and sign each submittal and make notations considered necessary before submitting to Consultant for review. Where submittal is substantially and obviously in conflict with requirements of Contract Documents, reject submittal without submitting to Consultant and request resubmission. Note limited number of reviews of each submittal covered under Consultant's services as specified below.

1.10.6.3. Assume sole responsibility for any conflicts occurring in the Work that result from lack of comparison and coordination of submittals required for the Work.

1.10.6.4. Verify field measurements and that affected adjacent work is coordinated. Assume sole responsibility for dimensions to be confirmed and correlated at the Place of the Work for information that pertains to fabrication processes or to techniques of construction and installation, and for coordination of the Work.

1.10.6.5. Submittals that have not been reviewed, checked, and coordinated by Contractor prior to submission to Consultant, or that do not bear the stamp and signature of Contractor as described above, will be stamped "REVISE AND RESUBMIT" and returned.

1.10.7. Consultant's Review of Submittals:

1.10.7.1. Review of submittals by Consultant is for the sole purpose of ascertaining conformance with the general design concepts and the general intent of the Contract Documents. This review shall not mean that Consultant approves the detail design inherent in the submittals, responsibility for which shall remain with the Contractor. Such review shall not relieve the Contractor of responsibility for errors or omissions in the submittals, nor of responsibility for meeting requirements of Contract Documents.

1.10.7.2. As part of their scope of work, Consultant shall review Shop Drawings no more than twice. Should three or more reviews be required due to reasons of Contractor omissions causing resubmission requests, then Contractor shall reimburse the Consultant for time expended in these extra reviews. Time shall be invoiced to the Owner (to be deducted from monies due to the Contractor and paid to Consultant by Owner) at rates recommended by Consultant's professional association and disbursements shall be invoiced at Consultant's cost. The Contractor shall cover directly costs and administration associated with courier services and the like for these extra Shop Drawings reviews.

1.10.7.3. Consultant's review and markings on submittals do not authorize changes in the Work nor in the Contract Time, and shall be accommodated at no additional cost to the Owner. If, in the opinion of the Contractor, the Consultant's markings on submittals constitute a change in the Work or will effect a change in the Contract Time, then the Contractor shall so notify the Consultant in writing and request an interpretation following the procedures for requests for interpretation in accordance with Section 01 31 00 – Project Management and Coordination. If the Consultant finds that the Consultant's markings on submittals do constitute a change in the Work or will effect a change in the Contract Time, then a Change Order will be prepared. The time taken to process such a request for interpretation shall not, in and of itself, constitute a change in the Work nor an increase the Contract Time.

1.10.7.4. Submittals that are not required by the Contract Documents or not requested by the Consultant will not be reviewed by the Consultant and will be marked 'NOT REVIEWED' by the Consultant and returned to the Contractor.

1.10.7.5. Without limitation, among other things, Contractor remains responsible for:

1.10.7.5.1. Detail design inherent in Shop Drawings.

1.10.7.5.2. Errors and omissions in Shop Drawings.

1.10.7.5.3. Meeting requirements of Contract Documents.

1.10.7.5.4. Confirmed and correlated site dimensions.

1.10.7.5.5. Information that pertains solely to fabrication processes, techniques of construction and installation.

1.10.7.5.6. Co-ordination of work of all trades.

1.10.8. Submittals Before Commencement of Work:

1.10.8.1. Obtain the documents listed under this heading and supply to Consultant before any on site construction activity:

1.10.8.1.1. Ministry of Labour Notice of Project

1.10.8.1.2. Maintenance Bond, deposit(s), permits as may be required by the City of Toronto for work on municipal property.

1.10.8.1.3. Building Permit or demolition permit

1.10.8.1.4. Performance Bond and Labour and Material Payment Bond.

1.10.8.1.5. Insurance Policies required under General Conditions of Contract and Supplementary Conditions.

1.10.8.1.6. Certificates of good standing from the Workplace Safety and Insurance Board for the Contractor and all Subcontractors. The certificates are to include rate, class number, and firm WSIB number.

1.10.8.1.7. Safety plan to comply with the Occupational Health and Safety Act, and together with the Contractor's own safety policy for the project:

1.10.8.1.7.1. In accordance with MonAvenir CSC Contractor Procedure Manual appendix Workplace, Health and Safety Program Manual.

1.10.8.1.8. Quality Control Plan.

1.10.8.1.9. Waste management plan.

1.10.8.1.10. SHN Construction Activity Permit for work in areas of the building that have been occupied by the Owner.

1.10.9. Submissions Before the First Progress Payment Application:

1.10.9.1. Submit the documents listed under this heading and supply to Consultant before commencement of work by the applicable trade and/or the first application for payment is submitted:

1.10.9.1.1. Shop drawing and sample schedule.

1.10.9.1.2. List of all shop drawings and samples to be submitted prepared as a shop drawing log. Identify specification Section number, product name, subcontractor responsible and status.

1.10.9.1.3. List of all required operation and maintenance manuals, warranties, and other closeout submittals. Identify specification Section number, material or component, subcontractor responsible and status.

1.10.9.1.4. Permits for temporary structures, hoists, hoardings, street occupancy, boulevard protection, etc.

1.10.9.1.5. Construction cost breakdown or schedule of values.

1.10.9.1.6. Estimate of monthly progress claims (cash flow schedule).

1.10.9.1.7. Construction schedule.

1.10.9.1.8. Complete list of Subcontractors with addresses, phone numbers and personnel along with Contractor's list of personnel.

1.10.9.1.9. Materials compatibility matrix – refer to Section 01 40 00 – Quality Requirements.

1.10.10. Closeout Submittals:

1.10.10.1. Submit closeout submittals in accordance with Section 01 78 00 – Closeout Submittals.

1.10.11. Other Submittals:

1.10.11.1. Supply submittals required by Contract Documents (e.g. plans, reports, tests, certifications, results, records, etc.) for Consultant's review, as required in the technical Sections.

1.11. DELEGATED DESIGN PROCEDURES

1.11.1. Definitions:

1.11.1.1. Delegated Design: certain detailed design aspects of the Work, as described in the technical specification Sections, are assigned to a professional engineer engaged by the Contractor, specializing in the type of work being deferred.

1.11.2. General

1.11.2.1. The Contract Documents include Delegated Design Components that require the Contractor to provide professional design services or certifications by a professional structural engineer. The performance and design criteria that such services must satisfy are indicated in the construction drawings and relevant specification sections.

1.11.2.2. Provide submittals for Delegated Design services or certifications by a professional structural engineer, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, shop drawings, field review reports and other submittals prepared by them.

1.11.2.3. Shop drawings and other submittals related to the Work, designed or certified by the professional responsible for the Delegated Design, if prepared by others, shall bear such professional’s written approval when submitted.

1.11.2.4. Consultant will review Delegated Design submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

1.12. TEMPORARY UTILITIES

1.12.1. References:

1.12.1.1. MonAvenir CSC Contractor Procedure Manual (General Conditions)

1.12.2. Temporary Utilities - General

1.12.2.1. Provide temporary utilities as specified and as otherwise necessary to perform the Work expeditiously.

1.12.2.2. Provide controlled environment for construction drying and curing of construction work to prevent growth of mold and speed up drying of concrete to meet moisture emission levels required by finish flooring installation. Conform to following performance requirements, except where more stringent requirements are required by work of other Sections:

1.12.2.2.1. Supply Air: Minimum 1 air change every 120 minutes.

1.12.2.2.2. Filtration of Out Air: 100%.

1.12.2.2.3. Temperatures: Minimum between 15 deg C (59 deg F) and 27 deg C (80 deg F).

1.12.2.2.4. Relative Humidity: Maintain at or below 50% RH.

1.12.2.2.5. Ensure moisture content in wood and hardwood materials is stabilized to maximum percentage recommended by AWI/AWMAC requirements.

1.12.2.3. Control condensation and maintain environmental conditions, including air and surface temperatures suitable for surface preparation, application and curing of paints and coatings.

1.12.2.4. Uniformly distribute heat to avoid hot or cool areas or excessive drying. Protect concrete, masonry, excavations, backfilling and other work from frost during construction.

1.12.2.5. Dehumidify interior spaces continuously during installation and curing periods required for moisture emitting work to maintain required relative humidity levels, including without limitations work of involving:

1.12.2.5.1. Joint compounds, skim coating, gypsum board work and plaster.

1.12.2.5.2. Cementitious materials.

1.12.2.5.3. Paints.

1.12.2.5.4. Spray applied fireproofing.

1.12.2.5.5. Finish carpentry, casework, wood paneling, wood flooring and other millwork.

1.12.2.6. As soon as construction is sufficiently advanced, and in order to prevent delays in progress of Work, enclose building using necessary tarpaulins, plastic sheeting or glazing and temporary doors, with locks to doors.

1.12.2.7. Submit schematic equipment layout, duct and/or pipe route, staging, sequencing layouts, enclosure and barricade construction.

1.12.2.8. Submit Product data, climate control equipment, temperature and humidity controls, duct, duct accessories, pipe and piping accessories materials and construction. Where placed outside, anchor and securely attach temporary supply canvas spiral duct to withstand wind damage. Ensure interior distribution polyethylene tubing has perforations to distribute air evenly throughout areas being served.

1.12.2.9. Remove temporary utilities after use.

1.12.3. Temporary Water Supply:

1.12.3.1. Arrange and pay for a temporary supply of water required during construction.

1.12.4. Temporary Heating and Ventilation:

1.12.4.1. Arrange and pay for temporary heating and ventilation required during construction.

1.12.4.2. Temporary heating, ventilation and air conditioning without limitation includes heating, cooling and desiccant de-humidification equipment, associated power cables, gas lines, temporary duct work and accessories.

1.12.4.3. Provide temporary heat for the Work as required to:

1.12.4.3.1. Facilitate progress of Work.

1.12.4.3.2. Protect work under way and completed work.

1.12.4.3.3. Prevent moisture condensation on surfaces, freezing, or other damage to finishes or stored Products.

1.12.4.3.4. Maintain specified minimum ambient temperatures and humidity levels for storage, installation and curing of Products.

1.12.4.3.5. After building is enclosed, maintain interior temperature of minimum 15 degrees C.

1.12.4.4. Provide temporary ventilation for the Work as required to:

1.12.4.4.1. Prevent accumulations of fumes, exhaust, vapours, gases and other hazardous, noxious, or volatile substances in enclosed spaces, as required to maintain a safe work environment meeting applicable regulatory requirements.

1.12.4.4.2. Ventilate temporary sanitary facilities.

1.12.4.5. Construction heaters used inside building must be vented to outside or be flameless type. Do not use direct fired space heaters and propane, salamander type heaters. Ventilate heated areas and keep building free of exhaust and combustion gases.

1.12.4.6. Maintain supervision of operation of temporary heating and ventilation equipment. Maintain temporary climate control equipment in service until completion of building commissioning or when use is no longer required as directed by Consultant.

1.12.4.7. Do not use permanent building heating and ventilation systems during construction.

1.12.5. Temporary Electrical Power and Lighting:

1.12.5.1. Arrange and pay for temporary power and lighting required during construction.

1.12.5.2. New permanent building power and lighting systems may be used during construction, at Contractor's option. If used during construction:

1.12.5.2.1. Contractor shall pay utility costs resulting from the use of permanent systems.

1.12.5.2.2. Operate systems in a non-wasteful and energy efficient manner. Be responsible for any system damage.

1.12.5.2.3. Just prior to Ready-for-Takeover replace lamps which have been used for more than 3 months.

1.12.5.2.4. Ensure that systems manufacturers' warranties do not commence until the date of Substantial Performance of the Work or, if manufacturers' warranties do commence earlier when systems are put into use, arrange for necessary extension of manufacturers' warranties or provide equivalent coverage under Contractor's warranty.

1.13. CONSTRUCTION FACILITIES

1.13.1. Construction Parking:

1.13.1.1. Limited parking will be permitted at Place of the Work at the discretion of the Contractor.

1.13.2. Vehicular Access and Road Maintenance:

1.13.2.1. Provide and maintain adequate access to Place of the Work.

1.13.2.2. Assume responsibility for any damage to municipal property caused by construction traffic and prevent or promptly clean up any mud tracking or material spillage.

1.13.2.3. Vehicle Cleaning:

1.13.2.3.1. Establish a designated vehicle loading point at the Place of the Work on a gravel base to minimize tracking of soil off the Place of the Work. If the loading point becomes contaminated, it shall be cleaned and replaced.

1.13.2.3.2. Vehicles leaving the Place of the Work shall be cleaned of loose soil and dust, including tire washing, and sweeping or washing of exteriors and tailgates by a designated labourer.

1.13.2.3.3. Keep a daily log of each vehicle leaving the Place of the Work, including time of cleaning and name of cleaner.

1.13.2.3.4. Tarp vehicles containing indigenous soil or debris leaving the Place of the Work.

1.13.2.4. Maintain access sidewalks, roadways and similar facilities as may be required for access to the Work. Do not block public roads, or impede traffic during work of this Project and if required to temporarily block traffic then provide flag person to direct traffic acceptable to Municipal authorities. Ensure access is available for emergency vehicles. Comply with fire plan for vehicular traffic.

1.13.3. Site Offices:

1.13.3.1. Provide a temperature controlled and ventilated office, with power, suitable lighting, of sufficient size to accommodate site meetings and furnished with meeting space.

1.13.3.2. Equip office with table and chairs to accommodate at least 10 meeting attendees, one - 3 drawer filing cabinet, one plan rack, and table to layout drawings.

1.13.3.3. Provide internet access.

1.13.3.4. Provide weekly cleaning service.

1.13.4. Sanitary Facilities:

1.13.4.1. Provide and maintain temporary facilities for use by workers in compliance with Occupational Health and Safety Act, applicable codes and by-laws. Provide portable, weatherproof toilets, serviced at least weekly.

1.13.4.2. When permanent water and drain connections are completed, provide temporary water closets and urinals complete with temporary enclosures, inside building.

1.13.4.3. Do not use permanent washroom facilities during construction.

1.13.4.4. Keep sanitary facilities clean and fully stocked with the necessary supplies.

1.13.5. Safety Program:

1.13.5.1. Conform to GC 3.6, undertake role of "Constructor" as defined under The Occupational Health and Safety Act, as amended. Be responsible to provide full safety program for anyone who gets paid for services on site including management, labour, delivery drivers, service personnel and others involved for services on site. Arrange for pre-project meeting related to safety, joint safety inspections with Contractor's consultant where required, site safety training and safety committees complete with accident investigation procedures.

1.13.5.2. Prior to commencement of construction, design fire safety plan in conjunction with local Fire Chief. Post fire plan throughout construction as recommended. Do not allow accumulation of waste that may constitute fire hazard.

1.13.5.3. Conform to Construction Safety Association of Ontario's Manual on Propane in construction. Watch work area for minimum of 30 minutes after hot work is completed. Provide site fire security when required by local building department and/or municipal fire department. Ensure water supply is adequate for fire fighting.

1.13.5.4. Provide on site such equipment and medical facilities as are necessary to furnish first aid to anyone who may be injured in connection with Work in accordance with regulations of Occupational Health and Safety Act (Ontario).

1.13.5.5. Promptly report in writing to Consultant all accidents arising out of or in connection with performance of Work, whether on or adjacent to site, which caused death, personal injury or property damage, giving full details and statements of witnesses. In addition, in case of death, serious injuries or damages, report accident immediately by telephone or messenger to Consultant.

1.13.5.6. If any claim is made by anyone against Contractor or any Subcontractor on account of any accident or damage, promptly report facts in writing to Consultant, giving full details of claim.

1.13.6. Fire Protection:

1.13.6.1. Comply with the rules and regulations:

1.13.6.1.1. Fire Marshall Act and the Accident Prevention Regulations of The Workplace Safety Insurance Board Provide and maintain temporary fire protection systems and equipment during construction.

1.13.6.1.2. MonAvenir CSC Contractor Procedure Manual, for notification requirements

1.13.6.2. Adjust and modify temporary fire protection facilities to accommodate progress of the Work.

1.13.6.3. Bulk storage of flammable liquids and other hazardous materials is not allowed on site.

1.13.6.4. Handle flammable liquids in approved containers. Bringing in, use and disposal of gasoline, benzine or other flammable materials must be handled with good and safe practice as required by authorities having jurisdiction.

1.13.6.5. Fire Extinguishers: Provide and maintain in working order, suitable Underwriters' labelled fire extinguishers and locate in prominent positions, to approval of authorities having jurisdiction. Such extinguishers remain property of Contractor.

1.13.6.6. Provide and maintain free access from street to fire hydrants and to outside connections for standpipes or other fire extinguishing equipment, permanent or temporary; and maintain free access to control valves and hoses on fire lines within building and to all portable fire extinguishers. Ensure devices are visibly identified 24 hours a Day.

1.13.6.7. Take necessary precautions to eliminate fire hazards and to prevent damage to work, building materials, equipment and other property both public and private having to do with the Work. Inspect work of this Contract at least once a week for this purpose. Observe following precautions as a minimum:

1.13.6.7.1. Prior to commencing work in any area, ensure workers are acquainted with the location of all fire-fighting apparatus and are familiar with its proper use and apparatus is in good working order.

1.13.6.7.2. Stop all work immediately when any deficiencies in fire protection are encountered after work commences. This includes deficiencies in the existing building that may be discovered during the course of work. Notify Consultant, seek instructions and remedy all such deficiencies before resuming any other work.

1.13.6.7.3. In areas where spraying with water will not cause damage, including areas at roof level, thoroughly wet area before commencing welding, oxyacetylene cutting, brazing, grinding or other hot work and keep area thoroughly wet until at least 1/2 hour following the last of previously stipulated hot work ceases. In areas where spraying with water would cause damage, provide approved fire retardant mats or blankets to cover all areas which might be reached by sparks, flame, hot slag, or other hot material from welding, cutting, brazing, grinding, or other hot work. In addition, provide blank flanges, plugs, caps, or other suitable means to seal openings and/or hot material and fill those items with water before commencing hot work. Stop all work immediately if water is lost or drained from any of those rubber-lined items. These requirements for rubber-lined items also apply to all other items with combustible linings.

1.13.6.7.4. When electric or gas welding, brazing, cutting and performing any operation with an open flame within 3000 mm (10') or above space that may be occupied by persons, keep a portable fire extinguisher within 3000 mm (10') or above of operator at all times.

1.13.6.7.5. Provide adequate fire watch at all times when welding, burning, cutting, brazing, or other hot work is in progress and until such times as the source of

ignition or flame has been extinguished and for longer as required. Ensure each fire watcher has a suitable fire extinguisher on hand at all times.

1.13.6.7.6. Ensure fire watchers have no duties other than fire protection and that fire watch continues through coffee breaks, meal periods and after normal work hours as necessary to ensure fire watch for at least 1/2 hour after welding, burning, brazing, cutting and similar hot work ceases.

1.14. TEMPORARY BARRIERS AND ENCLOSURES

1.14.1. General:

1.14.1.1. Provide temporary barriers and enclosures necessary to protect the public and to secure Place of the Work during performance of the Work.

1.14.1.2. Comply with applicable regulatory requirements and authorities having jurisdiction.

1.14.1.3. Maintain temporary barriers and enclosures in good condition for the duration of the Work.

1.14.1.4. Remove temporary barriers and enclosures from Place of the Work when no longer required.

1.14.2. Fire Routes:

1.14.2.1. Maintain fire access routes, including overhead clearances, for use by emergency response vehicles.

1.14.3. Protection Of Building Finishes:

1.14.3.1. Provide necessary temporary barriers and enclosures to protect completed or partially completed finished surfaces from damage during performance of the Work.

1.15. TEMPORARY CONTROLS

1.15.1. General:

1.15.1.1. Provide temporary controls as necessary for performance of the Work and in compliance with applicable regulatory requirements.

1.15.1.2. Maintain temporary controls in good condition for the duration of the Work.

1.15.1.3. Remove temporary controls and Construction Equipment used to provide temporary controls from Place of the Work when no longer required.

1.15.2. Dust and Particulate Control:

1.15.2.1. Implement and maintain dust and particulate control measures in accordance with applicable regulatory requirements.

1.15.2.2. Execute Work by methods that minimize dust from construction operations and spreading of dust on site or to adjacent properties.

1.15.2.3. Provide temporary enclosures to prevent extraneous materials resulting from sandblasting or similar operations from contaminating air beyond immediate work area.

1.15.2.4. Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.15.2.5. Use appropriate covers on trucks hauling fine, dusty, or loose materials.

1.15.2.6. Take appropriate dust control measures to avoid contamination of adjacent areas near site from dust. Respond immediately to complaints of dust received from public, authorities, or Consultant. Keep public and private roads free of dust, mud and construction debris resulting from trucks employed on this Project.

1.15.3. Moisture Control:

1.15.3.1. Concrete slabs shall be properly cured and dried before installation of finished flooring assemblies. Refer to Section 09 05 01 - Common Work Results for Flooring Preparation

1.15.3.2. Before installation of weather barriers, when materials are subject to wetting, protect as follows:

1.15.3.2.1. Protect porous materials from water damage.

1.15.3.2.2. Protect stored and installed material from flowing or standing water.

1.15.3.2.3. Keep porous and organic materials from coming into prolonged contact with concrete.

1.15.3.2.4. Remove standing water from decks.

1.15.3.2.5. Keep deck openings covered or dammed.

1.15.3.3. After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture, protect as follows:

1.15.3.3.1. Do not load or install gypsum board or other porous materials or components, or items with high organic content, into partially enclosed building.

1.15.3.3.2. Keep interior spaces reasonably clean and protected from water damage.

1.15.3.3.3. Periodically collect and remove waste containing cellulose or other organic matter.

1.15.3.3.4. Discard or replace water-damaged material.

1.15.3.3.5. Do not install material that is wet.

1.15.3.3.6. Perform work in a sequence that allows wet materials adequate time to dry before enclosing the material in gypsum board or other interior finishes.

1.15.3.4. After completing and sealing of the building enclosure but prior to the full operation of permanent heating, ventilation, and air conditioning systems, maintain as follows:

1.15.3.4.1. Control moisture and humidity inside building by maintaining effective drying conditions.

1.15.3.4.2. Use permanent heating, ventilation, and air conditioning system to control humidity subject to the prior written approval of the Consultant.

1.15.3.4.3. Comply with manufacturer's written requirements for temperature, relative humidity, and exposure to water limits.

1.15.4. Garbage Removal:

1.15.4.1. Procedures to be reviewed with the MonAvenir CSC Project Manager.

1.15.4.2. Removal of construction debris from the work area to exterior shall be during time periods as specified in Section 01 14 00 - Work Restrictions. Bag or wrap all materials and tape closed. Place bags in containers with tightly fitted closed lids. Use clean, rubber wheeled carts to transport to exterior garbage bid.

1.15.4.3. Do not use Owner’s garbage bin facilities for removal of construction rubbish and debris. Provide garbage bins with lid. Coordinate location and pick-up schedule of garbage bins with MonAvenir CSC Project Manager.

1.15.4.4. Repair damage to site surface upon removal of garbage bin.

1.15.5. Security:

1.15.5.1. The Contractor shall be solely responsible for securing the Place of the Work and the Work, and for securing areas used for the storage of Products or construction machinery and equipment. The Owner shall have no responsibility in this regard.

1.15.5.1.1. Provide and maintain security lighting.

1.15.5.1.2. Provide and maintain temporary locks. Premises to be locked at all hours when there is not construction superintendence on site.

1.16. EXAMINATION AND PREPARATION

1.16.1. Examination:

1.16.1.1. Make a careful examination of the Place of the Work and investigate conditions relating to the work to be undertaken, including access, obstacles, and interference this might cause to other trades, which may be caused during the performance of the Work.

1.16.1.2. Make a careful examination of the extent of the Work to be performed and any and all matters which are referred to in the Contract Documents, or which are necessary for the full and proper construction of the Project and the conditions under which it will be performed.

1.16.1.3. Contractor is held to have examined site and ascertained extent and nature of conditions affecting performance of Work before tendering, including location of concealed/buried services that may have to be protected, removed or relocated.

1.16.1.4. Before commencement of Work and/or ordering of equipment and materials thoroughly investigate all conditions related to the site.

1.16.1.5. Plan work to accommodate all requirements and limitations discovered by the above investigation so that the work can be completed without any inconvenience or additional costs.

1.16.1.6. The details of existing conditions and construction are based on the information available at the time of the preparation of the contract documents. If during construction, conditions are revealed which differ from the assumed conditions, advise the Consultant before proceeding.

1.16.1.7. Each subcontractor is to examine the substrate their work is to attach to, including a thorough examination of the drawings, specifications and the general contractor's as-builts, to determine whether the substrate is compatible with their work.

1.16.1.8. Report unsatisfactory conditions likely to prevent the proper installation of Work.

1.16.1.9. Commencement of the Work implies acceptance of conditions.

1.16.2. Preparation:

1.16.2.1. Planning, Scheduling & Coordination of Alterations:

1.16.2.1.1. Plan and schedule alterations to accommodate anticipated difficulties, indicated on and inferable from the Contract Documents.

1.16.2.1.2. Plan, schedule and coordinate alterations to accommodate on-going operations of Owner with minimal disruption.

1.16.2.1.3. Plan, schedule and coordinate alterations, required in Owner-occupied spaces or adjoining or below the Place of the Work, on a room-by-room basis and in accordance with a schedule mutually agreed upon with MonAvenir CSC Project Manager. Requests for access to occupied areas shall be made to Owner a minimum of 1 week in advance of requested access time.

1.16.2.1.4. Co-ordinate alterations with other contractors and proceed with the Work expeditiously.

1.16.3. Surveyor Qualifications:

1.16.3.1. Engage a registered land surveyor, licensed to practice in Ontario.

1.16.4. Submittals:

1.16.4.1. Submit name and address of registered land surveyor performing survey work.

1.16.4.2. Submit to Owner and Consultant the survey of the Work prepared and issued by a registered land surveyor on completion of the Work.

1.16.5. Survey Reference Points:

1.16.5.1. Locate and confirm permanent reference points prior to starting site work. Preserve and protect permanent reference points on site during construction.

1.16.5.2. Do not change or relocate reference points without prior written notice to Consultant.

1.16.5.3. Report to Consultant when a reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations. Require registered land surveyor to replace reference points in accordance with original survey.

1.16.6. Existing Utilities and Structures:

1.16.6.1. Before commencing excavation, drilling or other earthwork, establish or confirm location and extent of all existing underground utilities and structures in work area.

1.16.6.2. Promptly notify Consultant if underground utilities, structures, or their locations differ from those indicated in Contract Documents or in available project information. Consultant will provide appropriate direction.

1.16.6.3. Record locations of maintained, re-routed and abandoned utility lines.

1.16.7. Verification of Existing Conditions:

1.16.7.1. Where work specified in any Section is dependent on the work of another Section or Sections having been properly completed, verify that work is complete and in a condition suitable to receive the subsequent work. Commencement of work of a Section that is dependent on the work of another Section or Sections having been properly completed, means acceptance of the existing conditions.

1.16.7.2. Verify that ambient conditions are suitable before commencing the work of any Section and will remain suitable for as long as required for proper setting, curing, or drying of Products used.

1.16.7.3. Ensure that substrate surfaces are clean, dimensionally stable, cured and free of contaminants.

1.16.7.4. Verify lines, levels and dimensions. Thicknesses shown on Drawings are nominal only. Ascertain actual sizes on site. Report errors or inconsistencies in Drawings and obtain direction before commencing Work. Ensure work is executed in accordance with verified dimensions and positions indicated which maintain levels and clearances to adjacent work as set out in Contract Documents.

1.16.7.5. Notify Consultant in writing of unacceptable conditions.

1.17. EXECUTION

1.17.1. General:

1.17.1.1. Do Work in accordance with industry practice for type of work unless Contract Documents stipulate more precise requirements. Do not let unskilled, incompetent workers perform work.

1.17.1.2. Do Work in neat and careful manner to retain Work plumb, square and straight.

1.17.1.3. Ensure Work is properly related to form close joints and appropriately aligned junctions, edges and surfaces and is free of warp, twist, wind, wave or other irregularities.

1.17.1.4. When required by Specifications or by manufacturer's recommendations, have manufacturer, supplier or accredited agent, inspect work which incorporates their Products.

1.17.1.5. Do not permit materials to come in contact with other materials whether in presence of moisture or otherwise if conditions will result in corrosion, stain or discolouration or deterioration of completed Work. Provide compatible, durable separators where such contact is unavoidable.

1.17.1.6. Load no part of structure during construction with load greater than it is calculated to bear safely when completed. Make every temporary support as strong as permanent support. Place no load on concrete structure until it has sufficient strength to safely carry such load.

1.17.1.7. Built in Items: Provide and coordinate location of chases, slots and reglets including frames, sleeves, inserts, anchors, fasteners and bolts, forms and templates.

1.17.2. Manufacturer’s Instructions:

1.17.2.1. Unless specified otherwise, install each Product in accordance with manufacturer's published written instructions regarding handling, storage, preparation, methods of installation, protection and cleaning. Take into account site conditions and provide ancillary Products or accessories.

1.17.2.2. Conform to manufacturer's recommended installation temperatures. If finishes are installed at temperatures different from operation or service temperatures, make provisions for expansion and contraction in service as acceptable to manufacturer and Consultant. Repair resulting damage should expansion provisions prove inadequate.

1.17.2.3. Submit copy of such instructions and indicate if and where there is discrepancy between them and requirements of Specifications and obtain direction.

1.17.2.4. Notify Consultant, in writing, of conflicts between Contract Documents and manufacturer’s instructions where, in Contractor’s opinion, conformance with Contract Documents instead of the manufacturer’s instructions may be detrimental to the Work or may jeopardize the manufacturer’s warranty.

1.17.2.5. Do not rely on labels or enclosures provided with Products. Obtain written instructions directly from manufacturers.

1.17.2.6. Provide manufacturer’s representatives with access to the Work at all times. Render assistance and facilities for such access so that manufacturer’s representatives may properly perform their responsibilities.

1.17.3. Barrier Free Design Requirements:

1.17.3.1. Conform to OBC requirements for barrier free installations.

1.17.3.2. Install switches, telephones, fire-alarm pull stations, washroom accessories and other equipment and devices requiring accessibility by building staff and public, excluding mechanical and electrical room installations, to meet barrier-free requirements. If there is conflict between this requirement and any other building code requirement bring to attention of Consultant prior to installation.

1.17.4. Fastenings – General:

1.17.4.1. Supply appropriate anchors, fasteners, accessories and adhesives required for fabrication and erection of Work.

1.17.4.2. Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials.

1.17.4.3. Prevent electrolytic action and corrosion between dissimilar metals and materials by using suitable non-metallic strips, washers, sleeves, or other permanent separators to avoid direct contact.

1.17.4.4. Use non-corrosive fasteners and anchors for securing exterior work and in spaces where high humidity levels are anticipated.

1.17.4.5. Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage.

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

1.17.4.7. Do not use fastenings or fastening methods that may cause spalling or cracking of material to which anchorage is made.

1.17.4.8. Powder Actuated Fastenings:

1.17.4.8.1. Powder actuated fasteners shall not be used for the support of ceilings.

1.17.4.8.2. Do not use powder actuated fastening devices which are used in tension, without approval.

1.17.4.8.3. Powder actuated fastenings shall not be used on any portion of the Work, unless written consent for a specific use is obtained from the Consultant. If approved, tools and operation shall conform to CAN3-Z166-M85-Series – Powder Actuated Tools.

1.17.4.9. Use adhesives specified, or if not specified, those recommended by manufacturer of materials involved, compatible with materials to be joined and effective in forming permanent joint of adequate strength.

1.17.4.10. Use screws, nails, staples and other similar, driven fasteners suitable to materials to be joined and to conditions under which they are installed and used. Ensure in finished work, fasteners are sized to take durable hold under stress to be encountered without damage to, or weakening of, elements secured together and fastenings will not corrode or cause staining of exposed surfaces.

1.17.4.11. Security Screws:

1.17.4.11.1. Provide Torx-Plus® or break off type screws complying with ANSI/ASME B18.6.3 where tamper-resistant fasteners are specified or noted on Drawings.

1.17.4.11.1.1. Screws with heads having a deep hex-lobular recess with a solid post formed in the centre requiring a special metal driver to install or remove screw.

1.17.4.11.2. Fasteners and tools shall be of type produced by licensed manufacturer. Break-Off head security screws with drive heads having an additional hexagonal shaped head designed to break off after installation at a predetermined torque level. Grind remaining portion of neck smooth after hex-head is broken off.

1.17.4.11.3. Acceptable manufacturers, Tamper Proof Screws Inc or Folger Adam Security Inc, or Sentry Security Fasteners, Inc. or Tamper Proof Screw Co.

1.17.4.12. Do brazing or soldering to form durable connections of strength adequate to resist stresses to be encountered without deformation of elements joined. Prepare base metals and use methods and materials to ensure clean joint, and to prevent staining, corrosion, discolouration, deformation or other damage to finished Work.

1.17.4.13. Do welding to CSA W59 for steel and to CSA W59.2-M for aluminum, unless specified otherwise. Have welding performed by companies certified operatives to CSA W47.1 or CSA W47.2.

1.17.4.14. Provide accessory items or materials required, such as brackets, cleats, connectors, sealants, lubricants, cleaners, protection and similar items, whether specified or not, so Work is complete and performs as required.

1.17.4.15. Fastening devices or adhesives shall be of appropriate type, used in sufficient quantity and in such manner to provide positive, permanent fastening which will not shift, work loose or fail during occupancy of building due to vibration or other causes resulting from normal use of building. Install anchors at spacing to provide required load/stress carrying capacity. Do not use wood plugs.

1.17.5. Fastenings – Equipment:

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

1.17.5.2. Bolts shall not project more than one diameter beyond nuts.

1.17.6. Fire Rated Assemblies:

1.17.6.1. When penetrating fire rated walls, ceiling, or floor assemblies, completely seal voids with fire-stopping materials, smoke seals, or both, in full thickness of the construction element as required to maintain the integrity of the fire rated assembly.

1.17.7. Installation - Mechanical & Electrical Work:

1.17.7.1. Mechanical and electrical drawings indicate approximate locations diagrammatically. Prior to installation, request and obtain final locations and arrangement drawings for plumbing, heating and electrical fixtures and outlets, ducts, conduits and pipes. Allow Consultant to adjust final locations within a 1500 mm (5') radius from diagrammatic position indicated, without change to Contract Price.

1.17.7.2. Locate fixtures, outlets, and devices to provide minimum interference, maximum usable space, and as required to meet safety, access, maintenance, acoustic, and regulatory, including barrier free, requirements.

1.17.7.3. Align and cluster devices and fitments neatly in accordance with specified mounting heights, properly aligned horizontally and vertically.

1.17.7.4. Lay out mechanical and electrical work in advance of concrete placement and furring installation to allow for its proper concealment.

1.17.7.5. Install and arrange fixtures, equipment, ducts, piping and conduit to conserve as much headroom and space as possible, and avoid interference and obstruction of access. Observe good installation practice for safety, access, maintenance and follow manufacturer's recommendations. Location of fixtures, access panels, outlets and mechanical and electrical components indicated are approximate. Make changes requested to comply with these requirements at no additional cost to Owner.

1.17.7.6. Test and inspect work before applying pipe covering and before Work is concealed.

1.17.7.7. Ensure identification of electrical and mechanical system installations and other automated systems or equipment is recorded and located on as-built drawings.

1.17.8. Concealment:

1.17.8.1. Conceal pipes, ducts, and wiring in floors, walls and ceilings in finished areas:

1.17.8.1.1. After review by Consultant and authority having jurisdiction, and

1.17.8.1.2. Where locations differ from those shown on Drawings, after recording actual locations on as-built drawings.

1.17.8.2. Provide incidental furring or other enclosures as required.

1.17.8.3. Notify Consultant in writing of interferences before installation.

1.17.8.3.1. If in doubt as to method of concealment, or intention of Contract Documents in this connection, request clarification from Consultant before proceeding with work in question.

1.17.8.4. Where services are to left exposed, arrange in a neat and logical manner in straight lines and following walls.

1.17.9. Workmanship:

1.17.9.1. General:

1.17.9.1.1. Workmanship shall be the best quality, executed by workers experienced and skilled in the respective duties for which they are employed. Immediately notify the Consultant if required work is such as to make it impractical to produce the required results.

1.17.9.1.2. Do not employ any unfit person or anyone unskilled in their required duties.

1.17.9.1.3. Decisions as to the quality or fitness of workmanship in cases of dispute rest solely with the Consultant whose decision is final.

1.17.9.2. Overloading: Prevent overloading of any part of the building, structure, falsework, form work and scaffolding. Do not cut, drill or sleeve any load bearing members unless specifically indicated, without written approval of Consultant. Make good any damages due to overloading at no cost to Owner.

1.17.9.3. Where reference is made to only 1 testing authority, an equivalent fire rating as determined or listed by another of aforementioned testing authorities is acceptable if approved by Authorities Having Jurisdiction. Obtain and submit such approval of authorities, in writing, when requesting acceptance of a proposed equivalent rating or test design.

1.17.9.4. Ensure engineering judgements are sealed by a licensed engineer.

1.17.9.5. Quality:

1.17.9.5.1. Products, materials, equipment and articles (referred to as Products throughout the specifications) incorporated in the Work, except where specifically specified, shall be new (except where expressly specified otherwise), not damaged or defective, and of the best quality (comparable with the specifications) for the purpose intended. If requested, furnish evidence as to type, source and quality of Products provided.

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

1.17.9.5.3. Should any dispute arise as to the quality or fitness of Products, the decision rests strictly with Consultant based upon the requirements of the Contract Documents.

1.17.9.5.4. Unless otherwise indicated in the specifications, maintain uniformity of manufacture for any particular or like item throughout the Work.

1.17.10. Tolerances:

1.17.10.1. Unless more stringent tolerances are required by a Section of the Specifications or a referenced standard, meet following tolerances for installed work:

1.17.10.1.1. Maximum variation from plumb in vertical lines, surfaces of columns, walls, and arrises:

1.17.10.1.1.1. 6.4 mm (1/4”) in 3 m (10 ft)

1.17.10.1.1.2. 9.6 mm (3/8”) in a storey height not to exceed 6 m (20 ft)

1.17.10.1.1.3. 12.7 mm (1/2”) in 12 m (40 ft) or more

1.17.10.1.2. Maximum variation from plumb for external corners, expansion joints, control joints, and other conspicuous lines:

1.17.10.1.2.1. 6.4 mm (1/4”) in any storey or 6 m (20 ft)

1.17.10.1.2.2. 12.7 mm (1/2”) in 12 m (40 ft) or more

1.17.10.1.3. Maximum variation from level for exposed lintels, sills, parapets, horizontal grooves, and other conspicuous lines:

1.17.10.1.3.1. 6.4 mm (1/4”) in any bay or 6 m (20 ft)

1.17.10.1.3.2. 12.7 mm (1/2”) in 12 m (40 ft) or more

1.17.10.1.4. Maximum variation from drawing location of columns, walls, and partitions:

1.17.10.1.4.1. 12.7 mm (1/2”) in any storey or 6 m (20 ft)

1.17.10.1.4.2. 19 mm (3/4”) in 12 m (40 ft) or more.

1.17.10.1.5. Maximum variation in cross-sectional dimension of columns and thicknesses of wall from dimensions indicated:

1.17.10.1.5.1. Minus 6 mm (1/4”)

1.17.10.1.5.2. Plus 12.7 mm (1/2”)

1.17.10.1.6. Maximum variation from plane or from straight:

1.17.10.1.6.1. 3.2 mm (1/8”) in 3 m (10 ft) under a 3 m (10 ft) straight edge.

1.17.10.1.7. Maximum variation from square or angle indicated:

1.17.10.1.7.1. 10 seconds.

1.17.10.2. Tolerances shall be non-cumulative.

1.17.11. Protection of Completed Work and Work in Progress:

1.17.11.1. Protection of Work in Progress: Adequately protect work completed or in progress, existing buildings and equipment, lawns, trees, fencing, service poles, wires, utilities above and below ground, and paving located on this and adjoining properties. Work and items damaged or defaced due to failure in providing such protection are to be removed and replaced, or repaired, as directed by the Consultant, at no increase in Contract Price.

1.17.11.2. Protect finished flooring from damage. Make special efforts and take measures when moving heavy loads or equipment over them. Keep floors free of oils, grime, grease or other materials likely to discolour them or affect bond of applied surfaces.

1.17.11.3. Adequately protect floors and roofs from damage. Take special measures when moving heavy loads or equipment on them.

1.17.11.4. Keep floors free of oils, grease or other materials likely to discolour them or affect bond of applied surfaces including fumes generated by temporary heating devices. Take care not to spill or allow oil, grease, gasoline, diesel and fuel oil, chemicals and other substances to contaminate soil or water on or adjacent to site. Should such contamination accidentally occur report it immediately and clean up to satisfaction of Consultant.

1.17.11.5. Protect glass and other finishes against heat, slag and weld splatter using suitable protective shields or covers.

1.17.11.6. Promptly remove, replace, clean, or repair, as directed by Consultant, work damaged as a result of inadequate protection.

1.17.11.7. Do not load or permit to be loaded any part of the Work with a weight or force that will endanger the safety or integrity of the Work.

1.17.12. Remedial Work:

1.17.12.1. Notify Consultant of, and perform remedial work required to, repair or replace defective or unacceptable work. Ensure that properly qualified workers perform remedial work. Coordinate adjacent affected work as required.

1.17.12.2. Make Good any defects and deficiencies due to faulty materials or quality of performance that become apparent in Work within 12 months from date of Certificate of Substantial Performance or for such longer period as specified for certain Products in Contract Documents.

1.18. CUTTING AND PATCHING

1.18.1. Request For Cutting, Patching and Remedial Work:

1.18.1.1. Submit written request in advance of cutting, coring, or alteration which affects or is likely to affect:

1.18.1.1.1. Structural integrity of any element of the Work.

1.18.1.1.2. Integrity of weather exposed or moisture resistant elements.

1.18.1.1.3. Efficiency, maintenance, or safety of any operational element.

1.18.1.1.4. Visual qualities of sight exposed elements.

1.18.1.1.5. Work of Owner or other contractors.

1.18.1.1.6. Warranty of Products affected.

1.18.1.2. Include in request:

1.18.1.2.1. Identification of Project.

1.18.1.2.2. Location and description of affected work, including drawings or sketches as required.

1.18.1.2.3. Statement on necessity for cutting or alteration.

1.18.1.2.4. Description of proposed work, and Products to be used.

1.18.1.2.5. Alternatives to cutting and patching.

1.18.1.2.6. Non-destructive structural survey: Radiography (X-ray) imaging of work to be cut or cored.

1.18.1.2.7. Effect on work of Owner or other contractors.

1.18.1.2.8. Written permission of affected other contractors.

1.18.1.2.9. Date and time work will be executed.

1.18.2. Products:

1.18.2.1. Unless otherwise specified, when replacing existing or previously installed Products in the course of cutting and patching work, use replacement Products of the same character and quality as those being replaced.

1.18.2.2. If an existing or previously installed Product must be replaced with a different Product, submit request for substitution in accordance with Section 01 25 00 - Substitution Procedures.

1.18.3. Preparation:

1.18.3.1. Provide supports to ensure structural integrity of surroundings; provide devices and methods to protect other portions of the Work from damage.

1.18.3.2. Provide protection from elements for areas that may be exposed by uncovering work.

1.18.4. Existing Services and Utilities:

1.18.4.1. Where the Work involves breaking into or connecting to existing services, give authority having jurisdiction, Owner, and Consultant 48 hours notice for necessary interruption of mechanical or electrical services.

1.18.4.2. Maintain excavations free of water.

1.18.4.3. Keep duration of interruptions to a minimum.

1.18.4.4. When inactive services are encountered, cap off in a manner approved by authority having jurisdiction and stake or otherwise record location of capped service. Record location of services, including depth, on as-built drawings.

1.18.4.5. Carry out interruptions after regular working hours of occupants, preferably on weekends, unless Owner's prior written approval is obtained.

1.18.4.6. Protect and maintain existing active services. Record location of services, including depth, on as-built drawings.

1.18.5. Cutting, Patching, and Remedial Work:

1.18.5.1. Coordinate and perform the Work to ensure that cutting and patching work is kept to a minimum.

1.18.5.2. Perform cutting, fitting, patching, and remedial work including excavation and fill, to make the affected parts of the Work come together properly and complete the Work.

1.18.5.3. Provide openings in non structural elements of the Work for penetrations of mechanical and electrical work.

1.18.5.4. Perform cutting by methods to avoid damage to other work

1.18.5.5. Provide proper surfaces to receive patching, remedial work, and finishing.

1.18.5.6. Perform cutting, patching, and remedial work using competent and qualified specialists familiar with the Products affected, in a manner that neither damages nor endangers the Work.

1.18.5.7. Do not use pneumatic or impact tools without Consultant's prior approval.

1.18.5.8. Ensure that cutting, patching, and remedial work does not jeopardize manufacturers' warranties.

1.18.5.9. Restore work with new Products in accordance with requirements of Contract Documents.

1.18.5.10. Refinish surfaces to match adjacent finishes. For continuous surfaces refinish to nearest intersection. For an assembly, refinish entire unit.

1.18.5.11. Fit work to pipes, sleeves, ducts, conduit, and other penetrations through surfaces with suitable allowance for deflection, expansion, contraction, acoustic isolation, and firestopping.

1.18.5.12. Maintain fire ratings of fire rated assemblies where cutting, patching, or remedial work is performed. Completely seal voids or penetrations of assembly with firestopping material to full depth or with suitably rated devices.

1.19. CLEANING AND WASTE MANAGEMENT

1.19.1. General Cleaning Requirements:

1.19.1.1. Observe MonAvenir CSC Contractor Procedure Manual requirements for site cleanliness and general upkeep.

1.19.1.2. Provide adequate ventilation during use of volatile or noxious substances. Do not use building ventilation systems for this purpose.

1.19.1.3. Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer. Use appropriate tools and cleaning equipment

1.19.1.4. Prevent cross-contamination during the cleaning process.

1.19.1.5. Notify the Consultant of the need for cleaning caused by Owner or other contractors.

1.19.2. Progressive Cleaning and Waste Management:

1.19.2.1. Maintain the Work in a tidy and safe condition, free from accumulation of waste materials and construction debris.

1.19.2.2. Provide appropriate, clearly marked, containers for collection of waste materials and recyclables.

1.19.2.3. Remove waste materials and recyclables from work areas, separate, and deposit in designated containers. Collect packaging materials for recycling or reuse.

1.19.2.4. Remove waste materials and recyclables from Place of the Work at regular intervals.

1.19.2.5. Remove oily rags and waste from premises at close of each Day work is performed, or more often if required.

1.19.2.6. Do not dispose of volatile fluid wastes (such as mineral spirits, oil or paint thinner) in storm or sanitary sewer systems or into streams or waterways.

1.19.2.7. Clean interior building areas prior to start of finish work and maintain free of dust and other contaminants during finishing operations.

1.19.2.8. Remove from finished surfaces deposits which could stain, harden, set or become difficult to remove.

1.19.2.9. Lower waste materials in a controlled manner with minimum handling; do not drop or throw materials from heights. Schedule cleaning operations so dust and other contaminants resulting from cleaning process will not fall on wet, newly painted surfaces. Sprinkle dusty debris with water.

1.19.2.10. Sweep adjacent roads and sidewalks daily to remove dirt and clods of earth deposited on adjacent public and private properties by construction traffic.

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

1.19.2.12. Clear snow and ice from public sidewalks as required to comply with applicable municipal regulatory requirements.

1.19.3. Final Cleaning:

1.19.3.1. Before final cleaning, arrange a meeting on site to determine the acceptable standard of cleaning. Ensure that MonAvenir CSC Project Manager, Consultant, Contractor, and cleaning company are in attendance.

1.19.3.2. Prior to cleaning, submit to Consultant a complete list of manufacturers' cleaning and maintenance instructions for all components of the Work.

1.19.3.3. Final finishing is in addition to and compatible with cleaning and finishing specified in technical Sections.

1.19.3.4. Remove from Place of the Work surplus Products, waste materials, recyclables, Temporary Work, and Construction Equipment not required to perform any remaining work.

1.19.3.5. Provide professional cleaning by a qualified, established cleaning company.

1.19.3.6. Floors:

1.19.3.6.1. Tile/Terrazzo/Vinyl/Stone Flooring: Sweep floor free of debris; clean corners and base boards free of marks and dirt. Scrub new flooring using appropriate solutions to remove factory installed protective coatings.

1.19.3.6.2. Vacuum carpet flooring using power brush equipped vacuum cleaner. Remove stains using approved stain removal methodology. Where carpet is exposed to extensive dry wall dust and other fine dust particles, carpet shall be pile lifted using rotary pile lifting machine. In addition, carpet shall be cleaned using extraction method approved by manufacturer.

1.19.3.7. Walls: shall be completely dusted and all marks removed. Where necessary wall shall be washed and re- painted.

1.19.3.8. Ceilings: remove any marks visible from 1.5 m. Replace acoustic panels if necessary..

1.19.3.9. Window blinds: open fully to clean both sides of fabric.

1.19.3.10. Clean and polish glass, mirrors, hardware, wall tile, stainless steel, anodized aluminum, chrome, porcelain enamel, baked enamel, plastic laminate, and all other finished surfaces, including mechanical and electrical fixtures, light switch and power outlet cover plates. Replace broken, scratched or otherwise damaged glass.

1.19.3.11. Clean doors, windows, frames, and hardware.

1.19.3.12. Clean mechanical and electrical fixtures and equipment.

1.19.3.13. Remove stains, spots, marks, and dirt from finished surfaces, electrical and mechanical fixtures, furniture fitments.

1.19.3.14. Remove dust from lighting reflectors, lenses, lamps, bulbs, and other lighting surfaces.

1.19.3.15. Vacuum clean and dust behind grilles, louvres and screens.

1.19.3.16. Clean mechanical, electrical, and other equipment. Replace filters for mechanical equipment if equipment is used during construction. Vacuum clean ducts, fans, blowers and coils if units were operated during construction.

1.19.3.17. Remove waste material and debris from crawlspaces and other accessible concealed spaces.

1.19.3.18. Lock or otherwise restrict access to each room or area after completing final cleaning in that area.

1.19.3.19. Re-clean as necessary areas that have been accessed by Contractor’s workers prior to Owner occupancy.

1.19.3.20. Exterior Surfaces:

1.19.3.20.1. Remove stains, spots, marks, and dirt from exterior facades.

1.19.3.20.2. Clean exterior and interior window glass and frames.

1.19.3.20.3. Clean and sweep roofs, clear roof drains.

1.19.3.20.4. Sweep clean exterior sidewalks, steps, driveways, roads, parking lots, and other paved surfaces.

1.19.3.20.5. Use leaf blowers to clean landscaped surfaces.

1.19.4. Waste Management and Disposal:

1.19.4.1. Dispose of waste materials and recyclables at appropriate municipal landfills and recycling facilities in accordance with applicable regulatory requirements.

1.20. CLOSEOUT PROCEDURES

1.20.1. Reference Standards:

1.20.1.1. OAA/OGCA Document 100 – 2018 (Reissued 2019) Recommended Procedures Concerning Substantial Performance of Construction Contracts and Completion Take-Over of Projects.

1.20.1.2. Construction Act, R.S.O. 1990, C.30, 2023

1.20.2. Definitions:

1.20.2.1. Basic Holdback: as defined in the Construction Act.

1.20.2.2. Certificate: A document attesting to the truth of a fact; in construction. A certificate is prepared by a professional, either an architect or an engineer.

1.20.2.3. Certificate of Substantial Performance: A certificate issued under the appropriate lien legislation attesting that the contract between the Owner and the Contractor is substantially complete.

1.20.2.4. Completed: the contract will be deemed to be complete as defined in the Construction Act.

1.20.2.5. Construction Trade Newspaper: as defined in OAA/OGCA Document 100.

1.20.2.6. Finishing Holdback: as defined in the Construction Act.

1.20.2.7. Guaranty: A three-party agreement in which the third party (such as a surety) guarantees the performance of an obligation to the Owner in the event of default of the Contractor.

1.20.2.8. Holdback: 10% of the monetary amount payable under the construction contract, is held as security for a certain period. Holdbacks will be released on a phase by phase basis. Progressive release of holdback is described in Section 01 29 00 – Payment Procedures.

1.20.2.9. Lien: A legal claim on real property to satisfy a debt owed to the lien claimant by the property Owner, in accordance with the Construction Act.

1.20.2.10. Maintenance: The act of keeping a building system, process or property in proper and efficient working condition.

1.20.2.11. Post-occupancy Evaluation: An assessment of the performance of a work area after it has been occupied.

1.20.2.12. Ready-for-Takeover: In accordance with Canadian Construction Document Committee (CCDC) used to describe a set of contractual and regulatory requirements that must be satisfied prior to achieving a financial milestone for the release of the project close-out payment(s).

1.20.2.13. Substantial Completion: when the work or portion of the work is ready for occupancy and an occupancy permit has been issued by the Chief Building Official in accordance with the OBC,

1.20.2.14. Substantial Performance: as defined in the Construction Act

1.20.2.15. Warranty: A two-party agreement which provides an assurance by a Contractor to the Owner that the Contractor will assume stipulated responsibilities for correction of defects in the goods within a period of time as stated in the contract or in the specifications.

1.20.3. Ready-For-Takeover:

1.20.3.1. The prerequisites to attaining Ready-for-Takeover of the Work are described in the General Conditions of the Contract.

1.20.4. Inspection and Review Before Ready-For-Takeover:

1.20.4.1. Contractor's Inspection: Before applying for the Consultant's review to establish Ready-for-Takeover of the Work:

1.20.4.1.1. Ensure that the specified prerequisites to Ready-for-Takeover of the Work are completed.

1.20.4.1.2. Conduct an inspection of the Work to identify defective, deficient, or incomplete work.

1.20.4.1.3. Prepare a comprehensive and detailed list of items to be completed or corrected.

1.20.4.1.4. Provide an anticipated schedule and costs for items to be completed or corrected.

1.20.4.2. Consultant's Review: Upon receipt of the Contractor's application for review, together with the Contractor's list of items to be completed or corrected, the Consultant will review the Work. The Consultant will advise the Contractor whether or not the Work is Ready-for-Takeover and will provide the Contractor with a list of items, if any, to be added to the Contractor's list of items to be completed or corrected. Provide the Consultant with a copy of the Contractor's revised list.

1.20.4.3. Maintain the list of items to be completed or corrected and promptly correct or complete defective, deficient and incomplete work. The Contractor's inspection and Consultant's review procedures specified above shall be repeated until the Work is Ready-for-Takeover and no items remain on the Contractor's list of items to be completed or corrected.

1.20.4.4. When the Consultant determines that the Work is Ready-for-Takeover, the Consultant will notify the Contractor and the Owner in writing to that effect.

1.20.5. Partial User Occupancy:

1.20.5.1. If partial Owner occupancy of a part of the Work is required before the date of Ready-for-Takeover of the entire Work of the Contract, the provisions of this Section shall apply, to the extent applicable, to that part of the Work that the Owner intends to occupy.

1.20.5.2. Owner occupancy of work areas by phases in accordance with the requirements for occupancy Section 01 14 00 - Work Restrictions.

1.20.6. Substantial Performance of the Work:

1.20.6.1. The prerequisites to, and the procedures for, attaining substantial performance of the Work, or similar such milestone as provided for in the lien legislation applicable to the Place of the Work, shall be independent of those for attaining Ready-for-Takeover of the Work.

1.20.6.2. Conform to Construction Act for commencement, procedure and release of hold back fund. Lien Period commencement, procedure and release of hold back monies will be in accordance with Construction Act.

1.20.7. Closeout Procedures:

1.20.7.1. Comply with recommended takeover procedures contained in OAA/OGCA Document No. 100, except as modified by Contract Documents. In case of conflict with Contract Documents conform to more stringent requirements. Procedure described in document consists of following stages:

1.20.7.1.1. Stage 1 Contract Submissions

1.20.7.1.1.1. Submit all documentation required under the contract.

1.20.7.1.2. Stage 2 Contractor's Inspection for Substantial Performance

1.20.7.1.2.1. Provide an electronic copy of noted deficiencies. Include estimate of cost to complete each item and an estimated schedule to complete the work.

1.20.7.1.3. Stage 3 Contractor's Application for Certificate of Substantial Performance

1.20.7.1.3.1. Following completion or correction of deficiencies found in Stage 2, if the Contractor has determined that the requirements for substantial performance of the contract have been met, the Contractor shall then make a written application for a certificate of substantial performance.

1.20.7.1.3.2. Such request shall include a reconciliation of compliance with money test given in Construction Act

1.20.7.1.4. Stage 4 Certificate of Substantial Performance

1.20.7.1.4.1. Consultant will carry out a review and assessment of the work, to determine whether the contract has been substantially performed.

1.20.7.1.4.2. Consultant shall certify the substantial performance of the contract by preparing and signing a certificate in Form 9 prescribed by the Construction Act.

1.20.7.1.4.3. Contractor shall publish a copy of the certificate of substantial performance in a construction trade newspaper.

1.20.7.1.5. Stage 5 Certificate for Payment of Basic Holdback Monies

1.20.7.1.5.1. Consultant shall prepare the certificate for payment of the basic holdback

1.20.7.1.5.2. Consultant will prepare a final Change Order, to consolidate all expenditures from cash allowances.

1.20.7.1.6. Stage 6 Contractor’s Completion of the Contract

1.20.7.1.6.1. Provide an electronic copy of the final inspection report.

1.20.7.1.6.2. If the Contractor has determined that the requirements for deemed completion of the contract have been met, the Contractor shall then make a written request for a review and assessment of the work.

1.20.7.1.6.3. Consultant will carry out a review and assessment of the work, to determine whether the contract has been completed.

1.20.7.1.6.4. Consultant shall notify the Contractor of approval of the Contractor’s application by issuance of Statement of Contract Deemed Completed, as per OAA/OGCA Document No. 100.

1.20.7.1.7. Stage 7 Certificate for Payment of Monies for Finishing Holdback

1.20.7.1.7.1. Consultant shall prepare the certificate for payment of the monies retained as a finishing holdback.

1.20.7.1.8. Stage 8 Final Payment Certificate

1.20.7.1.8.1. Consultant shall issue a final certificate for payment

1.20.7.1.9. Stage 9 Warranty-Guarantee Period(s)

1.20.7.1.9.1. Prior to the completion of the one year warranty period, Consultant will carry out a review of the work for any defects or deficiencies.

1.20.7.2. All stages will be reviewed at first Coordination Site Meeting to ensure all parties understand their responsibilities.

1.20.8. Inspections:

1.20.8.1. Provide an electronic punch list with any requests for inspections.

1.20.8.1.1. Identify any work items that are beyond the Contractor's control including seasonal work.

1.20.8.1.2. Identify work which is incomplete and still in progress.

1.20.8.1.3. Identify each room or area and provide drawing references to accurately locate work as required.

1.20.8.2. Defect and Deficiency:

1.20.8.2.1. A defect is an item of Work required by Contract which has been installed but requires repair and/or replacement at a specific time.

1.20.8.2.2. A deficiency is an item of Work required by Contract which has not been installed or put into operating condition.

1.20.8.2.3. A warranty item is an item of Work, installed under Contract which manufacturer or installer agrees to maintain in, or restore to perfect condition for a specific period of time, after Owner's acceptance of Work as being substantially performed.

1.20.8.3. Neither Owner's representatives, nor Consultant will be responsible for issue of extensive lists of deficiencies. Any reviews to approve Certificates of Substantial Performance will be immediately canceled if it becomes apparent that extensive deficiencies are outstanding or the work has not yet met the requirements for substantial performance.

1.20.8.4. The purpose of review by the Consultant is to verify the list provided by the Contractor. The Owner and Consultant will respond to the Contractor by editing the electronic list and identifying any additional deficiencies or comments.

1.20.8.5. In accordance with the Construction Act, certain work items such as work that is beyond the Contractor's control, or work to be completed at a later date, and as agreed with the Owner, the cost of the services or materials remaining to be supplied and required to complete the work shall be deducted from the contract price in determining substantial performance:

1.20.8.5.1. The cost of such work shall be determined by the Consultant.

1.20.8.5.2. A Change Order will be prepared for the purpose of deleting the work from the scope of work and reducing the Contract Price.

1.20.8.5.3. A separate contract may be created for the purpose of completing this work at a later date.

1.20.8.6. End of Warranty Period Review:

1.20.8.6.1. At beginning of 12th month after Substantial Performance of Contract MonAvenir CSC Project Manager, Contractor and Consultant, along with key Subcontractors as designated by Consultant, carry out a complete review of building and its systems to determine which deficiencies are to be rectified under warranty.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

1.1.1. Section Includes: Provide selective removal in phases, including but not limited to following:

1.1.1.1. Removal of existing millwork units and black boards in the classrooms and corridors

1.1.1.2. Removal of existing kitchen cabinets in Gym server, staff and IT rooms

1.1.1.3. Removal of existing flooring

1.2. REFERENCES

1.2.1. Review "Designated Substance Report" and take appropriate precautions.

1.2.2. Definitions:

1.2.2.1. Hand Demolition: Systematic demolition of structures by workers using hand-held tools.

1.2.2.2. Mechanical Demolition: Systematic demolition of structures using powered equipment.

1.2.2.3. Systematic Demolition: Methodical dismantling of structure piece by piece, usually carried out in reverse order of construction.

1.2.2.4. Hazardous Materials: dangerous substances, dangerous goods, hazardous commodities and hazardous products, may include but not limited to: poisons, corrosive agents, flammable substances, ammunition, explosives, radioactive substances, or other material that can endanger human health or well being or environment if handled improperly.

1.3. ADMINISTRATIVE REQUIREMENTS

1.3.1. Review Specification for work included under this Section and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials, inspection of construction to be demolished, methods to be used, sequence and quality control, Project staffing, restrictions due to environmental protection requirements and other matters affecting demolition, to permit compliance with intent of this Section.

1.3.2. Scheduling:

1.3.2.1. Where practicable, remove or neutralize hazardous or toxic materials before demolition begins.

1.3.2.2. Phase selective demolition to be coordinated with Owner’s on-going occupancy of the school.

1.4. QUALITY ASSURANCE

1.4.1. Comply with National Building Code, Part 8, Construction Safety Measures at Construction and Demolition Sites.

1.4.2. Do work in accordance with CSA S350 and comply with pertinent codes, regulations and insurance carriers providing coverage for this work.

1.4.3. Execute the work in strict accordance with The Occupational Health and Safety Act and Regulations for Construction Projects, latest addition. Keep copy of the Act at the place of the Work at all times.

1.4.4. Restrictions: Restrict demolition activities to hours in accordance with Section 01 10 00 - Project Administrative Requirements.

1.5. SITE CONDITIONS

1.5.1. Demolition performed on this Project in school areas adjacent to occupied areas. Every part of the demolition work must be carefully planned, scheduled, and coordinated with the MonAvenir Protect Manager, including:

1.5.1.1. Hours of operation

1.5.1.2. Dust control, infection prevention and control.

1.5.1.3. Disruption to existing mechanical or electrical services, fire alarm, sprinkler, communications systems.

1.5.1.4. Noise control.

1.5.1.5. Protection to existing building

1.5.1.6. Access to the work area including procedures for movement and removal of materials.

PART 2 - PRODUCTS

2.1. MATERIALS

2.1.1. Description:

2.1.1.1. Regulatory Requirements:

2.1.1.1.1. Conform to The Occupational Health and Safety Act and Regulation for Construction Projects

2.1.1.1.2. Conform to OBC, especially Division C, Part 1, Article 1.2.2.3 as applicable.

2.1.1.1.3. Conform to Fire Code, Regulation under Fire Marshal Act especially Part 8.

2.1.2. Materials and Products Removed From Existing Building

2.1.2.1. Refer to drawings for existing items that are designated to be carefully removed and reinstalled or relocated.

2.1.2.2. Refer to drawings for existing items that are to be carefully removed and handed over to the Owner.

2.1.2.3. Materials resulting from demolition and not required to be retained shall be removed promptly from site in accordance with requirements of authorities having jurisdiction and in safe manner to minimize danger at site and during disposal.

2.1.2.4. Materials that are to be removed from the site and can be reused should be sent to the appropriate facility.

PART 3 - EXECUTION

3.1. EXAMINATION

3.1.1. Review audit of hazardous materials and designated substances of existing construction provided by Owner.

3.1.2. Consultant does not guarantee that existing conditions are the same as those indicated in Construction Documents.

3.1.3. Preliminary Survey:

3.1.3.1. Before commencing demolition operations, examine building to determine type of construction, condition of structure and site conditions. Assess strength and stability of damaged or deteriorated structures.

3.1.3.2. Assess potential effect of removal of any part or parts on remainder of structure before such part(s) are removed.

3.1.3.3. Investigate for presence of hazardous materials not identified in the construction documents.

3.1.3.4. Prepare a complete photographic record of all finishes and equipment to remain. Note any damages, missing items, breaches in fire rated construction, potential hazardous materials, conditions that are different from what is shown in the Construction Documents, and any other items of concern that could impact the construction. Submit report of existing conditions before start of demolition operations, for each work area.

3.1.4. Existing Services:

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

3.1.4.2. Identify all services and systems exposed as part of the demolition.

3.1.4.3. Verify services are cut off and properly capped before commencing associated or effected demolition.

3.1.4.4. Provide and maintain temporary fire alarm and fire protection services required during demolition to satisfaction of authorities having jurisdiction, fire departments and MonAvenir Project Manager.

3.1.4.5. Verify prior to commencement work of this Section that disconnection and capping of electrical and mechanical services have been carried out.

3.1.4.6. Verify that dust control hoardings have been completed, inspected and accepted before proceeding.

3.2. PREPARATION

3.2.1. Protection of In-Place Conditions:

3.2.1.1. Post suitable warning signs outside of work area for protection of staff and public. Supervise entrance to work area to prevent entrance by unauthorized persons. If requested, provide lockable doors to prevent public entering danger zone.

3.2.1.2. Post warning signs on electrical lines and equipment which must remain energized to serve other portions of the building during period of demolition.

3.2.1.3. Provide fire extinguishers acceptable to fire prevention authorities in locations and of type suitable to enable personnel to deal with fire occurring during progress of work.

3.2.1.4. Provide suitable protection to existing lockers, doors, walls and finishes to remain. This includes a sealed 6 mil poly cover to prevent dust getting into equipment and fixtures.

3.2.2. Environmental Protection:

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

3.2.2.2. Removal of all demolition materials shall be in sealed containers. Removal of transite panels from work area shall be in approved sealed bags.

3.2.3. Protection to Existing Services:

3.2.3.1. Provide protection required to enable existing building services, systems and equipment to remain in continuous and normal operations.

3.2.3.2. Demolition shall be carried out in a manner to ensure the minimum of disruption to Owner, and other contractors working in the building.

3.3. DEMOLITION — GENERAL

3.3.1. Execute work in conformance to MonAvenir CSC Standards. Notify School Board Project Manager before disrupting building access or services.

3.3.2. Carry out demolition in accordance with CSA S350-M. Demolish structure and remove materials from site. Use hand tools only. Adhere to manufacturer's recommendations in use of hand held tools while conforming to the Occupational Health and Safety Act requirements.

3.3.3. Do not demolish spray or trowel-applied friable materials, materials suspected of containing PCBs or other hazardous materials. Where such materials are encountered notify MonAvenir Project Manager immediately. Do not proceed until instructions have been received from Consultant.

3.3.4. Remove mechanical and electrical items indicated to be removed. Remove all abandoned services, communication lines, electrical wiring, plumbing, and ductwork.

3.3.5. The use of pneumatic or electrical jack hammers is not permitted.

3.3.6. Report any existing conditions uncovered by the demolition work that require remediation. This includes:

3.3.6.1. Damaged or unsafe services.

3.3.6.2. Unsupported services, structural members or missing hangers.

3.3.6.3. Incomplete insulation, vapour retarder or air barrier.

3.3.6.4. Incomplete or unacceptable fire separation, missing seals, fire dampers, fireproofing or firestopping.

3.3.7. Minimize noise. Avoid use of noisy equipment. Proposed methods for demolition to be reviewed at the pre-construction meetings ahead of the work in each work area.

3.3.8. Firestopping and Smoke Seal: In event work of this Section impacts on integrity of fire separations, ensure trade performing firestopping is notified.

3.3.9. Demolition for new services:

3.3.9.1. Cut openings through existing walls, partitions, roofs and floors. Establish exact location of steel reinforcing and conduits in existing concrete slabs or walls before cutting. Locate using non destructive, non ionizing radio frequency locators, magnetic scanning or X-ray. Scanning procedures and proposed methods and equipment to be reviewed with MonAvenir Project Manager before proceeding. Be responsible for damage to existing steel reinforcing and be liable for structural failure.

3.3.9.2. Neatly cut openings and holes plumb, square and true to dimensions required. Use cutting methods least likely to damage remaining or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.

3.3.9.3. Openings to allow passage of ducts shall be closed tight to perimeters of duct at all locations where fire dampers are required.

3.3.10. Where items are to be removed from existing structure or surfaces that are to remain in place, remove those items complete with hangers, brackets and other readily removable supports and fastenings:

3.3.11. Building Services:

3.3.11.1. Arrange with MonAvenir Project Manager to disconnect or interrupt existing building services. Cut-off and cap existing building services under Owner's supervision.

3.3.11.2. Coordinate with Mechanical and Electrical respectively for removal, relocation and reinstallation of mechanical and electrical items.

3.3.11.3. Prevent demolition debris from entering building drains.

3.3.12. Relocation of Salvaged Items:

3.3.12.1. Carefully remove, store, protect and re-install where applicable existing materials and equipment noted on Drawings to be retained and relocated. Relocate items to be retained and store them in areas directed by Consultant. In addition to items indicated on Drawings, Owner still reserves the right to retain any items or materials.

3.4. REMOVAL OF MILLWORK

3.4.1. Remove shelving including supporting tracks and brackets.

3.4.2. Remove millwork cabinets including countertops, sinks and associated plumbing and electrical services.

3.4.3. Remove abandoned services where exposed, back to walls that remain. Cap off plumbing and make safe electrical wiring.

3.4.4. Remove dishwasher and refrigerator. Consult with Owner regarding items to be salvaged and reused or disposed of.

3.5. MISCELLANEOUS DEMOLITION

3.5.1. Remove, tack boards, chalk boards, notice boards, washroom accessories, fitments, projectors and screens, and other such components as indicated on the drawings.

3.6. CUTTING AND PATCHING

3.6.1. Obtain Consultant's approval before cutting, boring or sleeving load-bearing members.

3.6.2. Cut and patch as required to make work fit.

3.6.3. Make cuts with clean, true, smooth edges.

3.6.4. Where new work connects with existing and where existing work is altered, cut, patch and make good to match existing work.

3.6.5. Patch openings created where mechanical and electrical services are removed in existing building.

3.6.6. Use specialists in affected materials to execute cutting, fitting and remedial work.

3.6.7. Make good surfaces exposed or disturbed by work with material and finish to match existing adjoining surfaces.

3.7. CLEANING

3.7.1. Waste Management:

3.7.1.1. Clear away dirt, rubbish and loose litter resulting from work of this Section, minimum daily. Keep dust to a minimum. When necessary and practical demolition works shall be sprayed periodically with water to reduce dust. Wet down debris from time to time to control dust.

3.7.1.2. Selling or burning of materials on site is not permitted.

3.7.1.3. Conform to requirements of authorities having jurisdiction regarding disposal of waste materials.

3.7.1.4. Materials prohibited from municipality waste management facilities shall be removed from site and dispose of at recycling companies specializing in recyclable materials.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

1.1.1. Section Includes: Provide architectural woodwork including but not limited to following:

1.1.1.1. Wood casework.

1.2. REFERENCES

1.2.1. Abbreviations and Acronyms:

1.2.1.1. AWMAC/WI: Architectural Woodwork Manufacturers Association of Canada/Woodwork Institute; www.awmac.com.

1.2.1.2. NAAWS: North American Architectural Woodwork Standards

1.2.2. Reference Standards:

1.2.2.1. ANSI/BHMA A156.9-2020 – Cabinet Hardware

1.2.2.2. ANSI/BHMA A156.18-2020 - Materials And Finishes

1.2.2.3. ANSI/NPA A208.1-2022 - Particleboard

1.2.2.4. ANSI/NEMA LD 3-05 - High-Pressure Decorative Laminates

1.2.2.5. CAN/ULC-S102-18-REV1 - Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies

1.2.2.6. CSA O121-17(R2022) - Douglas Fir Plywood

1.2.2.7. CSA O151-09(R2022), Canadian Softwood Plywood

1.3. ADMINISTRATIVE REQUIREMENTS

1.3.1. Preinstallation Meetings:

1.3.1.1. Conduct a pre-installation meeting in accordance with Section 01 10 00 – Project Administrative Requirements.

1.3.1.2. The following minimum items shall be reviewed at the pre-installation meeting:

1.3.1.2.1. Verify project requirements.

1.3.1.2.2. Review installation conditions under which work is to be performed including possible site concerns.

1.3.1.2.3. Review locations of backing required for millwork installation as shown on millwork shop drawings.

1.3.1.2.4. Review method of attachment for backing to wall system as shown on architectural drawings.

1.3.1.2.5. Coordination requirements with other subtrades.

1.3.2. Coordination:

1.3.2.1. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that cabinets can be supported and installed as indicated.

1.4. SUBMITTALS

1.4.1. Submittals in accordance with Section 01 10 00 – Project Administrative Requirements.

1.4.2. Shop Drawings:

1.4.2.1. Submit Shop Drawings for work of this Section in accordance with Section 1 of NAAWS.

1.4.2.2. On casework and countertop elevations show location of backing required for attachment within walls.

1.4.2.3. Clearly indicate material being supplied and show connections, attachments, reinforcing, anchorage and location of exposed fastenings.

1.4.2.4. Clearly indicate material being supplied.

1.4.3. Samples: Submit samples in following sizes:

1.4.3.1. Minimum 300 mm (12") long x 300 mm (12") wide x 25 mm (1") thick solid wood.

1.4.3.2. Minimum 300 mm (12") square and of specified thickness, veneer mounted on 19 mm (3/4") particle board and finished as specified.

1.4.3.3. Each type of hardware.

1.4.3.4. Each plastic laminate in manufacturer's standard chip size.

1.4.3.5. Minimum 300 mm (12") square x 25 mm (1") thick counter top materials.

1.5. QUALITY ASSURANCE

1.5.1. Qualifications:

1.5.1.1. Provide work of this Section in accordance with NAAWS produced by AWMAC/WI, except as specified otherwise herein and by reference are hereby made a part of this Section. Ensure any reference to grades and terminology in this Section is as defined in NAAWS.

1.5.1.2. Requirements of this Section govern and modify NAAWS.

1.5.1.3. Woodwork Manufacturer Qualifications:

1.5.1.3.1. Member in Good Standing of AWMAC.

1.5.1.3.2. Minimum 5 years of production experience similar to this project, whose qualifications indicate ability to comply with requirements of this Section.

1.5.1.3.3. Minimum one project in past 5 years where value of woodwork within 20 percent of cost of woodwork for this Project.

1.5.1.4. Installers:

1.5.1.4.1. Provide work of this Section executed by competent installers with minimum 5 years experience in the application of Products, systems and assemblies specified and be a member of AWMAC/WI.

1.6. DELIVERY, STORAGE AND HANDLING

1.6.1. Delivery and Acceptance Requirements:

1.6.1.1. Do not deliver finished Products during rainy or damp weather.

1.6.1.2. Do not deliver work of this Section until building and storage areas are sufficiently dry so Products will not be damaged by excessive changes in moisture content.

1.6.1.3. Deliver Products of this Section in accordance with Section 2, Rule 2.4.4.1 of NAAWS.

1.6.1.4. Do not deliver damaged Products.

1.6.2. Storage and Handling Requirements:

1.6.2.1. Store and handle Products of this Section in accordance with Section 2, Rules 2.4.4.2 and 2.4.4.3 of NAAWS.

1.6.2.2. Cover finished plastic laminate surfaces and varnished surfaces with heavy kraft paper and put in cartons for protection. Protect installed plastic laminate surfaces by acceptable means. Do not remove protective covers until immediately prior to final cleaning.

1.6.2.3. Maintain indoor temperature and humidity within range recommended by AWMAC's Standards (NAAWS).

1.7. WARRANTY

1.7.1. Manufacturer Warranty: Warrant work of this Section for a period of 2 years against defects and/or deficiencies in accordance with General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of Owner.

1.7.2. Defects include but are not limited to, delamination of plastic laminate, opening of seams, warpage and extensive colour fading.

PART 2 - PRODUCTS

2.1. MANUFACTURERS

2.1.1. High Pressure, Paper Base, Decorative Laminates (PL):

2.1.1.1. Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications:

2.1.1.1.1. Arborite; www.arborite.com

2.1.1.1.2. Formica Inc.; www.formica.com

2.1.1.1.3. Industrial Laminates/Norplex, Inc.; www.micarta.com

2.1.1.1.4. Nevamar Company, LLC; www.nevamar.com

2.1.1.1.5. Pionite Decorative Laminates; www.pionite.com

2.1.1.1.6. Wilsonart Canada; www.wilsonart.com

2.2. PERFORMANCE/DESIGN CRITERIA

2.2.1. Work in conformance with the Architectural Woodwork Manufacturer's Association of Canada Quality Standards Manual 4.0

2.2.2. Materials, methods, construction and installation to be in accordance with AWMAC Standards for Custom Grade, except as modified in these specifications.

2.2.3. Ensure millwork (e.g. countertops, wall cabinets, etc.) are capable of supporting structural loads without deflection in accordance with "casework integrity" in "Appendix" of NAAWS.

2.3. MATERIALS

2.3.1. Framing Lumber: Select Merchantable Western White Spruce, kiln dried, or sound material of any species may be used for concealed members, free from sap, shakes, knots, splits and other defects.

2.3.2. Architectural Lumber: Clear, straight, kiln dried, Select Yellow Birch for fitments and door jambs. Provide kiln dried lumber to 7% moisture content, free from blemishes that would be apparent after finish is applied.

2.4. PANEL MATERIALS

2.4.1. Panel material schedule; except where indicated or specified otherwise:

2.4.1.1. Thickness: 19 mm (3/4"), minimum.

2.4.1.2. Maximum moisture content at time of installation: 10% to 12%.

2.4.2. Plywood:

2.4.2.1. Backing grade, veneer core:

2.4.2.1.1. Softwood plywood to CSA O151

2.4.2.1.2. Douglas Fir plywood to CSA O121.

2.4.3. Particleboard; medium density:

2.4.3.1. Industrial grade, medium density particleboard core of minimum 720 kg/m3 (45 lbs/cu ft) density conforming to ANSI/NPA A208.1, Grade R, sanded both sides.

2.4.4. Particle board; fire retardant:

2.4.4.1. To ANSI A208.1-1999, FSC certified, no added urea-formaldehyde used in composition, and 100% recovered and recycled fibre and as follows:

2.4.4.1.1. Flame Spread: Class A Flame Spread 25 or under, to CAN/ULC-S102-03.

2.5. PLASTIC AND COMPOSITE MATERIALS

2.5.1. Melamine:

2.5.1.1. Conforming to ANSI A208.1, grade M3, 19 mm (3/4") minimum thick, complete with matching non-yellowing edge trim, unless otherwise noted.

2.5.2. High Pressure, Paper Base, Decorative Laminates (PL):

2.5.2.1. To ANSI/NEMA LD 3, classified as general purpose grade (HGS) (both horizontal and vertical trades) and post forming grade (HGP) (both horizontal and vertical grades).

2.5.2.2. Provide types and thicknesses conforming to ANSI/NEMA LD 3 and Section 4, “Table: 4-046 – HPDL TYPES and Minimum Performance Requirements” of NAAWS.

2.5.2.3. Plastic Laminate Adhesive: Provide in accordance with Section 4, Rule 4.4.4.6.4 and “adhesive usage guidelines” in “Appendix” of NAAWS.

2.6. FASTENERS AND ADHESIVES

2.6.1. Fasteners:

2.6.1.1. Wood screws: FF-S-111D Amendment 1 (1989), type, size, material and finish as required for the condition of use.

2.6.1.2. Nails: FED FF-N-105, type, size material and finish as required for the condition of use.

2.6.1.3. Anchors: Type, size material and finish as required for the condition of use.

2.6.1.4. Fastening devices shall be set or countersunk flush with surface of framing member. No exposed fasteners permitted. Exposed fasteners shall be flat head hex socket cap screws and matching joint connector sex bolts (also known as Chicago screws or post and screw) by Murakoshi, distributed by Richelieu, Spaenaur Joint Connector bolt with decorative head, hex drive series.

2.6.1.5. At butt joints in railing caps and counter surfaces, employ assembling bolts to ensure tight structural joint.

2.6.2. Adhesives: Moisture resistant complying with FS MMM-A-125, Type II, or FED MMM-A- 188, Type I, II or III; type best suited for the purpose.

2.7. HARDWARE

2.7.1. Casework hardware: to ANSI/BHMA A156.9-2003.

2.7.1.1. Shallow Drawer Slides: “1375” by Knape & Vogt Manufacturing Company; www.knapeandvogt.com or “3832” by Accuride; www.accuride.com, full extension type with a capacity of 34 kg (75 lb).

2.7.1.2. Deep Drawer Slides: “1485” by Knape & Vogt Manufacturing Company or “4005” by Accuride, full extension type with a capacity of 68 kg (150 lb).

2.7.1.3. Recessed Shelf Pilasters, Standards and Clips: Provide “KV255" pilaster and “KV256" clip supports by Knape & Vogt Manufacturing Company; www.knapeandvogt.com or “120-10 Series” pilasters and “1903-2G” clip supports by Richelieu Hardware Ltd.; www.richelieu.com.

2.7.1.4. Concealed Hinges: “Euromat Topsafe” by Hettich Canada L.P.; www.hettich.com, minimum 170 degree opening angle and is self closing. Supply manufacturer's recommended number of hinges to suit door size and thickness.

2.7.1.5. Wire Pulls (Doors and Drawers): “CBH 220" by Canadian Builders Hardware Mfg. Inc.; www.cbhmfg.com, 100 mm (4").

2.7.1.6. Knobs (Doors and Drawers): “BK.K771.PB” by Belwith Keeler; www.belwithkeeler.net, brass in 32 mm (1-1/4") diameter.

2.7.1.7. Door Locks: Keyed cylinder cam lock type C4 (satin brass, clear coated on brass base) finish.

2.7.1.8. Drawer Locks: “0738 Drawer Lock” by CCL Security Products; www.cclsecurity.com, C4 (satin brass, clear coated on brass base) finish.

2.7.1.9. Plastic Hooks: “HC.H 520" by Hewi; www.hewi.com, 100 mm (4") in size.

2.7.1.10. Closet Coat Rods: “KV660" 27 mm (1-1/16") od stainless steel rod complete with “KV734" and “KV735" polished chrome flanges by Knape & Vogt Manufacturing Company; www.knapeandvogt.com. Size rods to suit closet widths.

2.7.1.11. Grommets: “Round Grommets" by Richelieu Hardware Ltd.; www.richelieu.com, 63 mm (2-1/2") drilling diameter, black in colour. Provide 4 grommets per workstation and locate as directed by Province.

2.7.2. Hardware finish:

2.7.2.1. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with ANSI/BHMA A156.18-2006 for BHMA finish number indicated.

2.7.2.1.1. Dark, Oxidized, Satin Bronze, Oil Rubbed: BHMA 613 for bronze base; BHMA 640 for steel base.

2.7.2.1.2. Bright Brass, Clear Coated: BHMA 605 for brass base; BHMA 632 for steel base.

2.7.2.1.3. Satin Brass, Blackened, Bright Relieved, Clear Coated: BHMA 610 for brass base; BHMA 636 for steel base.

2.7.2.1.4. Satin Chromium Plated: BHMA 626 for brass or bronze base; BHMA 652 for steel base.

2.7.2.1.5. Bright Chromium Plated: BHMA 625 for brass or bronze base; BHMA 651 for steel base.

2.7.2.1.6. Satin Stainless Steel: BHMA 630.

2.7.2.2. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in ANSI/BHMA A156.9-2003.

2.7.3. Display Case Hardware:

2.7.3.1. Refer to drawings

2.7.3.1.1. Product Finish: Chrome (140)

2.8. FABRICATION

2.8.1. General:

2.8.1.1. Materials and methods of construction to meet requirements of AWMAC's Standards (NAAWS) for Custom grade.

2.8.1.2. Fabricate joints accurately fitted, coped where possible and well glued up. Fabricate joints mitred to perfect fit and alignments carefully matched.

2.8.1.3. Fabricate finished woodwork in 1 piece where possible. Fabricate running members in the longest lengths obtainable.

2.8.1.4. Fabricate to conceal fastenings.

2.8.1.5. Provide plastic laminate work in shop where practical and/or possible.

2.8.1.6. Fabricate exposed gables to match the required exposed finishes.

2.8.2. Plastic Laminate Millwork:

2.8.2.1. Construction Type: Frameless.

2.8.2.2. Cabinet and door interface: flush overlay.

2.8.2.3. Exposed Surfaces HPDL, color, finish and pattern direction color and pattern as selected by Consultant and meeting requirements of AWMAC's Standards (NAAWS) for Grade specified.

2.8.2.4. Exposed interior surfaces: LPDL of a color and pattern as selected by Consultant.

2.8.2.5. Semi-exposed surfaces: LPDL of a color and pattern as selected by Consultant.

2.8.2.6. Edgeband: PVC

2.8.3. Drawers:

2.8.3.1. Sides: Particle board with LPDL surfaces.

2.8.3.2. Bottoms: MDF with melamine surfaces.

2.8.3.3. Joinery: Meeting requirements of AWMAC's Standards (NAAWS) for Grade specified.

2.8.4. Countertops:

2.8.4.1. Fabricate and assemble countertops and splashbacks in shop to profiles and lengths required.

2.8.4.2. Fabricate cutouts for services penetrations as required.

2.8.4.3. Verify governing dimensions before fabricating items which abut wall surfaces.

2.8.4.4. Provide cutouts required and round internal corners, chamfer edges and seal exposed core.

2.8.4.5. Provide sidesplashes at abutting ends of counters and at adjoining walls, unless otherwise indicated.

2.8.4.6. Provide a 6 mm (1/4") drip groove approximately 13 mm (1/2") in from the underside edge.

2.8.4.7. Laminated Plastic Countertops:

2.8.4.7.1. Core material: Water resistant particle board.

2.8.4.7.2. Back splashes: height and profile as shown on drawings.

2.8.4.7.3. Front edges: As shown on plans.

2.8.4.8. Solid Surface Countertops:

2.8.4.8.1. Back splashes: height and profile as shown on drawings.

2.8.4.8.2. Front edges: As shown on plans.

2.8.5. Exposed wood construction:

2.8.5.1. Fabricate joints carefully matched for grain and colour.

2.8.5.2. Fabricate millwork with slow fed machines free from sticker and/or sander markings, with sections and moulding work cut accurately to profiles.

2.8.5.3. Sandpaper woodwork, smooth removing burrs, feathers, sleeves, raised grain and sharp arises and leave exposed surfaces perfectly clean and smooth ready for finishing.

2.8.5.4. Provide edges noted to be solid, as minimum 6 mm (1/4") thick wood to match exposed veneer, glued to core prior to the application of face veneers.

PART 3 - EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions: Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation.

3.1.2. Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2. INSTALLATION

3.2.1. Install work of this Section in accordance with appropriate Section of NAAWS.

3.2.2. Provide work of this Section true and straight and securely fastened in place.

3.2.3. Mitre exposed corners.

3.2.4. Provide plastic laminate countertops plumb and true, neatly scribed to adjoining surfaces.

3.2.5. Thoroughly fix and anchor work of this Section into position.

3.2.6. Mechanical and Electrical Fittings:

3.2.6.1. Provide openings required to accommodate mechanical and electrical fittings as part of the work of this Section and provide a core sealant to protect counter cores which are exposed to accommodate:

3.2.6.1.1. Mechanical services and fittings.

3.2.6.1.2. Washroom accessories.

3.2.6.2. Mechanical and electrical fittings and services will be provided as part of the work of Mechanical and Electrical

3.2.7. Installation of Hardware:

3.2.7.1. Install architectural woodwork hardware in accordance with manufacturer's requirements and templates. Adjust architectural woodwork hardware to provide smooth operation and ensure clearances are maintained. Repair damage to adjacent surfaces resulting from failure to conform with this requirement.

3.2.7.2. Provide lubricants required and use in manner to ensure smooth function of hardware consistent with manufacturer's recommendations.

3.2.7.3. Verify fastening components are tightened securely. Align screws, bolts and similar fastenings such that relationship of screw head indentations, similar surfaces and slots are perpendicular to matching vertical or horizontal position when on same surface. Do not burr or otherwise mar edges of surfaces of hardware components. Repair defects caused by work of this Section in an acceptable manner.

3.3. ADJUSTING & TOUCH UP

3.3.1. Adjust all moving and operating parts to function smoothly and correctly.

3.3.2. Fill and retouch all nicks, chips and scratches. Replace all un-repairable damaged items.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

1.1.1. This Section includes:

1.1.1.1. Hollow metal doors

1.1.1.2. Metal frames including centre mullion.

1.1.1.3. Glazed transom

1.1.1.4. Glass and glazing

1.1.1.5. Door hardware

1.1.2. Related Sections: Following description of work is included for reference only and shall not be presumed complete:

1.1.2.1. Building in hollow metal door frames in masonry walls: Section 04 20 00 - Unit Masonry.

1.1.2.2. Caulking and/or sealing door frames: Section 07 92 00 - Joint Sealants.

1.1.2.3. Finish painting doors and frames: Section 09 91 00 - Painting.

1.2. REFERENCES

1.2.1. Abbreviations and Acronyms:

1.2.1.1. CSDMA: Canadian Steel Door Manufacturers Association; www.csdma.org.

1.2.1.2. HMMA: Hollow Metal Manufacturers Association; www.naamm.org/hmma/.

1.2.1.3. NAAMM: National Association of Architectural Metal Manufacturers; www.naamm.org.

1.2.2. Reference Standards:

1.2.2.1. ANSI/SDI A250.4-2022 - Test Procedure and Acceptance Criteria for – Physical Endurance for Steel Doors, Frames and Frame Anchors

1.2.2.2. ANSI/SDI A250.10-(2020) - Test Procedure and Acceptance Criteria for – Prime Painted Steel Surfaces for Steel Doors and Frames

1.2.2.3. ASTM A653/A653M-23 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

1.2.2.4. ASTM A924/A924M

1.2.2.5. ASTM C177-19(E1) - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus

1.2.2.6. ASTM C305-20 - Standard Practice for Mechanical Mixing of Hydraulic Cement Pastes and Mortars of Plastic Consistency

1.2.2.7. ASTM C518-21 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus

1.2.2.8. ASTM C665 – 23 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing

1.2.2.9. ASTM C1289-23a - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board

1.2.2.10. CAN/ULC-S702.1-2021 - Standard for Mineral Fibre Thermal Insulation for Buildings

1.2.2.11. CGSB 41-GP-19Ma(R1984) - Rigid Vinyl Extrusions for Windows and Doors

1.2.2.12. CSA W59-18 - Welded Steel Construction (Metal Arc Welding)

1.2.2.13. NAAMM-HMMA 860-18 - Guide Specifications for Hollow Metal Doors and Frames

1.3. ADMINISTRATIVE REQUIREMENTS

1.3.1. Coordination:

1.3.1.1. Cooperate fully with door hardware distributor's representative during preparation of shop drawings and execution of shop fabrication. Be responsible to provide adequate reinforcing, clearances, for door hardware specified and for accurate installation of door and door hardware on site.

1.3.2. Preinstallation Meetings:

1.3.2.1. The following minimum items shall be reviewed at the pre-installation meeting:

1.3.2.1.1. Verify project requirements.

1.3.2.1.2. Review installation conditions under which work is to be performed including possible site concerns.

1.3.2.1.3. Inspection of surfaces to receive the work.

1.3.2.1.4. Coordination requirements with other subtrades.

1.3.2.2. Key personnel shall attend the pre-installation meeting including but not limited to:

1.3.2.2.1. Steel door and frame installer subtrade personnel.

1.3.2.2.2. Related work subtrade personnel.

1.4. ACTION SUBMITTALS

1.4.1. Submittals in accordance with Section 01 10 00 – Project Administrative Requirements.

1.4.2. Product Data Sheets:

1.4.2.1. Submit manufacturer’s product data sheets for products to be used in the work of this section. Manufacturer’s product data sheets shall include:

1.4.2.1.1. Material and product physical properties and characteristics including size.

1.4.2.1.2. Performance criteria.

1.4.2.1.3. Limitations of products.

1.4.3. Shop Drawings:

1.4.3.1. Indicate door location using numbering system per door and frame schedule.

1.4.3.2. Include size, and hand of each door, elevation of each door type; beveling of door edges, construction type core and edge construction not covered in product data.

1.4.3.3. Indicate dimensions and locations of cut-outs including requirements for louver openings.

1.4.3.4. Provide details of door hardware locations, anchorage and fastening methods.

1.4.4. Test and Evaluation Reports: Submit following test and evaluation reports in accordance with NAAMM-HMMA 860:

1.4.4.1. Hollow metal door and frame assemblies supplied under this Section meet acceptance criteria of ANSI/SDI A250.4, Level A.

1.4.4.2. Primer applied on hollow metal door and frame assemblies meet acceptance criteria of ANSI/SDI A250.10.

1.4.4.3. Insulated doors supplied in exterior openings meet specified thermal resistance rating.

1.4.4.4. Ensure reports include name of testing authority, date of test, location of test facility, description of test specimen, procedures used in testing and indicate compliance with specified acceptance criteria.

1.5. QUALITY ASSURANCE

1.5.1. Qualifications:

1.5.1.1. Manufacturers:

1.5.1.1.1. Provide doors and frames manufactured by a firm specializing in the design and production of hollow metal steel doors and frames.

1.5.1.1.2. Manufacturer of doors and frames shall be a member in good standing of the Canadian Steel Door Manufacturers Association (CSDMA).

1.5.2. Quality Standard:

1.5.2.1. Perform work of this section in accordance with requirements of Canadian Steel Door Manufacturer's Association (CSDMA) “Guide Specification for Installation and Storage of Hollow Metal Doors and Frames”.

1.6. DELIVERY, STORAGE, AND HANDLING

1.6.1. Comply with CSDMA, Guide Specification For Installation and Storage of Hollow Metal Doors and Frames.

1.6.2. Inspect materials thoroughly upon receipt and report immediately any discrepancies, deficiencies and damages incurred during shipment on carriers' bill of lading and report immediately, in writing, to Supplier and Consultant.

1.6.3. Store materials properly on planks, in a dry area, out of water and covered to protect from damage from adverse weather conditions. Remove wet packaging immediately.

1.6.4. Remove wrappings or coverings from doors upon receipt at the Project Site, and store in a vertical position, spaced with blocking to permit air circulation between them.

1.7. WARRANTY

1.7.1. Manufacturer Warranty: Warrant work for period of 10 years against defects and/or deficiencies in accordance with General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of Consultant.

PART 2 - PRODUCTS

2.1. MANUFACTURERS

2.1.1. Steel door and frames manufacturer list: Products of the following manufacturers are acceptable subject to conformance to requirements of drawings, schedules and specifications:

2.1.1.1. All Steel Doors 2000 Limited; http://www.allsteeldoors.ca/home.html

2.1.1.2. Baron Steel Doors & Frames; www.baronmetal.com

2.1.1.3. Ceco Door: www.cecodoor.com

2.1.1.4. Daybar Industries Limited; www.daybar.com

2.1.1.5. Fleming Doors; www.flemingdoor.com

2.1.1.6. Gensteel Doors, Inc.; www.gensteeldoors.com

2.1.2. Basis of Design:

2.1.2.1. This Specification is based on “Trio-E” door and “Mercury 3” frame by Ceco Door. Comparable Products from manufacturers listed herein will be considered provided they meet requirements of this Specification.

2.2. PERFORMANCE/DESIGN CRITERIA

2.2.1. Ensure Product is manufactured by a firm experienced in design and production of standard and custom commercial metal door and frame assemblies.

2.2.2. Cycle Test Acceptance Criteria: Ensure door and frame assembly is testing in accordance with ANSI/SDI A250.4 for “High Usage” and is certified as Level “A” (1,000,000 cycles).

2.2.3. Twist Test Acceptance Criteria: Maximum permanent deflection not to exceed 3 mm (1/8”) under a maximum 136 kg (300 lb) load, total deflection not to exceed 32 mm (1-1/4") when tested in accordance with ANSI/SDI A250.4. Ensure tests are conducted by an independent nationally recognized accredited laboratory.

2.2.4. Product quality shall meet standards set by the Canadian Steel Door Manufacturers Association.

2.2.5. Door: Insulated, steel stiffened door

2.2.6. Frame: Thermally broken, insulated

2.2.7. Thermal Performance:

2.2.7.1. U-factor of 0.34 ASTM C1363/NFRC 102-2014. Thermal resistance R 2.92

2.2.7.2. Thermally broken frames shall be separated by a continuous PVC thermal break.

2.2.7.3. Thermally broken sections shall not be assembled by means of screws, grommets or other fasteners.

2.2.7.4. Welds shall not cause thermal transfers between interior and exterior surfaces of the frame sections.

2.2.8. Air Infiltration: NFRC 400-2014/ASTM E283 of 0.1 cfm/f^2.

2.2.9. Physical endurance testing: Meets ANSI A250.4 performance test, level A (5,000,000 cycles) class 1 stiffness.

2.3. MATERIALS

2.3.1. Steel:

2.3.1.1. Fabricated from tensioned levelled steel to ASTM A924/A924M-18, galvanized to ASTM A653/A653M, Commercial Steel CS, Type B coating designation A40 (ZF120), known commercially as paintable Galvanneal.

2.3.1.2. Steel shall be free of scale, pitting, coil breaks, surface blemishes, buckles, waves, and other defects.

2.3.1.3. Minimum sheet thickness; coated sheet steel complying with ASTM A653/A653M in accordance with Appendix 1: Steel Thicknesses and gauges of CSDMA “Recommended Specifications for Commercial Steel Door and Frame Products”.

2.3.1.4. Galvanneal coating finish, designation ZF120 (A40).

2.3.2. Hollow Metal Doors:

2.3.2.1. Face Sheets: 1.5 mm (16 ga) galvanized steel sheet.

2.3.2.2. Vertical Stiffeners: 0.8 mm (22 ga) steel.

2.3.2.3. End Channels and Reinforcement: 1.9 mm (14 ga) steel

2.3.2.4. Hinge Reinforcements: 7 ga

2.3.2.5. Reinforcements for closers and holders: 2.7 mm (12 gage) steel minimum

2.3.2.6. Glazing Stops: 1.519 mm thick (16 ga) minimum unprimed steel sheet, formed, drilled and countersunk for fastenings.

2.3.2.7. End Channels:

2.3.2.7.1. Top of Door: Close top of door with same material as face sheets. Steel flush channel, putty-filled seam and ground smooth, sealed, projection welded. Fully continuously welded centred seam, no putty with flush internal channel of minimum 1.214 mm (18 ga).

2.3.2.7.2. Bottom of Door: Close bottom of door with same material as face sheets. Steel inverted channel. Steel flush channel unfilled.

2.3.2.7.3. Provide weep-holes openings in bottom of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.

2.3.3. Hollow Metal Door Frames:

2.3.3.1. Steel: Minimum 1.9 mm thick (14 ga) steel.

2.3.3.2. Reinforcements:

2.3.3.2.1. Lock and Strike Reinforcements: Minimum 1.519 mm thick (16 ga) steel.

2.3.3.2.2. Hinge Reinforcements: Minimum 3.4 mm thick (10 ga) steel.

2.3.3.2.3. Flush Bolt Reinforcement: Minimum 1.519 mm thick (16 ga) steel.

2.3.3.2.4. Reinforcement for Surface Applied Hardware: Minimum 1.2 mm thick (18 ga) steel.

2.3.3.2.5. Concealed Door Closer or Holder Reinforcements: Minimum 2.6 mm thick (12 ga) steel.

2.3.3.2.6. Top and Bottom End Channels: Minimum 1.2 mm thick (18 ga) steel.

2.3.4. Frame Anchors:

2.3.4.1. Floor Anchors: Minimum 3 mm (1/8") thick adjustable floor anchors with 2 holes for bolting to floor.

2.3.4.2. Wall Anchors: Masonry T-strap Type Wall Anchors: Minimum 1.2 mm thick (18 ga) steel

2.3.5. Transom and Window Frame Assemblies:

2.3.5.1. Steel: Minimum 1.519 mm thick (16 ga) steel.

2.3.5.2. Glazing Stops: Minimum 0.912 mm thick (20 ga) steel, formed, drilled and countersunk for fastenings.

2.3.5.3. Jamb Shipping Bars: Minimum 0.912 mm thick (20 ga) steel.

2.3.6. Door Core and Frame Insulation: polyurethane insulation.

2.3.7. Exterior Top Caps: Rigid PVC extrusion conforming to CGSB 41-GP-19Ma.

2.3.8. Fasteners for Stops: Cadmium plated steel, counter sunk flat or oval head sheet metal Phillips screws.

2.3.9. Mortar Guard Boxes: Minimum 0.8 mm thick (22 ga) steel.

2.3.10. IGU Components:

2.3.10.1. Spacer:

2.3.10.1.1. Thermoplastic with integrated desiccant, Basis of Design: Viracon Thermal Spacer (VTS™)“ by Viracon. Colour: black. Thickness as required. Equivalent products from other listed fabricators will be considered.

2.3.10.1.2. Secondary seal: silicone.

2.3.10.1.3. Identification Number (VIN) to be laser printed onto spacers. Each VIN code to provide the following information: insulating glass unit’s thickness, size, substrate, print, heat treatment and manufacture date.

2.3.10.2. Interspace fill for IGU: 90% Argon gas 10% air.

2.3.10.3. Tempered Laminated Glass (TLG): Clear transparent laminated tempered glass (FT) conforming to ASTM C1172, Kind LT and meeting requirements of ANSI Z97.1, minimum 6 mm (1/4") thick overall unless otherwise specified or required; clear PVB interlayer of 1.6 mm (0.060") thickness

2.3.10.4. Bird Frit:

2.3.10.4.1. Bird deterrent treatment: in accordance with CSA A460, provide glass with bird deterrent patterns of etching applied to No. 1 surface.

2.3.10.4.2. Pattern: 50 mm x 50 mm

2.3.10.4.3. Dots: 5 mm dia., white.

2.3.11. IGU Composition:

2.3.11.1. Exterior Lite: 6 mm TLG

2.3.11.1.1. Surface 1: Bird Frit

2.3.11.2. Interior Lite: 6 mm TLG

2.3.11.3. Overall thickness: 25 mm

2.3.11.4. Performance:

2.3.11.4.1. VLT: 74%

2.3.11.4.2. SHGC: 0.41

2.3.11.4.3. Winter U-value: 1.42 W/m2K

2.3.12. Glazing Gaskets:

2.3.12.1. Manufacturer's standard compression types

2.3.12.2. Replaceable, extruded EPDM rubber

2.3.13. Spacers and Setting Blocks: Manufacturer's standard elastomeric type

2.4. FABRICATION

2.4.1. Door construction: mechanically interlocked adhesive assisted with edge seams welded, filled and sanded flush with no visible seam.

2.4.2. Ensure door frames are welded type construction. Knock-down frames are not permitted.

2.4.3. Welding: Carry out welding in accordance with CSA W59.

2.4.4. Grind exposed welds smooth and flush. Fill open joints, seams and depressions with filler or by continuous brazing or welding. Grind smooth to true sharp arises and profiles and sand down to smooth, true, uniform finish.

2.4.5. Hardware Requirements: Blank, mortise, reinforce, drill and tap doors and frames to receive mortised templated hardware. Check hardware specifications for requirements.

2.4.6. Center mullion for pair doors to fixed or removable as noted in the door schedule.

2.4.7. Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb. Provide 2 anchors for rebate opening heights up to and including 1500 mm (5') and 1 additional anchor for each additional 760 mm (30") of height or fraction thereof, except as indicated below. For frames in previously placed concrete, masonry or structural steel provide anchors located not more than 150 mm (6") from top and bottom of each jamb and intermediate anchors at 660 mm (26") on centre maximum.

2.4.8. Where floor finishes allow, fabricate frames to extend 38 mm (1-1/2") below finished floor level. Where frames are to terminate at finished floor level, provide plates for anchorage to slabs.

2.4.9. Factory apply touch-up primer to areas where zinc coating has been removed during fabrication.

2.4.10. Mitre corners of frames. Cut frame mitres accurately and weld continuously on returns and inside of frame faces.

2.4.11. When required due to site access or due to shipping limitations, fabricate frame Product for large openings in sections, with splice joints for field assembly. Provide alignment plates or angles at each joint, fabricated of same metal thickness as frame. Indicate joints for field assembly on Shop Drawings.

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

2.4.13. Weld in 2 temporary jamb shipping bars at each frame to maintain alignment during shipment.

2.4.14. Use formed channel glazing stops, minimum 16 mm (5/8") in height, accurately fitted, butted at corners and fastened to frame sections with counter-sunk oval head sheet metal screws.

2.4.15. Doors - General:

2.4.15.1. Fabricate doors to be swing type flush with 1 continuous face free from joints, tool markings and abrasions and with provisions for glass and/or louvre openings as indicated on Door Schedule and Drawings.

2.4.15.2. Ensure longitudinal edges have continuously welded seams, filled and sanded flush full height of door.

2.4.15.3. Fabricate doors with top and bottom inverted recessed spot welded channels.

2.4.15.4. Reinforce, blank, drill and tap doors for mortised, templated hardware.

2.4.15.5. Reinforce doors for surface mounted hardware.

2.4.15.6. Factory prepare holes 13 mm (1/2") diameter and larger. Factory prepare holes less than 13 mm (1/2") when required for function of device for knob, lever, cylinder, turn pieces or when these holes overlap function holes.

2.4.16. Fabrication Tolerances:

2.4.16.1. Frames:

2.4.16.1.1. Width and Height: +1.6 mm (+1/16”), -0.8 mm (-1/32”).

2.4.16.1.2. Face, Stop and Rabbet: +/-0.8 mm (+/-1/32”).

2.4.16.1.3. Jamb Depth: +/-1.6 mm (+/-1/16”).

2.4.16.2. Doors:

2.4.16.2.1. Width and Height: +/-1.2 mm (+/-3/64”).

2.4.16.2.2. Thickness: +/-1.6 mm (+/-1/16”).

2.4.16.2.3. Edge Flatness: 1.6 mm (1/16”) maximum.

2.4.16.2.4. Surface Flatness: 3 mm (1/8”) maximum.

2.4.16.2.5. Door Twist: +/-1.6 mm (+/-1/16”).

2.4.16.3. Hardware:

2.4.16.3.1. Cutouts: Template dimension +0.38 mm (+0.015”), -0 mm (-0”).

2.4.16.3.2. Location: +/-0.8 mm (+/-1/32”).

2.4.16.3.3. Between Hinge Centrelines: +/-0.4 mm (+/-1/64”).

2.5. FINISH

2.5.1. Electrostatically applied prime base coat.

2.5.2. Prime Painting: Apply factory touch up primer at areas where zinc coating has been damaged during fabrication.

PART 3 - EXECUTION

3.1. INSTALLATION

3.1.1. Hollow Metal Doors:

3.1.1.1. Install hollow metal doors in accordance with manufacturer's instructions.

3.1.2. Hollow Metal Frames:

3.1.2.1. Install hollow metal frames in accordance with manufacturer's instructions.

3.1.2.2. Set frames plumb, square, level and at correct elevation, maintaining uniform door width and height. Check and correct as necessary opening width, opening height, square, alignment, twist and plumb, in accordance with the CSDMA, "Recommended Dimensional Standards for Commercial Steel Doors and Frames".

3.1.2.3. Secure anchorages and connections to adjacent construction.

3.1.2.4. Remove temporary steel shipping jamb spreaders prior to setting 1-piece welded frames. Brace frames rigidly in position while being built in. Use precisely-dimensioned installation spreaders at sill and third-points of door opening height to maintain door opening width during building-in. Follow manufacturer’s instructions regarding proper use of floor and jamb anchors. Remove installation spreaders only after mortar has set, where applicable.

3.1.2.5. Allow for deflection to prevent structural loads from being transmitted to frame.

3.1.2.6. Provide batt insulation to completely fill pressed steel frames of exterior doors and adjacent cavities.

3.1.2.7. Spot Grouting:

3.1.2.7.1. Coordinate spot grouting with Section 09 22 16 - Non-Structural Metal Framing.

3.1.2.7.2. Provide spot grout to increase rigidity of frame and improve resistance to frame rotation caused by weight of door.

3.1.2.7.3. Comply with manufacturer’s recommendations for surface preparation, cleaning, forming, mixing, placement and curing of grout.

3.1.2.7.4. Mix grout in accordance with ASTM C305 requirements.

3.1.2.7.5. Spot grout at strike and hinge side jambs at steel door frames set in gypsum board partitions, walls and other similar locations in accordance with manufacturer’s recommendations. Immediately insert gypsum panels into jamb and attach to framing. Do not terminate gypsum board against trim.

3.1.2.7.6. Do not use pumped slurry method to perform spot grouting.

3.1.2.8. Continuous Grouting:

3.1.2.8.1. Coordinate continuous grouting with Section 04 20 00.

3.1.2.8.2. Comply with manufacturer's recommendations for surface preparation, cleaning, forming, mixing, placement and curing of grout.

3.1.2.8.3. Mix grout in accordance with ASTM C305 requirements.

3.1.2.8.4. Provide grouting employing established procedures recommended by manufacturers. Use minimum water required to produce placement consistency.

END OF SECTION

PART 1 - GENERAL

1.1. GENERAL INSTRUCTIONS

1.1.1. Read and conform to:

1.1.1.1. Division 01 requirements and documents referred to therein.

1.2. SUMMARY

1.2.1. Section Includes: Provide aluminum doors and frames including but not limited to following:

1.2.1.1. Fixed exterior aluminum screens.

1.2.1.2. Exterior aluminum doors.

1.2.1.3. Glass and glazing for work of this section.

1.2.1.4. Door Hardware

1.3. REFERENCES

1.3.1. Abbreviations and Acronyms:

1.3.1.1. NAFS: North American Fenestration Standard

1.3.1.2. PVDF: Polyvinylidene Fluoride.

1.3.2. Reference Standards:

1.3.2.1. AAMA/WDMA/CSA 101/I.S.2/A440-08 - NAFS—North American Fenestration Standard/Specification for windows, doors and skylights

1.3.2.2. AAMA-CW-10-2015 Care & Handling of Architectural Aluminum From Shop To Site

1.3.2.3. AAMA 2605-22 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusion and Panels

1.3.2.4. ASTM B117-19 - Standard Practice for Operating Salt Spray (Fog) Apparatus

1.3.2.5. ASTM B209M-14, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric).

1.3.2.6. ASTM B244-09(2021) - Standard Test Method for Measurement of Thickness of Anodic Coatings on Aluminum and of Other Nonconductive Coatings on Nonmagnetic Basis Metals with Eddy-Current Instruments

1.3.2.7. ASTM C920-18 - Standard Specification for Elastomeric Joint Sealants

1.3.2.8. ASTM D523-14(2018) - Standard Test Method for Specular Gloss

1.3.2.9. ASTM D714-02(2017) - Standard Test Method for Elevating Degree of Blistering of Paints

1.3.2.10. ASTM D968-22 - Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive

1.3.2.11. ASTM D2244-23 - Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates

1.3.2.12. ASTM D2247-15(2022) - Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity

1.3.2.13. ASTM D3363-22 - Standard Test Method for Film Hardness by Pencil Test

1.3.2.14. ASTM D4214-23 - Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films

1.3.2.15. ASTM E283-19 - Standard Test Method for Penetrating Rate of Air Leakage thru Exterior Windows, Curtain Walls and Doors under Specified Pressure Differences Across the Specimen

1.3.2.16. CAN3-S157-17/S157.1-17(R2022), Strength Design in Aluminum/Commentary on CSA S157-17, Strength Design In Aluminum

1.3.2.17. CSA W59.2-2018, Welded Aluminum Construction

1.3.2.18. CSA A440S1-09 - the Canadian Supplement to NAFS-08

1.4. ADMINISTRATIVE REQUIREMENTS

1.4.1. Coordination:

1.4.1.1. Review and coordinate door with hardware supplied by hardware supplier. Be responsible to provide adequate reinforcing, clearances, rebates and brackets for hardware specified and for accurate installation of door and hardware on site.

1.4.1.2. Field Measurements: verify existing opening dimensions. Indicate measurements on shop drawings.

1.4.2. Pre-Installation Meetings:

1.4.2.1. Hold meeting 1 week before beginning work of this Section on-site installation, with Contractor, Subcontractor, Owner in accordance with Section 01 10 00 – Project Administrative Requirements to:

1.4.2.1.1. Verify project requirements,

1.4.2.1.2. Review installation and substrate conditions,

1.4.2.1.3. Coordinate with other subcontractors, and

1.4.2.1.4. Review manufacturer's installation instructions and warranty requirements.

1.4.3. Sequencing: Comply with manufacturer's recommendations for sequencing construction operations.

1.5. ACTION AND INFORMATIONAL SUBMITTALS

1.5.1. Submittals in accordance with Section 01 10 00 – Project Administrative Requirements.

1.5.2. Product Data:

1.5.2.1. Submit manufacturer's instructions, product literature and data sheets for doors and frames and include product characteristics, performance criteria, physical size, finishes, and limitations.

1.5.2.1.1. Indicate exterior door and frame performance ratings to AAMA/WDMA/CSA 101/I.S.2/A440-08 - NAFS for Hamilton including positive design pressure, negative design pressure, water penetration resistance test pressure, and Canadian air infiltration and exfiltration level.

1.5.2.1.2. Submit list on aluminum door manufacturer’s letterhead of materials, components and accessories to be incorporated into Work.

1.5.2.1.3. Include product names, types and series numbers.

1.5.2.1.4. Include contact information for manufacturer and their representative for this Project.

1.5.2.2. Submit product data sheet for insulated glass unit (IGU) including performance characteristics of the IGU.

1.5.2.3. Submit WHMIS SDS.

1.5.3. Shop Drawings:

1.5.3.1. Submit drawings stamped and signed by Professional Engineer. Submit Shop Drawings for aluminum doors and frames. Include full-size, scaled details of components for each type of door and frame. Indicate:

1.5.3.1.1. Interior and exterior trim.

1.5.3.1.2. Connections with adjacent construction, including air and vapour membranes.

1.5.3.1.3. Connections between combination units.

1.5.3.1.4. Include details of fasteners between interior and exterior extrusions ensuring no penetration of thermal break or thermal bridging

1.5.3.1.5. Elevations of units.

1.5.3.1.6. Core thicknesses of components.

1.5.3.1.7. Type and location of exposed finishes, method of anchorage, number of anchors, supports, reinforcement, and accessories.

1.5.3.1.8. Type and location of exposed finishes.

1.5.3.1.9. Location of sealants.

1.5.3.1.10. Each type of door system including location.

1.5.3.1.11. Arrangement of reinforcing for hardware and joints.

1.5.3.1.12. Arrangement of hardware and required clearances.

1.5.3.1.13. Locations of manufacturer's nameplates.

1.5.3.1.14. Relation to adjoining work and location, construction and back-up,

1.5.3.1.15. Glazing and glass stop details,

1.5.3.2. Include catalogue details for each type of door illustrating profiles, dimensions and methods of assembly.

1.5.3.3. Clearly indicate materials used for every component on Shop Drawings.

1.5.4. Samples:

1.5.4.1. Submit duplicate sample sections of component parts of doors and glass, finished in specified colours. Ensure samples of extruded shapes are 300 mm (12") long; samples of each type of glass 300 mm (12") square.

1.5.5. Manufacturer Reports: Submit manufacturer's written Field Reports promptly after review, verifying compliance of work, as described in Part 3 of this Section.

1.5.6. Installer Qualifications: Submit letter verifying installer’s experience with work similar to work of this Section.

1.6. CLOSEOUT SUBMITTALS

1.6.1. Submit in accordance with Section 01 10 00 – Project Administrative Requirements.

1.6.2. Operation and Maintenance Data: Submit maintenance data for cleaning of aluminum finishes and maintenance of operable hardware, and incorporate into manual.

1.6.3. Warranty Documentation: Submit manufacturer's warranty documents.

1.7. QUALITY ASSURANCE

1.7.1. Qualifications:

1.7.1.1. Manufacturer: Obtain aluminum doors and frames from a single manufacturer.

1.7.1.2. Installers: Provide work of this Section executed by competent installers with minimum 5 years experience in the application of Products, systems and assemblies specified and with approval and training of the Product manufacturers.

1.7.1.3. Licensed Professionals: Employ a licensed engineer carrying minimum $2,000,000.00 professional liability insurance and is registered in the Province of Ontario.

1.7.2. Certifications: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics, and criteria and physical requirements.

1.7.3. Test and Evaluation Reports: Submit test reports from approved independent testing laboratories certifying compliance with specifications, for

1.7.3.1. Airtightness,

1.7.3.2. Watertightness,

1.7.3.3. Wind load resistance

1.7.3.4. Condensation resistance.

1.8. DELIVERY, STORAGE AND HANDLING

1.8.1. Delivery and Acceptance Requirements: Transport materials to site storage in a manner to prevent in-transit damage. These measures include, but are not limited to, crating, polyethylene wrapping system, etc.

1.8.2. Storage and Handling Requirements:

1.8.2.1. Material Handling: To AAMA CW-10.

1.8.2.2. Store in a dry, protected area on site, in original undamaged containers with manufacturer's labels and seals intact.

1.8.2.3. Comply with unpacking procedures as recommended by framing and glass manufacturers.

1.9. WARRANTY

1.9.1. Manufacturer Warranty: Warrant work of this Section for period of 5 years against defects and/or deficiencies in accordance with General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of Consultant and at no expense to Owner. Defects include but are not limited to; leakage in excess of the specified tolerances and limits, glass breakage, failure of insulating glass units and condensation in excess of the specified tolerances and limits (without limit to other defects which may become apparent).

1.9.2. Finish Warranty: 30-year warranty for prefinished coil-coated steel coating covering colour fading, peeling, chalking, cracking, and film integrity.

PART 2 - PRODUCTS

2.1. MANUFACTURERS

2.1.1. Manufacturer List: Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications:

2.1.1.1. Alumicor Limited; www.alumicor.com

2.1.1.2. Commdoor Aluminum; www.commdooraluminum.com

2.1.1.3. Kawneer Company Canada Limited; www.kawneer.com

2.1.1.4. Oldcastle Building Envelope®; www.ode.com

2.1.2. Basis of Design:

2.1.2.1. Exterior Door “500T Insulpour™” by Kawneer

2.1.2.2. Entrance framing: “Trifab® VersaGlaze® 601T Framing System” by Kawneer

2.1.3. Substitution Limitations:

2.1.3.1. Comparable Products from manufacturers listed will be considered.

2.1.4. Comparable Products from manufacturers not listed will be considered provided:

2.1.4.1. They are submitted in accordance with Section 01 10 00 – Project Administrative Requirements

2.1.4.2. Meet requirements of this Specification.

2.1.4.3. Acceptance by Owner.

2.2. PERFORMANCE/DESIGN CRITERIA

2.2.1. Description: Aluminum-framed, thermally broken swing door with glass. Thermally broken, aluminum-framed glazed storefront constructed from prefinished aluminum extrusions.

2.2.2. Design Criteria for Pair Doors:

2.2.2.1. Doors to comply with NAFS-08 for Hamilton.

2.2.2.2. Design aluminum components to CAN/CSA S157.

2.2.2.3. Air infiltration:

2.2.2.3.1. Exterior doors and frame: 1.0 cfm/ft^2 maximum to ASTM E283 at differential pressure across assembly of 75 Pa (1.57 psf).

2.2.2.3.2. Sidelites: 0.3 L/s/m^2 (0.63 cfm) maximum of wall area to ASTM E283 at differential pressure across assembly of 300 Pa (0.044 psi).

2.2.3. Thermal transmittance (U-factor): When tested to AAMA Specification 1503, the thermal transmittance (U-factor) shall not be more than: 0.53 Btu/(hr·ft2·°F) per NFRC 100.

2.2.4. Water infiltration through sidelites: None to ASTM E331 at a minimum static air pressure differential of 8 psf (383 Pa) as defined in AAMA 501.

2.2.5. Design Criteria for Storefront Framing:

2.2.5.1. Aluminum-framed storefront to withstand dead and live loads caused by pressure and suction of wind, acting normal to plane of wall using design pressure of 0.95 kPa (20 psf) to ASTM E330.

2.2.5.2. Design aluminum-framed storefront system for expansion and contraction caused by cycling temperature range of 95 degrees C (171 degrees F) over 12 hour period without causing detrimental effect to system components.

2.2.5.3. Thermal expansion: Ensure aluminum-framed storefront system can withstand temperature differential of 85 degrees C (153 degrees F) and is able to accommodate interior and exterior system expansion and contraction without damage to components or deterioration of seals.

2.2.5.4. Design vertical expansion joints with baffled overlaps and compressed resilient air seal laid between mullion ends.

2.2.5.5. Ensure system is designed to accommodate:

2.2.5.5.1. Movement within aluminum-framed storefront assembly.

2.2.5.5.2. Movement between system and perimeter framing components.

2.2.5.5.3. Dynamic loading and release of loads.

2.2.5.5.4. Deflection of structural support framing.

2.2.5.5.5. Shortening of building concrete structural columns.

2.2.5.5.6. Creep of concrete structural members.

2.2.5.6. Limit mullion deflection to flexure limit of glass 19 mm (0.75 inches) or L/240 maximum with full recovery of glazing materials.

2.2.5.7. Sound attenuation through wall system (exterior to interior): STC 33 to ASTM E413.

2.2.5.8. Ensure no vibration harmonics, wind whistles, noises caused by thermal movement, thermal movement transmitted to other building elements, loosening, weakening, or fracturing of attachments or components of system occur.

2.2.5.9. Reinforce aluminum-framed storefront system where necessary.

2.2.6. Include continuous air barrier and vapour retarder through system, primarily in line with inside pane of glass and heel bead of glazing compound.

2.2.7. Evidence of performance requirements failure includes:

2.2.7.1. Deflection exceeding specified limits.

2.2.7.2. Structural framing members transferring stresses to glazing.

2.2.7.3. Noticeable noise or vibration created by wind or thermal movements.

2.2.7.4. Loosening of fasteners and components.

2.2.7.5. Sealant failure.

2.2.7.6. Operating components not functioning properly.

2.2.7.7. Failure of other specified requirements.

2.3. MATERIALS

2.3.1. Extruded aluminum: To ASTM B221, 6063 alloy with T5 temper.

2.3.2. Sheet aluminum: To ASTM B209, utility grade for unexposed surfaces, anodizing quality for exposed surfaces.

2.3.3. Thermal Barrier: Shall be IsoPour™ utilizing two continuous rows of polypropylene with a nominal 7/32" (5.5 mm) separation that consists of a two-part, chemically curing high density polyurethane which is mechanically and adhesively bonded to the aluminum at door rails and stiles.

2.3.4. IGU Components:

2.3.4.1. Spacer:

2.3.4.1.1. Thermoplastic with integrated desiccant, Basis of Design: Viracon Thermal Spacer (VTS™)“ by Viracon. Colour: black. Thickness as required. Equivalent products from other listed fabricators will be considered.

2.3.4.1.2. Secondary seal: silicone.

2.3.4.1.3. Identification Number (VIN) to be laser printed onto spacers. Each VIN code to provide the following information: insulating glass unit’s thickness, size, substrate, print, heat treatment and manufacture date.

2.3.4.2. Interspace fill for IGU: 90% Argon gas 10% air.

2.3.4.3. Exterior Lite:, 6 mm fully tempered

2.3.4.4. Surface 2: Low E

2.3.4.5. Interior Lite: 6 mm laminated

2.3.4.6. Overall thickness: 25 mm

2.3.4.7. Performance:

2.3.4.7.1. VLT: 72%

2.3.4.7.2. Visible Light Reflectance:

2.3.4.7.2.1. Exterior: 15%

2.3.4.7.2.2. Interior: 15%

2.3.4.7.3. SHGC: 0.36 maximum

2.3.4.7.4. Winter U-value: 0.24 BTU/hr ft^2 F maximum

2.3.4.7.5. Summer daytime U-Factor: 0.21 Btu/hr ft^2°F maximum

2.3.4.7.6. Shading Coefficient: 0.41 maximum

2.3.4.7.7. Outdoor Visible Light Reflectance: 15 % maximum

2.3.4.7.8. Colour Rendering Index: 98

2.3.5. Glazing Gaskets:

2.3.5.1. Manufacturer's standard compression types

2.3.5.2. Replaceable, extruded EPDM rubber

2.3.6. Spacers and Setting Blocks: Manufacturer's standard elastomeric type

2.3.7. Sealant: Multi-component conforming to ASTM C920, Type M, Grade NS for sealant to be incorporated between aluminum framing and adjacent structures. Colours later selected by Consultant from standard colour selection. Supply non-hardening, non-skimming, non-sagging, non-bleeding polyisobutylene or partially vulcanized rubber base sealant for use in concealed-sealing of thin joints in metal work.

2.4. HARDWARE

2.4.1. Refer to the door hardware specifications

2.5. ACCESSORIES

2.5.1. Screws, Bolts and Fasteners: Self tapping cadmium plated steel for aluminum to aluminum contact and stainless steel for aluminum to steel contact.

2.5.2. Anchors: 3-way adjustable type that accommodate fabrication and installation tolerances.

2.5.3. Steel Reinforcements and Anchors: Conforming to Section 05 50 00 – Metal Fabrications.

2.5.4. Dielectric Separator: Provide best grade, quick drying non-staining alkali resistant bituminous paint or epoxy resin solution or membrane type to acceptance of Consultant.

2.5.5. Compressible Filler: Supply "Unifoam R1009" by Goodco Limited.

2.5.6. Temporary Strips and Safety Markings: Supply 25 mm (1") wide, light reflecting, easily removable, pressure sensitive tape applied over glass lites in doors.

2.6. FABRICATION - GENERAL

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

2.6.2. Fabricate aluminum assemblies of extruded sections to sizes and profiles indicated.

2.6.2.1. Ensure stiles and rails are tubular extrusions designed for mechanical shear block fastening in combination with SIGMA deep penetration plug welds and fillet welds at all stile/rail connections.

2.6.3. Construct doors square, plumb and free from distortion, waves, twists, buckles or other defects detrimental to performance or appearance.

2.6.4. Fabricate doors and frames with hardware installed to maximum extent practical.

2.6.5. Provide structural steel reinforcement as required.

2.6.6. Fit joints tightly and secure mechanically. Reinforce mechanically-joined corners of doors to produce sturdy door unit. Fabricate framing members with straight profiles, without distortions or defects and with mitered or coped corners.

2.6.7. Framing systems to allow condensation occurring within framing to migrate to the exterior.

2.6.8. Conceal fastenings, except where Consultant has accepted visible fastener locations that are unavoidable.

2.6.9. Mortise, reinforce, drill, and tap doors, frames and reinforcements to receive hardware.

2.6.10. Fabricate doors and frames complete with necessary internal reinforcements, cutouts, recesses, mortising or milling operations required for a rigid assembly and to accommodate door hardware. Ensure connections have adequate strength.

2.6.11. Fabricate frames with joints accurately fitted and securely joined together in a manner to ensure tightly fitting joints. Internally caulk and seal corners of frames and joints exposed to water penetration using a material compatible to resist flow at the high surface summer temperatures to be experienced by the metal.

2.6.12. Locate operating devices (e.g., handles, pulls, latches, and locks) mounted between 900 mm and 1100 mm from the floor.

2.6.13. Form sections true to detail, free from defects impairing appearance, strength and durability.

2.6.14. Ensure frames are tubular extruded shapes with sharp, well defined corners.

2.6.15. Ensure overall assembled profiles are as detailed on Drawings.

2.6.16. Corners of formed work must be mitred and closely fitted. Apply back-up sealants designed for this purpose on inside of joints in aluminum work by this Section.

2.6.17. Carry out welding with argon shielded electric arcs to ensure complete fusion of the metal.

2.7. FABRICATION - DOORS

2.7.1. Ensure aluminum doors have bevelled glazing beads designed for neoprene glazing system; except at exterior doors with glass lites, use glazing system compatible with secondary sealant of the glass unit.

2.7.2. Equip doors with full weatherstripping at perimeter. Install weatherstripping throughout full length and width of doors at jambs and heads.

2.7.3. Exterior Doors:

2.7.3.1. Door Thickness: 50.8 mm (2 inches).

2.7.3.2. Stile width: 127 mm (5.00 inches).

2.7.3.3. Top rail: 127 mm (5.00 inches).

2.7.3.4. Centre rail: 214.3 mm (8 7/16 inches).

2.7.3.5. Bottom rail: 304.8 mm (12 inches)

2.7.3.6. Wall Thickness: 3.2 mm (1/8 inch)

2.8. FABRICATION - ENTRANCE FRAMING

2.8.1. Fabricate aluminum assemblies of extruded sections to sizes and profiles indicated.

2.8.1.1. Ensure verticals and horizontals are extrusions designed for shear block or screw spline corner construction.

2.8.2. Construct units square, plumb and free from distortion, waves, twists, buckles or other defects detrimental to performance or appearance.

2.8.3. Fabricate aluminum-framed storefront with minimum clearances and shim spacing around panel perimeter and ensure installation and dynamic movement of perimeter seal is enabled.

2.8.4. Accurately fit and secure joints and corners.

2.8.4.1. Ensure joints are flush, hairline, and weatherproof.

2.8.5. Prepare aluminum-framed storefront to receive anchor devices.

2.8.6. Prepare components to receive doors and openings as indicated.

2.8.7. Framing: 114.3 mm (4 1/2 inches) deep x 50.8 mm (2 inches) wide profile.

2.9. FINISHES

2.9.1. Clear Anodized Finish: Ensure aluminum finish is clear anodized in accordance with Aluminum Association; www.aluminum.org, Finish Designation AA-M12C22A41, Class I, minimum 0.018 mm (0.7 mils) thick for exterior exposure and AA-M12C22A31, Class II, minimum 0.01 mm (0.4 mils) thick for interior exposure.

2.9.2. Organic Finish: (3 Coat Wet System (primer/colour coat/clear coat)) including thermal setting application of 70% fluoropolymer resin minimum, PVDF with added colour pigment finish exceeding or meeting AAMA 2605 requirements. Ensure fluoropolymer baked resins form a continuous physically locked finish during manufacturing process. Apply fluoropolymer finish after multistage chemical treatment cleaning providing corrosion resistance surface ready to receive primer. During baking process apply primer in accordance with manufacturer's recommendations followed by a flash process whereby evaporating solvent and then fluoropolymer finish sprayed on to aluminum; apply another flash procedure and then bake for approximately 10 minutes when aluminum surface reaches a temperature of 232 deg C (450 deg F). Acceptable Product: "Duranar XL" by PPG Industries; www.ppgideascapes.com with following characteristics:

Description	Performance Characteristics
Coating Thickness:	0.0063 mm +/-0.0013 mm (0.25 +/-0.05 mils) primer 0.025 mm (1.0 mil) min barrier coat (if applicable) 0.025 mm (1.0 mil) min colour coat 0.015 mm +/-0.0005 mm (0.6 +/-0.02 mil) clear top coat
Pre-Treatment:	Multi-Stage Cleaning with Chemical Conversion Coating
Gloss (ASTM D523 @ 60°):	Medium gloss
Pencil Hardness (ASTM D3363):	F minimum
Abrasion Resistance Falling Sand (ASTM D968):	50 l/ml
Acid Resistance 10% Muriatic Acid Spot Test:	15 minutes - no attack

Colour Retention 10 yrs, 45° South Florida (ASTM D2244):	ΔE <5.0
Humidity Resistance: ASTM D714, ASTM D2247,4000 hrs, 100% R.H. @ 100°F:	Few #8 blisters maximum
Salt Spray Resistance:ASTM B117, 4000 hrs 5% NaCl @ 100°F:	1/16” maximum undercutting
Chalking Resistance 10 yrs, 45° South Florida (ASTM D4214):	No more than #8 (#6 for Whites)
Erosion Resistance: 10 yrs, 45° South Florida(ASTM B244):	Maximum 5%

PART 3 - EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions: Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation.

3.1.2. Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2. INSTALLATION

3.2.1. Install exterior aluminum doors and frames to CAN/CSA A440.4.

3.2.2. Frames:

3.2.2.1. Set frames plumb, square, and level at correct elevation in alignment with adjacent work and without warp or racking.

3.2.2.2. Anchor frames securely and rigidly.

3.2.2.3. Permanently isolate aluminum from direct contact with dissimilar metals, concrete, and masonry.

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

3.2.2.5. Co-ordinate attachment and seal of perimeter vapour retarder in accordance with Section 07 25 00 – AVWRB Weather Barriers.

3.2.2.6. Install liquid foam insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

3.2.3. Doors:

3.2.3.1. Install doors plumb, square, level, free from warp, twist and superimposed loads.

3.2.3.2. Secure work adequately and accurately to structure in required position, in a manner not restricting thermal movement.

3.2.3.3. Provide compressible filler over aluminum work at locations shown on Drawings.

3.2.3.4. Install doors complete with finish hardware supplied by hardware supplier, in accordance with templates supplied by same.

3.2.3.5. After installation of hardware, have hardware supplier check operation of hardware. Do readjustments as required.

3.2.3.6. Use aluminum or stainless steel screws, nuts, bolts, washers, rivets and other fastening devices, colour to match doors and frames where exposed to view.

3.2.4. Glazing:

3.2.4.1. Use extruded gaskets for door glazing and of type compatible with secondary sealant in insulating glass unit locations.

3.2.4.2. Thoroughly wipe surfaces receiving glazing materials with a cloth dampened in xylol to assure a clean surface.

3.2.4.3. Place setting blocks at quarter points from each corner, centre sealed unit in opening and press firmly against tape. Provide isolation tape at edges of laminated glass to prevent staining of interply plastic from glazing materials. Roll-in inside resilient extrusion.

3.2.5. Caulking: At interior and exterior joints between aluminum framing and adjacent work of others execute following work:

3.2.5.1. Install backer rod over compressible filler material or perimeter blocking to provide sealant joints of proper form, thickness to width ratios and bond break at back side of sealant. Where backer rod cannot be used or is not shown provide bond breaker tape to back side of sealant joint substrate.

3.2.5.2. Clean substrate surfaces where sealant is to bond and apply sealant primers as recommended by sealant manufacturer.

3.2.5.3. Caulk joints continuous to produce weatherproof and visually acceptable joint installation.

3.3. TOLERANCES

3.3.1. Site Installation Tolerances:

3.3.1.1. Variation from plumb: 12 mm per 30 m (0.5 inches per 100 feet) maximum.

3.3.1.2. Misalignment of two adjacent panels or members: 0.8 mm (0.03 inches) maximum.

3.3.1.3. Sealant space between aluminum-framed storefront and adjacent construction: 13 mm (0.5 inches) maximum.

3.4. SITE QUALITY CONTROL

3.4.1. Manufacturer Services: Provide manufacturer's site services consisting of periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

3.4.1.1. Have manufacturer of products of this Section review work involved in handling, installation, protection, and cleaning of its products, and submit written reports in acceptable format to verify compliance of this Section.

3.4.1.2. Submit manufacturer’s written reports to Consultant describing:

3.4.1.2.1. The scope of work requested.

3.4.1.2.2. Date, time and location.

3.4.1.2.3. Procedures performed.

3.4.1.2.4. Observed or detected non-compliances or inconsistencies with manufacturers’ recommended instructions.

3.4.1.2.5. Limitations or disclaimers regarding the procedures performed.

3.4.1.2.6. Obtain reports within seven days of review and submit immediately to Consultant.

3.4.1.3. Schedule manufacturer's review of work procedures at stages listed:

3.4.1.3.1. Product Application: 1 off site review.

3.4.1.3.2. Fabrication and Handling: 1 review at authorized installers fabrication facilities.

3.4.1.4. Schedule of Site Visits:

3.4.1.4.1. After delivery and storage of products, when preparatory work of this Section is complete, but before frame installation begins.

3.4.1.4.2. During progress of work at 50% completion.

3.4.1.4.3. Upon completion of work, after cleaning carried out.

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

3.5. CLEANING

3.5.1. Maintain aluminum work in a clean condition throughout construction period, so it will be without deterioration or damage at time of acceptance. Select methods of cleaning which will promote achievement of uniform appearance and stabilized colours and textures for materials that weather or age with exposure.

3.5.2. Immediately before time of Substantial Performance, clean aluminum work thoroughly, inside and out. Demonstrate proper cleaning methods to Owner during this final cleaning. Prepare a "Cleaning and Maintenance Manual" listing types of cleaning compounds, cleaning methods, sealants and glazing materials of the work and submit 2 copies to Consultant.

3.5.3. Remove protective covering and coating from aluminum surfaces, inside and out and clean surfaces, remove labels, stripes and protective devices and polish glass surfaces, immediately prior to final acceptance of the work by Consultant.

3.6. PROTECTION

3.6.1. Protect the work of this Section from damage. Protect work of other trades resulting from the work of this Section.

3.6.2. Provide at factory, strippable coatings on exposed surfaces of aluminum. Ensure coating and protective wrappings remain on surfaces through period other trades' works proceed on the building and removed by this trade on completion of building.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

1.1.1. Section Includes:

1.1.1.1. Testing and preparation of substrate for installation of flooring.

1.1.1.2. Moisture vapour control topping.

1.1.2. Related Sections: Following description of work is included for reference only and shall not be presumed complete:

1.1.2.1. Filling of major holes, crack repairs, patching chases and trenches in concrete substrate Flatness and levelness requirements for floor to receive resilient sheet flooring: Section 03 01 30 – Repairs to Concrete.

1.1.2.2. Vinyl flooring: Section 09 65 19 – Resilient Tile Flooring

1.2. ADMINISTRATIVE REQUIREMENTS

1.2.1. Coordination:

1.2.1.1. Coordinate preparation of concrete flooring with installation of flooring materials. Ensure that proposed materials are compatible and will achieve correct results.

1.2.1.2. Determine acceptable limits for moisture vapour emissions, and pH with each of the finish flooring manufacturers.

1.2.1.3. Schedule surface preparation work with the concrete trade and flooring installation trade.

1.2.2. Preinstallation Meeting:

1.2.2.1. Prior to start of concrete work, arrange for Project site meeting of all parties associated with work of this Section, including Contractor, various flooring installers, and concrete finisher in accordance with Section 01 10 00.

1.2.2.2. Review Specification for work included under this Section and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials, materials to be used, installation of materials, sequence and quality control, Project staffing, restrictions flooring installation and other matters affecting construction, to permit compliance with intent of this Section. Ensure Division 03 requirements for concrete are compatible with requirements of this Section; floor flatness and floor levelness requirements for various floor finishes and their acceptability by flooring manufacturer; surface texture of finished floor required for various floor finishes; acceptable approaches to remediation of high moisture and high pH floors; adhesive application and floor covering installation.

1.3. SUBMITTALS

1.3.1. Product Data Sheets:

1.3.1.1. Submit product data sheets for all products proposed for use in this Section.

1.3.1.2. Submit WHMIS Safety Data Sheets for each product.

1.3.2. Shop Drawing: submit floor plan showing the locations of all field testing of concrete floors.

1.3.3. Test and Evaluation Reports:, submit field test reports from recognized approved independent testing laboratory for following requirements:

1.3.3.1. Submit letters of acceptance from each manufacturer of flooring products specified in related Sections that the combination of products and methods used in the overall flooring preparation and installation are compatible and appropriate for their intended application.

1.3.3.2. Submit moisture vapour emissions testing for all concrete floor areas.

1.3.3.3. Submit calcium chloride test results in accordance with requirements specified herein.

1.3.3.4. Submit pH test results and verify their acceptability to resilient sheet flooring manufacturer in accordance with requirements specified herein.

1.4. CLOSEOUT SUBMITTALS

1.4.1. Update floor plan shop drawing with notes to confirm field testing locations and final test readings.

1.5. QUALITY ASSURANCE

1.5.1. Qualifications:

1.5.1.1. Field Testing Inspectors: Independent 3rd party inspectors with minimum three years experience with concrete testing.

1.5.1.2. Installers: Provide work of this Section executed by competent installers with minimum of 5 years experience in concrete preparation and application of concrete Products specified.

1.6. DELIVERY, STORAGE AND HANDLING

1.6.1. Delivery and Acceptance Requirements:

1.6.1.1. Deliver materials in good condition to site in manufacturer's original unopened containers that bears name and brand of manufacturer, Project identification, shipping and handling instructions.

1.7. SITE CONDITIONS

1.7.1. Ambient Conditions:

1.7.1.1. Maintain appropriate environmental conditions and protect work during and after installation. Comply with trade standards and manufacturer's Product instructions. Follow Product MSDS and label instructions concerning safety, health and other related precautionary and environmental protection.

1.7.1.2. Maintain relative humidity in accordance with manufacturer's instructions.

1.7.1.3. Exhaust temporary heaters to building exterior to prevent health hazards and damage to work from toxic fumes and emanations.

1.7.1.4. Maintain ambient air temperature and temperature of floor covering areas at not less than 10 deg C (50 deg F) or more than 29 deg C (85 deg F) 48 hours before, during installation and for 48 hours after application unless otherwise required in Product instructions.

1.8. WARRANTY

1.8.1. Manufacturer Warranty: Warrant work of this Section for period of 25 years against defects and/or deficiencies in accordance with General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, at no expense to Owner.

1.8.2. Defects include but are not limited to; failure of floor finish remaining in place and bonding to structural slab and finish becoming defective and spalling and/or cracking.

PART 2 - PRODUCTS

2.1. MANUFACTURERS

2.1.1. Manufacturer List: Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications:

2.1.1.1. Ardex Canada, Inc.; www.ardex.ca

2.1.1.2. Flextile Ltd.; www.flextile.net

2.1.1.3. Laticrete International, Inc.; www.laticrete.com

2.1.1.4. Mapei Corporation; www.mapei.ca

2.2. MATERIALS

2.2.1. Concrete Moisture Emission Reducer: Characteristics, performance requirements:

2.2.1.1. Epoxy cement, compliant with ASTM F3010.

2.2.1.2. Antimicrobial additive

2.2.1.3. Reduce the moisture vapour emission rate of concrete slabs ≤ 3 lbs. per 1,000 ft^2 per 24 hours.

2.2.1.4. Reduce the surface alkalinity of concrete slabs down to pH levels of 9

2.2.1.5. Provide 1 of following:

2.2.1.5.1. “Planiseal™ VS” by Mapei Corporation.

2.2.1.5.2. “Sikafloor® 81 EpoCemCA” by Sika Canada Inc.

2.2.1.5.3. “Ardex MC Rapid” by Ardex Canada

2.2.2. Primer:

2.2.2.1. Provide 1 of following:

2.2.2.1.1. “4040 Acrylic Primer” by Flextile Ltd except where epoxy moisture mitigation systems.

2.2.2.1.2. “Primer X” by Mapei Corporation

2.2.2.1.3. “Sikafloor 155 WN” by Sika Canada

2.2.2.1.4. “Ardex P4” by Ardex Canada

PART 3 - EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions for New Concrete:

3.1.1.1. Ensure new concrete slab has been properly cured and dry for minimum of 28 Days and has reached minimum compressive strength of 25 MPa (3625 psi) and a minimum of 1.5 MPa (218 psi) in tension.

3.1.1.2. Ensure no curing and sealing compounds, hardeners or other chemical additives have been used on concrete.

3.1.1.3. Notify Consultant in writing of any conditions which would be detrimental to the installation.

3.2. TESTING FOR ALL CONCRETE FLOORS:

3.2.1. Conduct concrete testing on all concrete floors prior to application of moisture vapour control topping and following corrective work.

3.2.2. Moisture Vapour Testing:

3.2.2.1. Perform calcium chloride test no earlier than 28 Days after concrete has been placed in accordance with requirements of ASTM F1869 for new and existing concrete floors, and in-situ probe RH testing in accordance with ASTM F2170 for new concrete prior to installation of flooring material.

3.2.2.2. Conduct 3 tests for each of the RH test methods for first 93 m2 (1000 sq ft) and 1 additional test for every 93 m² (1000 sq ft) of flooring. Ensure moisture emission from concrete floor does not exceed 2.27 kg/93 m² (5 lbs/1000 sq ft) in 24 hours or has a maximum RH of 80%.

3.2.2.3. Provide results to Consultant prior to commencement of installation including diagram of area tested showing location of each moisture test.

3.2.2.4. When concrete moisture emission rate is between 2.27 kg/93 m² (5 lbs/1000 sq ft) and 6.79 kg/93 m² (15 lbs/1000 sq ft) and in 24 hours use a concrete moisture emission reducer.

3.2.2.5. Do not proceed with installation until moisture problem has been corrected.

3.2.3. Alkalinity Testing (pH):

3.2.3.1. Measure pH of concrete in accordance with ACI PRC-364.17: How to Measure pH of a Concrete Surface Prior to Installation of a Floor Covering.

3.2.3.2. Perform pH test no earlier than 28 Days after concrete has been placed to ensure alkali salt residue is within limitation acceptable to manufacturer and to avoid adhesive failure, discoloration, shrinkage and softening of floor covering. If pH results are higher than 9.0, report to Consultant, Contractor or Owner for investigation and remedial work.

3.2.3.3. Perform at least three pH tests must be performed for the first 93 m² (1,000 square feet) of space. One additional test should be performed for each additional 93 m² (1,000 square feet 0 thereafter.

3.2.3.4. Refer to manufacturer for ways to neutralize floor prior to beginning of installation. Neutralize by sanding, vacuuming and/or by water plus mild sulfuric or sulfamic acid application as recommended by manufacturer.

3.2.3.5. Retest to assure pH has been neutralized.

3.2.4. Capillary Moisture Testing:

3.2.4.1. Moisture content of concrete substrate must be ≤ 4 % by mass (PBW – part by weight) as measured with a Tramex®CME / CMExpert type concrete moisture meter.

3.2.4.2. Before proceeding with application, test surfaces for moisture content in accordance with ASTM D4263 and in consultation with manufacturer to ensure they are suitable for application.

3.2.4.3. Provide all test results to Consultant prior to commencement of installation including diagram of area tested showing location of each moisture test, alkalinity test and capillary moisture test.

3.2.5. Evaluation and Assessment:

3.2.5.1. Report all testing results to manufacturer's representative and submit written acceptance of these results approval before proceeding.

3.2.5.2. Commencement of work implies acceptance of previously completed work.

3.3. SURFACE PREPARATION

3.3.1. For all new and existing concrete floor areas:

3.3.1.1. Prepare existing and new concrete floors over entire area with steel shot blasting or other method recommended by manufacturer. Remove uneven joints, rough areas, foreign and

projection off surfaces. Surface to be hard, sound and roughened to irregular surface with weak concrete removed and surface holes and voids exposed. Equip dry blasting machine with vacuum to minimize dust.

3.3.1.2. Shot blast floor to remove soft material and to achieve a profile equivalent to ICRI / CSP 3 – 4.

3.3.1.3. Shot blast to expose cracks in concrete surface. For cracks lesser than 1.5 mm (1/16") employ crack reinforcing tape in accordance manufacturer's recommendations. Repair cracks, holes or other deficiencies in accordance with manufacturer's recommendations.

3.3.1.4. Blow clean control joints, sawcuts and cracks with compressed air.

3.3.1.5. Prepare concrete floors to receive sheet flooring in accordance with requirements of ASTM F710. Achieve CSP of #2 - #3. Consult individual manufacturer for their specific recommendations and follow them as required.

3.4. MOISTURE BARRIER APPLICATION

3.4.1. If moisture levels exceed acceptable limit, apply moisture emission reducer in accordance with ASTM F710 and ASTM F3010.

3.4.2. Follow manufacturer's recommendations to determine whether cracks are filled before or after application of moisture barrier cement.

3.4.3. Mix moisture barrier in accordance with manufacturer's printed instructions.

3.4.4. Material components minimum 15°C (60°F) at time of mixing.

3.4.5. Apply coating using roller to achieve thickness as per manufacturer's instructions. Allow to cure.

3.4.6. Apply second coat of moisture barrier coating, dry film thickness of 12.8 mils. Allow to cure.

3.4.7. Re-test for moisture vapour emission and pH level.

3.5. CLEANING

3.5.1. Remove excess adhesive from floor, base and wall surfaces without damage.

3.5.2. Clean floor and base surface to flooring manufacturer's instructions.

3.6. PROTECTION

3.6.1. Protect installed flooring as recommended by flooring manufacturer against damage from rolling loads, other trades or placement of fixtures and equipment.

3.6.2. Prohibit foot traffic on floor for 24 hours after installation. Prohibit heavy traffic, rolling loads and furniture or appliance placement for a minimum of 72 hours after installation.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

1.1.1. Section Includes: Provide gypsum board assemblies work including but not limited to following:

1.1.1.1. Gypsum board ceilings, partitions and repairs to existing gypsum board.

1.1.1.2. Corner beads, casing beads, trim, control joints and corner reinforcement.

1.1.1.3. Taping and filling.

1.1.1.4. Sound attenuation batts.

1.1.1.5. Installation of access doors, and panels supplied by other Sections in gypsum board walls and ceilings as required.

1.2. QUALITY ASSURANCE

1.2.1. Qualifications:

1.2.1.1. Installers: Provide work of this Section executed by competent installers with minimum 5 years experience in the application of Products, systems and assemblies specified and with approval and training of the Product manufacturers.

1.3. DELIVERY, STORAGE AND HANDLING

1.3.1. Storage and Handling Requirements:

1.3.1.1. No outside storage permitted. Store in clean, dry area, off ground. Provide adequate ventilation to avoid excess moisture, surface relative humidity and mould or fungal growth. Remove immediately any board showing signs of mould, mildew or fungal growth.

1.3.1.2. Stack gypsum board flat on level and dry surface without overhanging boards. Prevent sagging and damage to edges, ends and surfaces. Protect bagged Products from moisture or wetting.

1.4. SITE CONDITIONS

1.4.1. Ambient Conditions:

1.4.1.1. Do not install work of this Section in any area unless satisfied that work in place has dried out and that no further installation of materials requiring wetness, moisture or dampness is contemplated. Ensure relative humidity in area of work of this Section does not exceed 55% for duration of Project.

1.4.1.2. Ensure temperature of surrounding areas is min 13 deg C (55 deg F) and max 21 deg C (70 deg F) for 7 Days before and during application of gypsum board; maintain for 4 Days thereafter. Ensure heat is provided at appropriate time before work has started to bring surrounding and adjacent materials up to required temperature and maintained as specified. Avoid concentrated or irregular heating during drying by means of deflectors or protective screens.

1.4.1.3. Ensure ventilation is provided for proper drying of joint filler and adhesive and to prevent excessive humidity. Do not force dry adhesives and joint treatment.

PART 2 - PRODUCTS

2.1. MANUFACTURERS

2.1.1. Manufacturer List: Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications:

2.1.1.1. Bailey Metal Products Ltd.; www.bmp-group.com

2.1.1.2. CertainTeed Corporation; www.certainteed.com

2.1.1.3. CGC Inc; www.cgcinc.com

2.1.1.4. Georgia-Pacific Canada, Inc.; www.gpgypsum.com

2.1.1.5. Johns Manville; www.jm.com

2.1.1.6. Roll Formed Specialty; www.rollformed.com

2.1.1.7. Trim-Tex Inc.; www.trim-tex.com

2.2. GYPSUM BOARD

2.2.1. Gypsum Board: Conforming to ASTM C1396/C1396M. Unless indicated otherwise use 1200 mm (4') wide standard facing board in maximum continuous lengths up to 3600 mm (12'), beveled and/or tapered edges to suit design requirements with butted square ends:

2.2.1.1. Gypsum Board (Walls): Provide 15.9 mm (5/8") thick with tapered edges unless otherwise specified as follows:

2.2.1.1.1. Provide 9.5 mm (3/8") thick gypsum board on curved walls.

2.2.1.2. Gypsum Board (Ceiling): Provide 15.9 mm (5/8") thick with tapered edges unless otherwise specified as follows:

2.2.1.2.1. Use anti sag sheets.

2.2.2. Moisture Resistant Gypsum Board: ASTM C1658/C1658M, glass mat faced, silicone treated core gypsum board, ASTM D3273 with a rating of 10, no mould growth after 4 weeks exposure, 12.7 mm (1/2") or Type X, 15.9 mm (5/8"). Acceptable products:

2.2.2.1. "DensArmor Plus® High Performance Interior Panel" by Georgia-Pacific Canada, Inc.

2.2.2.2. "CGC Sheetrock® Brand Glass-Mat Panels Mold Tough®" by CGC Inc.

2.2.3. Fire Rated Gypsum Board having Testing Agency Fire Rating Identification Stamp on Each Sheet: ASTM C1396/C1396M, Type X, 12.7 mm (1/2") and/or 15.9 mm (5/8") thick gypsum board 1200 mm (4') wide, maximum practical length and tapered edge as required by each fire resistance assembly. Acceptable products:

2.2.3.1. "Gyproc Fireguard Type X or Type C" by Georgia-Pacific Canada, Inc.,

2.2.3.2. "CGC Sheetrock Firecode X or Firecode C" by CGC Inc.

2.2.3.3. "ProRoc Type X or Type C" by CertainTeed Corporation.

2.2.4. Gypsum Board Tile Backer Board: ASTM C1178/C1178M, glass mat faced, water-resistant gypsum core board, with a rating of 10 in accordance with ASTM D3273, no mould growth after 4 weeks exposure, 15.9 mm (5/8") thick plain or Type X;. Acceptable products:

2.2.4.1. "DensShield® Tile Backer" by Georgia-Pacific Canada, Inc.

2.2.4.2. "Durock® Glass-Mat Tilebacker" by CGC Inc.

2.2.4.3. "GlasRock® Diamondback® Tile Backer" by CertainTeed Corporation.

2.2.5. Abuse Resistant Gypsum Board: Provide 1 of following:

2.2.5.1. Enhanced gypsum core encased in heavy duty paper facers on front and back, 15.9 mm (5/8"), conforming to ASTM C1396/C1396M and attaining a maximum of 0.014" as tested to ASTM D4060 (H-18 abrasion wheel, 500 grams, 200 cycles), a maximum of 0.123" indentation as tested to ASTM D5420 (72 in lbs) and a minimum of (133 ft lbs) as tested to ASTM E695 (50 lb bag) and ASTM C1629/C1629M Type X in fire rated assemblies. Acceptable products:

2.2.5.1.1. “Extreme Abuse with M2Tech” by CertainTeed Corporation

2.2.5.1.2. “CGC Sheetrock® Brand Mold Tough® AR Firecode Core” by CGC Inc.

2.2.5.2. Enhanced gypsum core encased in fibreglass facers on front and back, 15.9 mm (5/8"), conforming to ASTM C1396/C1396M and attaining a maximum of 0.014" as tested to ASTM D4060 (H-18 abrasion wheel, 500 grams, 200 cycles), a maximum of 0.123" indentation as tested to ASTM D5420 (72 in lbs) and a minimum of (133 ft lbs) as tested to ASTM E695 (50 lb bag) and ASTM C1629/C1629M Type X in fire rated assemblies. Acceptable products:

2.2.5.2.1. “DensAmor Plus® Abuse Guard” by Georgia-Pacific Canada, Inc.

2.2.5.2.2. “Sheetrock Mold Tough Glass Mat Abuse Resistant” by CGC Inc.

2.3. FASTENERS

2.3.1. Screws for Sheet Steel Members: ASTM C954, self-drilling, self-tapping gypsum board screws, 25 mm (1") long #6 for single layer application, 41 mm (1-5/8") long #7 for double layer application and as follows:

2.3.1.1. For single layer application over steel framing; self-drilling, self-tapping, case hardened, No. 6 contoured Phillips head or Type S bugle head, sized for minimum 15.9 mm (5/8") penetration into steel framing. Ensure fasteners are corrosion resistant. Use drill point screws for abuse resistant gypsum fibre panels.

2.3.1.2. For double layer application over gypsum backing board and existing gypsum board; 38 mm (1-1/2") Type G bugle head. For each additional layer of board, increase length of fasteners proportionally.

2.3.2. Screws; for exterior sheathing board: in accordance with manufacturer’s installation instructions to comply with design wind loads.

2.3.3. Laminating Compound: Asbestos-free, as recommended by manufacturer. Manufacturer's standard, multi-purpose construction adhesive. At fire-rated construction, use adhesive which conforms to that used in applicable fire tests. Acceptable products:

2.3.3.1. “Sheetrock Brand Laminating Compound” by CGC Inc.,

2.3.3.2. “Dehydratine 9T” by Grace Construction Products

2.3.3.3. “Stangard Foamastic” by Standard Chemicals Ltd.

2.4. JOINT TREATMENT MATERIALS

2.4.1. Joint Tape: Conforming to ASTM C475/C475M, provide following:

2.4.1.1. Regular Gypsum Board: Use kraft paper joint tape with feathered edges and minute perforations 50 mm (2") wide.

2.4.1.2. Moisture Resistant Gypsum Board or Cement Board: Use glass fibre tape only, open weave, with pressure sensitive adhesive 1 side. Acceptable products:

2.4.1.2.1. “Durock Cement Board Tape” by CGC Inc.

2.4.2. Joint Fillers and Topping Compound: Either slow or fast setting, low shrinkage type free of asbestos fillers and as recommended by manufacturer. Use “Gyproc 90" by Georgia-Pacific Canada, Inc. or “Durabond 90" by CGC Inc. at exterior soffits.

2.4.3. Finish coat for level 5 finish: vinyl acrylic latex based coating to ASTM C840, spray applied, “Tuff-Hide Primer-Surfacer” by CGC Inc.

2.5. ACCESSORIES

2.5.1. Dust Barrier: Minimum 0.152 mm (6 mil) polyethylene, CAN/CGSB-51.33-M, Type 2.

2.5.2. Resilient Sponge Tape: Self-sticking adhesive on 1 side, closed cell neoprene sponge tape. Acceptable products:

2.5.2.1. "Rubatex®" by Rubatex Corp.,

2.5.2.2. "Foamflex # 1220" by Jacobs & Thompson Inc.; www.foamparts.com

2.5.2.3. "Backerseal™ (Greyflex)™" by Emseal LLC; www.emseal.com.

2.5.3. Sealant for Moisture Resistant Gypsum Board Edges: "Sheetrock Brand W/R Sealant" by CGC Inc., or similar type acceptable to Consultant.

2.5.4. Corner Beads: "PG1 Platinum Square Nose Tape-On Trims" by Bailey Metal Products Ltd. "No-Coat®" by CertainTeed or "Fast Edge" paper by Trim-Tex at corners, reveals, or similar. Provide custom shapes of similar materials and design as noted.

2.5.5. Trim: "PG4 Platinum Tape-On L-Trims" by Bailey Metal Products Ltd.

2.5.6. Flexible Casing Beads: 0.531 mm (25 ga) steel, wipe coated, angle shaped in size to fit over edge of gypsum board, to suit curved applications.

2.5.7. Control Joints: Pre-fabricated control joints prepared to suit site conditions. Certified by manufacturer for use at fire resistance rated assemblies. Acceptable products:

2.5.7.1. "No. 093" zinc alloy control joint by CGC Inc.

2.5.7.2. "DRM-50-25 2-PC" by Fry Reglet

2.5.7.3. "093V Expansion Bead" by Trim-Tex Drywall Products Inc.

2.5.8. Access Doors and Panels:

2.5.8.1. Supplied as part of Section 08 31 13 and Divisions 21, 22, 23, 26, 27 and 28 for installation as part of this Section.

2.6. SOUND CONTROL MATERIALS

2.6.1. Acoustical Insulation: CAN/ULC S702, Type 1, of sufficient thickness to meet required STC rating for sound-rated partitions and of width to suit metal framing spacing

2.6.1.1. Acoustical Insulation Batts in non-fire rated assemblies: glass fibre

2.6.1.1.1. Acceptable Products:

2.6.1.1.1.1. "EcoTouch™ QuietZone® PINK™ FIBERGLAS® Acoustical Insulation" by Owens Corning Canada LP; www.insulation-owenscorning.ca

2.6.2. Strip Impalement Clips: 25 mm (1") wide strip of "Insul-Hold" by Insul-Hold Co., Inc.; www.insulhold.com, fabricated from 0.531 mm (25 ga) galvanized sheet metal in 30 m (100') rolls with punch-out insulation securement arrows. Alternatively, use special studs with punch-out impalement strips.

2.6.3. Acoustic Sealant:

2.6.3.1. Concealed locations: Single component, non-hardening, non-skinning synthetic rubber sealant; "Tremco Acoustical Sealant" by Tremco Canada; www.tremcosealants.com.

2.6.3.2. Fire resistance locations: Smoke-seal sealant with flame-spread not more than 25 and smoke developed classification not more than 50 to CAN/ULC-S102.

2.6.4. Elastomeric Sealant: As recommended by manufacturer of fibre-reinforced gypsum sheathing board.

2.6.5. Gaskets: Closed cell neoprene, 3 mm (1/8") thick x 64 mm (2-1/2") wide.

PART 3 - EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions: Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation.

3.1.2. Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2. PREPARATION

3.2.1. Ensure that services, blocking and supports to be installed in partitions have been installed and inspected before closing in with gypsum board.

3.2.2. Vacuum clean stud track, suspended support framing, and spaces to be concealed before starting the days installation.

3.3. INSTALLATION

3.3.1. Gypsum Board Application:

3.3.1.1. Provide gypsum board in accordance with manufacturer's written installation instructions and finish to requirements of ASTM C840. Install Moisture Resistant Gypsum Board on any wall/partition with a paint finish containing a plumbing fixture (i.e. water closets, sinks, tubs, etc.). Install gypsum board tile backer board on any wall partition or ceiling requiring a tile finish.

3.3.1.2. Provide metal trim casing bead at junctions with dissimilar materials. Provide reveals at junctions with dissimilar materials where indicated.

3.3.1.3. Provide finished work plumb, level and true, free from perceptible waves or ridges and square with adjoining work.

3.3.1.4. Cut and fit gypsum board to accommodate or fit around other parts of the Work. Provide work of this Section accurately and neatly.

3.3.1.5. Butt gypsum board sheets together in moderate contact. Do not force into place. Place tapered or wrapped edges next to 1 another.

3.3.1.6. Provide gypsum board perpendicular to framing and in lengths that will span ceilings and walls without creating end (butt) joints. If butt joints do occur stagger and locate them as far from centre of walls and ceilings as possible. Accurately fit exposed butt joints together and make edges smooth.

3.3.1.7. Support ends and edges on framing.

3.3.1.8. Fasten gypsum board to metal furring and steel studs with screws. Space screws at 200 mm (8") oc at board edges and 300 mm (12") oc on board field.

3.3.1.9. Gypsum Board - Single Layer:

3.3.1.9.1. Ceilings: Apply gypsum board to metal furring with screws. Erect board with long dimension parallel to supports. Locate end joints over supporting members. Space screws at 200 mm (8") oc.

3.3.1.9.2. Partitions: Apply gypsum board to steel studs with screws. Erect board with long dimension parallel to supports. Locate end joints over supporting members. Locate vertical joints at least 300 mm (12") from jamb lines of openings. Space screws at 200 mm (8") oc at board edges and 300 mm (12") oc on board field.

3.3.1.9.3. Ceiling and Partition Fasteners: Ensure perimeter screws are not less than 9 mm (3/8") nor more than 13 mm (1/2") from edges and ends are opposite screws on adjacent boards. Drive screws with power screw-gun and set with countersunk head slightly below surface of board.

3.3.1.9.4. Joints: Finish all joints unless specified otherwise.

3.3.1.10. Gypsum Board - Double Layer:

3.3.1.10.1. Lay out work to minimize end joints on face layer; to offset parallel joints between face and base layers by at least 250 mm (10") and to apply face layer at right angles to base layer.

3.3.1.10.2. Base Layer: Ensure base layer is same as face layer, or backing board, and applied at right angles to framing members. Secure base layer with screws spaced 300 mm (12") oc to each member. Ensure perimeter screws are not more than 13 mm (1/2") from edges and ends are opposite screws on adjacent boards. Ensure surface of erected base layer is straight, plumb or level and without protrusions before face layer is applied.

3.3.1.10.3. Face Layer: Apply face layer at right angles to base layer with screws.

3.3.1.10.4. Joints: Finish joints in face layers only, unless otherwise required to achieve fire resistant ratings indicated, as hereinafter specified. Ensure setting compound for fire rated construction conforms to requirements of authorities having jurisdiction to obtain fire rating shown on Drawings.

3.3.2. Interior Ceilings:

3.3.2.1. Comply with recommendations of CGC Drywall Steel-Framed Systems Folder 09250-SA 923.

3.3.2.2. Provide hanger wires spaced at maximum 1200 mm (4') oc along carrying channels and within 150 mm (6") of ends of carrying channel runs. Secure hanger wires to inserts in structure above.

3.3.2.3. Provide carrying channels maximum 1200 mm (4') oc and within 150 mm (6") of walls. Secure with hanger wire saddle-tied along channels. Provide 25 mm (1") clearance between runners and walls. Provide splicers behind joints. Level channels to a maximum tolerance of 3 mm (1/8") over 3600 mm (12').

3.3.2.4. Provide metal furring channels at right angles to carrying channels at maximum 600 mm (24") oc and within 150 mm (6") of walls. Provide 25 mm (1") clearance between furring ends and abutting walls. Attach furring channels to carrying channels with saddle-tie of double strand tie wire.

3.3.2.5. Provide additional cross-reinforcing at bulkheads and other openings.

3.3.2.6. Provide ceiling gypsum board, smooth and level. In areas with a high humidity content (ie. Washrooms, janitor closets, etc.) install MRGB.

3.3.3. Metal Trim and Accessories:

3.3.3.1. Provide metal trim casing beads at reveals; at ceiling-wall intersections and partition perimeters; and at intersection of dissimilar constructions such as gypsum board to concrete.

3.3.3.2. Provide metal trim casing beads where gypsum board abutts against a surface having no trim concealing junction.

3.3.3.3. Provide a 13 mm (1/2") separation gasket between metal trim casing beads and window frames or other cold surfaces or provide sponge tape between gypsum board partition or furring framing, where such framing abuts exterior door or window frame, sponge tape between floor and gypsum board partition track. Ensure tape is either full width or 1 strip 9 mm (3/8") wide on each side of framing member.

3.3.3.4. Provide casing bead and sponge tape where gypsum board abuts materials other than itself and acoustic tile ceilings including at exterior door and window frames, where juncture is not concealed with trim; or elsewhere where indicated on Drawings. Unless indicated

otherwise, use tape 3 mm (1/8") narrower than casing bead to provide recess at exposed side. Compress tape by 25%.

3.3.3.5. Provide metal trim casing beads where indicated on Drawings.

3.3.3.6. Access Doors and Panels: Install access doors and panels supplied as part of work of Divisions 22, 23 and 26 and where required as part of work of this Section in walls, bulkheads, ceilings and soffits.

3.3.4. Control Joints:

3.3.4.1. Provide either manufactured control joint devices or field fabricated control joints from suitable materials to suit site conditions in accordance with manufacturer's instructions and/or ASTM C840.

3.3.4.2. Set in gypsum facing board, supporting control joints with studs or furring channels on both sides of joint. Ensure double studs with discontinuous tracks and double suspended ceiling furring channels have been installed prior to commencing board and bead application at control joints. Provide control joints as required to prevent cracks at following locations:

3.3.4.2.1. Where a partition, wall or ceiling traverses a construction joint (expansion, seismic or building control element) in base building structure

3.3.4.2.2. Where a wall or partition runs in an uninterrupted straight plane exceeding 9.1 m (30') (Note: A full height door frame may be considered a control joint).

3.3.4.2.3. interior ceilings with perimeter relief: installed so linear dimensions between control joints do not exceed 15 m (50') and total area between control joints does not exceed 230 m^2 (2,500 sq ft).

3.3.4.2.4. Interior ceilings without perimeter relief: installed so linear dimensions between control joints do not exceed 9.1 m (30') and total area between control joints does not exceed 84 m^2 (900 sq ft).

3.3.4.2.5. Exterior ceilings and soffits: installed so linear dimensions between control joints do not exceed 15 m (50') and total area between control joints does not exceed 230 m^2 (2,500 sq ft).

3.3.4.2.6. At stress points (ie corners of openings or changes in direction of surfaces).

3.3.4.3. Provide additional control joints at long and narrow surfaces.

3.3.4.4. Provide control joints full height floor to ceiling or door header to ceiling in partitions and furring runs.

3.3.4.5. Provide control joints from wall to wall in ceiling areas.

3.3.4.6. Provide continuous polyethylene dust barrier behind and across control joints.

3.3.4.7. Ensure Consultant reviews exact locations of control joints.

3.3.5. Sound Control:

3.3.5.1. Where indicated on Drawings, provide sound rated partitions and ceiling in locations indicated to meet required minimum STC rating. Apply gypsum board on both sides of sound-proofed partitions. Follow manufacturer's details and recommendations.

3.3.5.2. Provide sound attenuation insulation to completely fill height of stud cavities. Tightly butt ends and sides of blankets within cavities. Cut blankets to fit small spaces. Carefully fit blankets behind electrical outlets, bracing, fixture attachments and mechanical and electrical services.

3.3.5.3. Mechanically fasten blankets to back of gypsum board as recommended by gypsum board manufacturer.

3.3.5.4. At sound attenuating suspended ceiling and enclosures having spring isolator hangers, terminate ceiling or enclosure at adjacent construction by providing continuous isolator strip and sealed joint.

3.3.6. Joint Treatment - Gypsum Board:

3.3.6.1. Verify board is firm against framing members and screw heads are properly depressed.

3.3.6.2. Mix joint compound or ready-to-use compounds according to manufacturer's directions. Use pure, unadulterated, clean water for mixing. Permit mixed material to stand 30 minutes before using. Do not mix more material than can be used within 1 hour. Do not use set or hardened compound. Clean tools and equipment after mixing each batch.

3.3.6.3. Tape and fill joints and corners in accordance with gypsum board manufacturer's printed instructions. Fill either manually, using hand tools of trade, or by a mechanical taping and filling machine of proven efficiency.

3.3.6.4. Remove plastic tape from control joints after finishing with joint compound.

3.3.6.5. After final coats of filler have dried at least 24 hours, sand surface lightly with No. 00 sandpaper to leave it smooth, ready for decoration.

3.3.6.6. Provide finished work smooth, seamless, plumb and true, flush and with square plumb neat corners.

3.3.6.7. Levels of Finish: Provide Level 4 finish in accordance with ASTM C840.

3.3.7. Cutting and Patching: Cooperate and coordinate with other Sections to obtain satisfactory gypsum board finish work. Do cutting, patching and Make Good as required by installation of work of other Sections.

3.4. CLEANING

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

3.5. PROTECTION

3.5.1. Provide protection of materials and work of this Section from damage by weather and other causes. Perform work in areas closed and protected from damage due to weather. Protect work of other trades from damage resulting from work of this Section. Make Good such damage immediately.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

1.1.1. Section Includes: Provide resilient base and accessories including but not limited to following:

1.1.1.1. Resilient base.

1.1.1.2. Reducing strips.

1.2. SUBMITTALS

1.2.1. Samples: Submit following samples in sizes indicated:

1.2.1.1. Resilient base 300 mm (12") long.

1.2.1.2. Reducing strips 300 mm (12") long.

1.3. SITE CONDITIONS

1.3.1. Ambient Conditions:

1.3.1.1. Maintain appropriate environmental conditions and protect work during and after installation. Comply with trade standards and manufacturer's Product instructions.

1.3.1.2. Close doors and windows. Turn off radiant floor heating systems and protect work area from direct draft, sun and heat exposure during installation and for at least 72 hours after completion.

1.3.1.3. When necessary, build a temporary shelter and use indirect auxiliary heaters to maintain an adequate temperature level in work environment.

1.3.1.4. Exhaust temporary heaters to building exterior to prevent health hazards and damage to work from toxic fumes and emanations.

1.3.1.5. Maintain temperature of floor covering areas at not less than 18 deg C (65 deg F) or more than 38 deg C (100 deg F) 48 hours before, during installation and for 48 hours after application unless otherwise required in Product instructions.

PART 2 - PRODUCTS

2.1. MANUFACTURERS

2.1.1. Manufacturer List: Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications:

2.1.1.1. American Biltrite (Canada) Ltd.; www.american-biltrite.com

2.1.1.2. Burke Flooring, a Division of Burke Industries; www.burkeflooring.com

2.1.1.3. Flexco; www.flexcofloors.com

2.1.1.4. Johnsonite; www.johnsonite.com

2.1.1.5. Roppe Corporation, USA; www.roppe.com

2.1.1.6. Tarkett; www.tarkett.com

2.1.2. Substitution Limitations: Comparable Products from manufacturers listed herein will be accepted provided they meet requirements of this Specification.

2.2. MATERIALS

2.2.1. Provide Products free from blisters, cracks, chipped edges, embedded foreign matter or other defects.

2.2.2. Resilient Base: 3 mm (1/8") thick x 150 mm (6") high in accordance with ASTM F1861, Type TS, Group 1, Style B, PVC-free vulcanized rubber, in coil lengths, colour selected from manufacturer's standard range.

2.2.2.1. Acceptable Products:

2.2.2.1.1. “Rubber Wall Base” by Johnsonite

2.2.2.1.2. “Marathon Cove Base” by American Biltrite (Canada) Ltd.

2.2.2.1.3. “PVC-Free Wallflowers Rubber Wall Base” by Flexco,

2.2.2.1.4. PVC-Free Burke Wall Base” by Burke Floors

2.2.2.1.5. “PVC-Free Pinnacle Rubber Wall Base” by Roppe Corporation, USA.

2.2.3. Reducing Strips: Vinyl, thickness to suit adjacent flooring; Johnsonite, American Biltrite (Canada) Ltd., Flexco or Roppe Corporation, USA.

2.2.4. Primers and Adhesives: As required for surfaces involved as recommended and supplied by resilient base manufacturer used.

2.2.5. Colours: Selected by Consultant from manufacturer's standard colour selection.

2.2.6. Sealant: ColorRite sealant, www.colorriteinc.com, color to match base.

PART 3 - EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions: Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation.

3.1.2. Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2. INSTALLATION

3.2.1. Resilient Base:

3.2.1.1. Provide resilient base to substrate surfaces in accordance with manufacturer's recommendations.

3.2.1.2. Select the appropriate adhesive for the application and job site conditions. Apply adhesive evenly and continuously for full base adhesion and contact. Do not apply adhesive in a manner which promotes induced waviness in resilient base.

3.2.1.3. Apply wall base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

3.2.1.4. Install wall base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.

3.2.1.5. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

3.2.1.6. Provide preformed inside and outside corners.

3.2.1.7. Do not stretch wall base during installation.

3.2.1.8. On masonry surfaces or other similar irregular substrates, fill voids along top edge of wall base with manufacturer's recommended adhesive filler material.

3.2.1.9. Ensure material is rolled appropriately into the adhesive using a hand roller.

3.2.1.10. Remove and replace base showing shrinkage or adhesion failure.

3.2.1.11. Apply sealant where base meets door frame.

3.2.2. Reducing Strips: Protect exposed edges of resilient flooring, where finished and unfinished area adjoin, by means of reducing strips butting to and flush with finished surface of floor covering material.

3.2.3. Remove and replace base showing shrinkage or adhesion failure.

3.2.4. Apply sealant where base meets door frame reveals.

END OF SECTION

PART 1 - General

1.1. SUMMARY

1.1.1. Section Includes:

1.1.1.1. Testing and preparation of substrate for installation of flooring.

1.1.1.2. Resilient vinyl tile flooring

1.1.1.3. Reducing strips and thresholds at junction with adjacent architectural finishes.

1.1.1.4. Resilient base.

1.1.2. Related Sections: Following description of work is included for reference only and shall not be presumed complete:

1.1.2.1. Filling of major holes, chases and trenches in concrete substrate Flatness and levelness requirements for floor to receive resilient sheet flooring: Section 03 01 30 – Repairs to Concrete.

1.1.2.2. Moisture vapour control topping: Section 09 05 61 – Common Work Results for Flooring Preparation.

1.1.2.3. Resilient base: Section 09 65 13 – Resilient Base and Accessories

1.2. ADMINISTRATIVE REQUIREMENTS

1.2.1. Coordination:

1.2.1.1. Ensure that substrate treatments for moisture, repair, or levelling are compatible with the manufacturer of work in this Section.

1.2.2. Preinstallation Meeting:

1.2.2.1. Prior to start of work, arrange for site meeting of parties associated with work of this Section. Presided over by Contractor, include Consultant, Subcontractor, and manufacturer's representative.

1.2.2.2. Review work included under this Section and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials to be used, installation, methods and procedures, quality control, Project staffing, restrictions on areas of work and other matters affecting construction, to permit compliance with intent of this Section. Also discuss following items:

1.2.2.2.1. Surface preparation.

1.2.2.2.2. Concrete testing for RH, pH, and capillary moisture.

1.2.2.2.3. Installation.

1.2.2.2.4. Coordination with other Work.

1.3. SUBMITTALS

1.3.1. Make Submittals in accordance with Section Division 01 General Requirements

1.3.1.1. Product Data:

1.3.1.1.1. Submit manufacturer's product data sheets for products to be for used in the work of this section. Manufacturer's product data sheets shall include:

1.3.1.1.1.1. Material and product physical properties and characteristics including size and colour.

1.3.1.1.1.2. Limitations of products

1.3.2. Shop Drawings: Submit Shop Drawings for all areas indicating the following:

1.3.2.1. Each resilient floor tile type, installation method, locations of building movement joints, and intricate floor tile patterns.

1.3.2.2. Locations and types of edge strips and reducer strips at flooring penetrations.

1.3.3. Samples: Submit following samples in sizes indicated:

1.3.3.1. Resilient base 300 mm (12") long.

1.3.3.2. Reducing strips 300 mm (12") long.

1.3.4. Manufacturer's Instructions: Submit manufacturer's storage, handling, and installation instructions.

1.4. CLOSEOUT SUBMITTALS

1.4.1. Operating and Maintenance Data: Provide maintenance data for resilient flooring for incorporation into maintenance manual specified in Division 01. Include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance.

1.4.2. Record Documentation: Submit a list of materials installed, including adhesives, and accessories. Indicate manufacturers, products, types, patterns, and colour names and numbers. Indicate room/area where installed.

1.5. QUALITY ASSURANCE

1.5.1. Installers:

1.5.1.1. Provide work of this Section executed by competent installers with minimum of 5 years experience in application of Products, systems and assemblies specified and with approval and training of Product manufacturers.

1.5.1.2. Submit documentation signed by the manufacturer to show that installers have been trained and meet their warranty criteria for installation requirements.

1.5.2. Bond Test:

1.5.2.1. Install multiple bond tests using selected tile adhered with the appropriate adhesive to verify quality of adhesion. Remove 1 tile after 24 hours, then another after 48 hours.

1.6. SITE CONDITIONS

1.6.1. Ambient Conditions:

1.6.1.1. Maintain appropriate environmental conditions and protect work during and after installation. Comply with trade standards and manufacturer’s Product instructions. Follow Product MSDS and label instructions concerning safety, health and other related precautionary and environmental protection. Comply with applicable federal, provincial, local and statutory regulations.

1.6.1.2. Close doors and windows. Turn off radiant floor heating systems and protect work area from direct draft, sun and heat exposure during installation and for at least 72 hours after completion.

1.6.1.3. When necessary, build a temporary shelter and use indirect auxiliary heaters to maintain an adequate temperature level in work environment.

1.6.1.4. Ventilation: Provide temporary ventilation:

1.6.1.4.1. Provide high ventilation rate with maximum outside air 24 to 48 hours before, during installation, and 48 to 72 hours after installation. If possible, vent directly to outside.

1.6.1.4.2. Do not let contaminated air recirculate through air distribution system. Continue high ventilation rate for at least four weeks after building occupation.

1.6.1.5. Maintain relative humidity in accordance with manufacturer's instructions.

1.6.1.6. Exhaust temporary heaters to building exterior to prevent health hazards and damage to work from toxic fumes and emanations.

1.6.1.7. Maintain temperature of floor covering areas at not less than 18 deg C (65 deg F) or more than 38 deg C (100 deg F) 48 hours before, during installation and for 48 hours after application unless otherwise required in Product instructions.

1.7. WARRANTY

1.7.1. Submit warranty, signed and issued in the name of Owner warranting the Work of this Section against defects in materials and workmanship for a period of 20 year from the date of Substantial Performance of the Work.

1.7.2. Warranty covers excessive wear, and defects in materials.

PART 2 - PRODUCTS

2.1. MATERIALS

2.1.1. Vinyl Tile Flooring:

2.1.1.1. Vinyl Composition Tyles, ASTM F1066, Class 2

2.1.1.2. Thickness 3.18 mm (0.125") ASTM F386

2.1.1.3. Tile Size: 305 mm X 305 mm

2.1.1.4. Colours and Patterns: allow for 6 different colours, a maximum of two colours per classroom

2.1.1.5. Tile Squareness: Passes ASTM F2055

2.1.1.6. Tile Dimensional Stability: Passes ASTM F2199

2.1.1.7. Flexibility: Passes ASTM F137

2.1.1.8. Static Load Limit: 150 psi " ASTM F970

2.1.1.9. Slip Resistance: SCOF ≥ 0.5 ASTM D2048

2.1.1.10. Maintenance: Conventional VCT maintenance, 3-5 coats of finish.

2.1.1.11. Basis of Design: "Tarket VCT II" by Tarkett; www.tarkettna.com

2.1.2. Accessories:

2.1.2.1. Adhesive:

2.1.2.1.1. Water-resistant reactive adhesives or of types recommended by resilient homogenous flooring manufacturer for specific material on applicable substrate, above, on or below grade.

2.1.2.1.2. Vinyl Tile Flooring: "Tarkett 100 or 975 or 901" as recommended by the manufacturer.

2.1.2.2. Subfloor Filler and Leveler:

2.1.2.2.1. Fast setting, polymer-modified Portland cement based patching compound mixed with either a latex additive or water only depending on substrate conditions and Product instructions. "Self-Leveler Plus" by Mapei.

2.1.2.3. Reducing Strips: aluminum, Schluter, profile and thickness to suit adjacent flooring.

2.1.2.4. Metal edge strips:

2.1.2.4.1. Aluminum extruded, smooth, mill finish and polished with lip to extend under floor finish, shoulder flush with top of adjacent floor finish, Schluter, VPSL; thickness to match VCT flooring thickness.

PART 3 - EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions for New Concrete:

3.1.1.1. Ensure new concrete slab has been properly cured and dry for minimum of 28 Days and has reached minimum compressive strength of 25 MPa (3625 psi) and a minimum of 1.5 MPa (218 psi) in tension.

3.1.1.2. Ensure no curing and sealing compounds, hardeners or other chemical additives have been used on concrete.

3.1.1.3. Notify Consultant in writing of any conditions which would be detrimental to the installation.

3.2. SURFACE PREPARATION

3.2.1. For all new and existing concrete floor areas:

3.2.1.1. Prepare existing and new concrete floors over entire area with steel shot blasting or other method recommended by manufacturer. Remove uneven joints, rough areas, foreign and projection off surfaces. Surface to be hard, sound and roughened to irregular surface with weak concrete removed and surface holes and voids exposed. Equip dry blasting machine with vacuum to minimize dust.

3.2.1.2. Shot blast floor to remove soft material and to achieve a profile equivalent to ICRI / CSP 3 – 4.

3.2.1.3. Shot blast to expose cracks in concrete surface. For cracks lesser than 1.5 mm (1/16") employ crack reinforcing tape in accordance manufacturer’s recommendations. Repair cracks, holes or other deficiencies in accordance with manufacturer's recommendations.

3.2.1.4. Blow clean control joints, sawcuts and cracks with compressed air.

3.2.1.5. Prepare concrete floors to receive sheet flooring in accordance with requirements of ASTM F710. Achieve CSP of #2 - #3. Consult individual manufacturer for their specific recommendations and follow them as required.

3.3. INSTALLATION - GENERAL

3.3.1. Install materials of this section in accordance with material manufacture’s written requirements.

3.3.2. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation. Do not install resilient products until they are same temperature as space where they are to be installed.

3.3.3. Spray paints, permanent markers and other indelible ink markers shall not be used to write on the back of the flooring material or used to mark the substrate as they could bleed through and permanently stain the flooring material. If such contaminants are present on the substrate they shall be mechanically removed prior to the installation of the flooring material.

3.3.4. Terminate vinyl tile in straight lines at centreline of door in openings where adjacent floor finish or vinyl composite tile colour is dissimilar.

3.3.5. At door opening locations where finished flooring is adjacent to weather-stripping or automatic door bottoms provide patching and levelling compound to provide full contact between finished flooring and weather-stripping or automatic door bottoms. Taper patching and levelling compound

to transition with adjacent flooring substrate to be provide smooth and seamless transition at maximum slope of 3:1000 (height to distance) ratio.

3.3.6. Install vinyl tile accurately fitted at perimeter of rooms, cut with precision at columns, door frames and at other obstructions.

3.3.7. Extend floor coverings into toe spaces, door reveals, closets, and similar openings.

3.3.8. Maintain reference markers, holes, or openings that are in place or marked for future cutting by repeating on floor coverings as marked on substrates. Use chalk or other nonpermanent marking device.

3.3.9. Install floor coverings on covers for telephone and electrical ducts and similar items in installation areas. Maintain overall continuity of color and pattern with pieces of floor coverings installed on covers. Tightly adhere floor covering edges to substrates that abut covers and to cover perimeters.

3.3.10. Adhere floor coverings to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.3.11. Allow no traffic over installation until adhesives have fully cured, minimum twenty-four (24) hours.

3.4. INSTALLATION – TILE

3.4.1. Lay out tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.

3.4.2. Lay tiles square with room axis, unless otherwise indicated or directed.

3.4.3. Match tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.

3.4.4. Lay tiles with grain running in one direction as indicated on drawings.

3.4.5. Lay tiles in simple pattern as decided during construction

3.4.6. Tiles to be rolled with a 3 section coated 100 lb roller in accordance with manufacturer’s installation instructions.

3.4.7. Finished flooring installation shall not show telegraphing of defects in substrate. Finished flooring installation shall be homogenous free of substrate lines, adhesive trowel lines, pockets, bumps and unevenness which are outside of specified tolerances.

3.4.8. Reducing Strips: Protect exposed edges of resilient flooring, where finished and unfinished area adjoin, by means of reducing strips butting to and flush with finished surface of floor covering material.

3.5. CLEANING

3.5.1. Remove excess adhesive from floor, base and wall surfaces without damage.

3.5.2. Clean floor and base surface to flooring manufacturer's instructions.

3.5.3. Perform the following operations immediately after completing resilient product installation:

3.5.3.1. Remove adhesive and other blemishes from exposed surfaces.

3.5.3.2. Sweep and vacuum surfaces thoroughly.

3.5.3.3. Damp-mop surfaces to remove marks and soil.

3.5.4. 72 hours after installation is completed, initial maintenance procedures must be implemented in accordance with manufacturer's requirements. Refer to Tarkett Vinyl Composition Tile Maintenance Instructions for complete maintenance details. .

3.6. PROTECTION

3.6.1. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods recommended in writing by manufacturer.

3.6.2. Cover products installed on horizontal surfaces with undyed, untreated building paper until Substantial Performance.

3.6.3. Do not move heavy and sharp objects directly over surfaces. Place hardboard or plywood panels over flooring and under objects while they are being moved. Slide or roll objects over panels without moving panels.

3.6.4. Prohibit foot traffic on floor for 24 hours after installation. Prohibit heavy traffic, rolling loads and furniture or appliance placement for a minimum of 72 hours after installation.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

1.1.1. Section Includes: painting new and existing surfaces as indicated on the drawings and specifications. Work under this contract shall also include, but not necessarily be limited to following:

1.1.1.1. Surface preparation of substrate: cleaning and preparation of surfaces for application of paint systems.

1.1.1.2. Priming except where pre-primed with an approved primer under other Sections of work and painting of structural steel, miscellaneous metal, ornamental metal and primed steel equipment.

1.1.1.3. Priming and back-priming of wood materials as noted herein.

1.1.1.4. Painting of all semi-concealed areas e.g. inside of light troughs and valances, behind grilles, and projecting edges above and below sight lines.

1.1.1.5. Painting and finishing of all door frames.

1.1.1.6. Provision of safe and adequate ventilation as required over and above temporary ventilation supplied by others, where toxic and/or volatile / flammable materials are being used.

1.2. REFERENCES

1.2.1. Definitions:

1.2.1.1. Exposed: Visible in completed work. In case of closets, cabinets and drawers, it includes their interiors.

1.2.1.2. Gloss or Sheen: Capacity of a finish on a surface to reflect light at specific angles as tested in accordance with ASTM D523.

1.2.1.3. Hazardous Waste: Construction and demolition materials that are regulated for disposal by local, city, county, province or federal authorities having jurisdiction.

1.2.1.4. Painting: In this Section refers to application of various types of paint, stain, varnishes and lacquers, etc.

1.2.1.5. Surface Preparation: Cleaning or treating of surface to be painted to ensure best possible bond between surface and painting to be applied to surface; remove surface contaminants that will affect performance of painting, without limitations such as oil, grease, salts, dust, dirt, rust, rust scale, mill scale and old coatings where applicable; remove surface imperfections without limitation including but not limited to such as weld spatter, sharp edges, burrs, slivers, laminations, pits, porosities and crevices; prepare surfaces to provide anchor profile or surface profile which improve mechanical bonding of coating to prepared surface by increasing surface area.

1.3. SUBMITTALS

1.3.1. Product Data:

1.3.1.1. Submit Product data and a Schedule of Finishes listing manufacturer's Product name, colour, textures, MSDS and test reports requested for each paint system. Submit test reports for odourless, low or zero VOC Products when requested.

1.3.1.2. Painting Subcontractor to receive written confirmation of specific surface preparation procedures and primers used for fabricated steel items from fabricator/supplier to ensure appropriate and manufacturer compatible finish coat materials prior to commencement of painting.

1.3.1.3. Submit Product data for concrete and concrete block primers.

1.3.2. Samples: Submit samples 30 Days before materials are required.

1.3.2.1. Submit following samples in sizes indicated:

1.3.2.1.1. 2 copies of brushouts minimum 200 mm x 250 mm (8" x 10") of each finish including colour, sheen and texture. Identify each sample with job, finish, colour name, number, sheen and gloss values, substrate to be applied to, date and name of Subcontractor.

1.4. SITE CONDITIONS

1.4.1. Ambient Conditions:

1.4.1.1. Paint and finish in clean, dust-free, properly ventilated and adequately lit areas minimum 323 Lx (30 ft candles) on surfaces to be painted or decorated.

1.4.1.2. Provide each paint materials in accordance with manufacturer's recommended tolerances for:

1.4.1.2.1. Substrate Moisture Content: Perform tests with a properly calibrated electronic moisture meter to ensure compliance with manufacturer's recommendations. Without limitation, maximum moisture content as follows:

1.4.1.2.1.1. Concrete and Concrete Unit Masonry: Maximum 12 - 14% for solvent coatings and as recommended by manufacturer for each water based system.

1.4.1.2.1.2. Gypsum Based Board and Plaster: Maximum 12 - 14%.

1.4.1.2.1.3. Wood: Maximum 15%.

PART 2 - PRODUCTS

2.1. MANUFACTURERS

2.1.1. Manufacturer List: Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications

2.1.1.1. Benjamin-Moore www.benjaminmoore.com

2.1.1.2. Dulux Paints www.dulux.ca

2.1.1.3. Sherwin Williams www.sherwin-williams.com

2.1.2. Basis of Design: for interior latex applications (PT-1): “Promar 200 HP Zero VOC” by Sherwin Williams

2.1.3. Substitution Limitations: Substitution Limitations: Comparable Products from other manufacturers not listed herein will be considered provided:

2.1.3.1. They are submitted in accordance with Substitution Procedures specified in Division 01

2.1.3.2. Meet requirements of this Specification.

2.1.3.3. Acceptance by Consultant.

2.2. MATERIALS

2.2.1. General: paint systems for existing surfaces shall be same finish system as for new work as specified below, but primer for existing painted or wallpapered surfaces: 1 coat X-Pert Gripper 250 by PPG, or as otherwise recommended by the finish paint manufacturer.

2.2.2. Finishes:

2.2.2.1. Colours: to be selected by Consultant – allow for minimum of 6 colours

2.2.2.2. Gloss Values Definition, as determined by ASTM D523:

		Light Reflection Unit
G1	Gloss Level 1 – Traditional matte finish, Flat	< 5
G2	Gloss Level 2 – High side sheen Flat, “Velvet-like” finish	< 10
G3	Gloss Level 3 – Traditional “Eggshell-like” finish	10 - 25
G4	Gloss Level 4 – “Satin-like” finish	20 - 35
G5	Gloss Level 5 – Traditional Semi-Gloss	35 - 70
G6	Gloss Level 6 – Traditional Gloss	70 - 85
G7	Gloss Level 7 – High Gloss	> 85

2.2.2.3. Gloss Values unless otherwise specified:

2.2.2.3.1. Walls: G4

2.2.2.3.2. Floors: G5 or G6

2.2.2.3.3. Ceilings: G1

2.2.2.3.4. Trim and Doors: G5

2.2.2.3.5. Signage: G1

2.2.3. Mixing and Tinting:

2.2.3.1. Unless otherwise specified herein or pre-approved, all paint shall be ready-mixed and pre-tinted. Re-mix all paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and color and gloss uniformity.

2.3. INTERIOR FINISH SCHEDULE:

2.3.1. Concrete Vertical Surfaces:

2.3.1.1. 1 coat primer alkali resistant water based: Dulux Gripper Universal Acrylic Primer/ Sealer code 60000A

2.3.1.2. 2 coats latex: Dulux Lifemaster code 59311

2.3.1.3. Finish: G3 -Eggshell.

2.3.2. Concrete Masonry Units (CMU’s): (concrete block and concrete brick):

2.3.2.1. 1 coat latex block filler: Dulux X-Pert Acryluc

2.3.2.2. 2 coats latex: Dulux Lifemaster code 59311

2.3.2.3. Finish: G3 -Eggshell.

2.3.3. Structural Steel and Metal Fabrications: (with existing shop coat primer):

2.3.3.1. Unexposed: No further finishing required except for touch-up of damaged surfaces.

2.3.3.2. Exposed:

2.3.3.2.1. 1 coat quick dry metal primer: PPG Pitt-Tech Plus EP WB Acrylic Primer

2.3.3.2.2. 2 coats quick dry enamel: PPG HPC Alkyd Industrial Semi-Gloss Enamel code 4336H

2.3.3.2.3. Finish: G5 - Semi-Gloss.

2.3.4. Galvanized Metal (Not Chromate Passivated): (High contact/high traffic areas (doors, frames, railings, pipes, etc.) low contact/low traffic areas (overhead decking, pipes, ducts, etc.):

2.3.4.1. 1 coat waterborne primer: PPG Pitt-Tech Plus EP WB Acrylic Primer

2.3.4.2. 2 coats latex: Dulux acrylic eggshell code 14220

2.3.4.3. Finish: G3 - Eggshell

2.3.5. Gypsum Board:

2.3.5.1. 1 coat latex primer sealer: Dulux X-Pert code 11000

2.3.5.2. 2 coats latex:

2.3.5.2.1. Walls: Dulux Lifemaster code 59311

2.3.5.2.1.1. Finish: G3 - Eggshell

2.3.5.2.2. Ceilings: Dulux Lifemaster code 59111

2.3.5.2.2.1. Finish: G1 - Flat.

2.3.6. Plywood Backer Panels:

2.3.6.1. 2 coats Albi Cote FRL-X

2.3.6.2. Finish: G1 – Flat

PART 3 - EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions:

3.1.1.1. Do work only when surfaces and conditions are satisfactory for production of quality work. Report to Consultant in writing any surfaces which are found to be unsatisfactory.

3.1.1.2. Ensure temperature of surfaces to be finished are as required for application of finish. Refer to “Temperature and Ventilation” article specified herein. Ensure surfaces are dry and free of dirt, grease or other contaminants that may affect applied finish.

3.1.1.3. Verify moisture content of surfaces with electronic moisture meter. Do not proceed without written directions if moisture reading is higher than as required for application. Refer to “Ambient Conditions” article specified herein for substrate moisture content requirements.

3.1.1.4. If substrate is masonry, allow to cure for 30 to 90 Days. Ensure moisture content is between 12% and 14% and test for alkalinity and neutralize (pH 6.5 - 7.5) before proceeding with priming.

3.1.1.5. If substrate is gypsum board, inspect to ensure joints are completely filled and sanded smooth. Inspect surfaces for "nail popping", screw heads not recessed and taped, breaks in surface or other imperfections and have repaired as required.

3.2. PREPARATION

3.2.1. Protection of In-Place Conditions:

3.2.1.1. Provide scaffolding, staging, platforms and ladders, as required for execution of work. Erect scaffolding to avoid interference with work of other trades. Comply with Occupational Health and Safety Act.

3.2.1.2. During work of this Section, provide drop cloths, plastic, plywood or metal sheets to protect floors in areas assigned for storage and mixing of paints. Cover finished floors, walls, ceilings and other work in vicinity and protect from paint and damage.

3.2.1.3. Protect work of other trades against paint splattering and Make Good at own expense any such damage.

3.2.1.4. Vacuum clean floors in areas to be painted.

3.2.1.5. Remove and securely store miscellaneous and finish hardware and surface fittings, electrical switch and outlet covers, receptacle plates, louvres, fittings and fastenings, to protect from paint splatter. Mask items not removable. Use sufficient drop cloths and protective coverings for full protection of floors, furnishings, mechanical, electrical and special equipment, other components of building which do not require painting or to be removed, from paint spotting and other soiling. Carefully clean and re-install items when paint is dry. Clean any components that are paint spotted or soiled. Do not use solvent or reactive cleaning agents on items that will mar or remove finishes (e.g. lacquer finishes).

3.2.1.6. Prohibit traffic, where possible, from areas where painting is being carried out and until paint is cured. Post “wet paint” or other warning signage during and on completion of work. Provide also warning signs at points of entry to areas where painting is applied and drying.

3.2.2. Surface Preparation:

3.2.2.1. Prepare defective surfaces to obtain a satisfactory substrate and in accordance with paint manufacturer's instructions.

3.2.2.2. Prior to painting, wipe down wall surfaces, vacuum clean floors, ensure all surfaces are dust-free.

3.2.2.3. Clean soiled surfaces to be painted. Wash existing surfaces with a biodegradable detergent, and bleach where applicable, and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants. Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface. Allow surfaces to drain completely and allow to dry thoroughly.

3.2.2.4. Remove efflorescence, chalk, dust, dirt, oil, grease, rust, form oil, release agents, loose mill scale and other extraneous matter from surfaces.

3.2.2.5. Remove mildew by scrubbing affected area with solution of 150 g (5.3 oz) TSP and 125 g (4.4 oz) bleach in 3.5 ℓ (0.92 gal) water. Rinse well with clean water and allow to dry. If condition is serious, source out finishes with extra mildew resistance.

3.2.2.6. Be responsible for surface preparation to suit surface condition and conform to level of cleaning based on SSPC, recommended metal cleaning procedures most commonly used to suit site conditions.

3.2.2.7. Existing surfaces - general: Remove or set screws, nails, hooks, tacks, and fasteners. Make repairs to damaged surfaces.

3.2.2.7.1. Existing gypsum board: Repair cracks and fissures by cutting away broken, damaged or loose material to expose substrate. Fill crack or damaged area with suitable new material in accordance with Section 09 29 00 – Gypsum Board.

3.2.2.8. Concrete and Masonry:

3.2.2.8.1. Form Oil Removal: Remove with Xylol or TSP.

3.2.2.8.2. Efflorescence Removal: Remove by dry brushing or washing with 1 part commercial muriatic acid to 20 parts water by volume and thoroughly rince with clean water.

3.2.2.8.3. Mildew Removal: Remove by scrubbing affected area with 1 part sodium hypochlorite to 3 parts water. Where dirt is also evident, add 1.36 kg (3 lbs) TSP to 6.8 ℓ (1.5 gal) of above solution.

3.2.2.8.4. Concrete Vertical Surfaces: Use sand blasting, high pressure water blasting, high pressure water blasting with abrasives, vacuum blasting with abrasives or alternatively, needle guns or power grinders equipped with suitable grinding stone, to remove concrete, loose mortar, fins, projections and surface contaminants. Vacuum or blow down and remove dust and loose particles from surface. Fill large cracks and/or voids in consultation with design engineer using either polyester, epoxy or acrylic resin, block filler or cement sand mixture in accordance with design engineer's written instructions. Fill only flush to surface and allow to set.

3.2.2.8.5. Concrete Block Masonry: Fill voids and cracks in masonry block wall to provide uniform surface for subsequent coats.

3.2.2.9. Metals:

3.2.2.9.1. Ensure application of paint and coatings occurs within appropriate time frame after cleaning when environmental conditions encourage flash-rusting, rusting, contamination or manufacturer's paint specifications require earlier applications.

3.2.2.9.2. SSPC-SP 3 (Power Tool Cleaning): Use of power sanders and wire brushes, impact tools, grinders and power chipping hammers to remove loose mill scale, loose rust, paint or other foreign matter. Do not employ power tool cleaning excessively causing burnished mill scale preventing primers to adhere properly.

3.2.2.9.3. Ferrous Metal: Clean to SSPC-SP 1/2/3, to suit site conditions. Remove loose rust and prime bare metal with rust inhibitive steel primer. Touch-up damaged shop applied primer using compatible Product. Provide full coat primer only if damage is extensive. Treat weld areas with phosphoric acid (5% solution).

3.2.2.9.4. Structural Steel/Miscellaneous Steel (previously painted and exposed by alterations work): Remove oil, grease, dirt, rust scale, loose mill scale, loose paint or coating by brush-off blast cleaning to SSPC-SP 7.

3.2.2.9.5. Hot Dipped Galvanized Steel (Unweathered): Allow to weather minimum of 26 weeks and Xylene clean to SSPC-SP 1 specified herein prior to coating to remove dust, dirt, grease, oxides and other foreign material. Remove silicates or similar surface treatments or any deposits of white rust by sanding or similar abrasive methods (bronze wool). Use of acetic acid to prepare galvanized surfaces is not acceptable.

3.2.2.9.6. Galvanized Steel (Weathered): Remove dust, dirt, grease, oxides and other foreign material and clean to SSPC-SP 1 specified herein prior to coating.

3.2.2.9.7. Galvanized Steel (Pre-Treated)(Non-Crystal Appearance): Follow manufacturer's recommendations for preparation, priming and coating of pre-treated galvanized steel.

3.2.2.9.8. Light Zinc Coated or Satin Coated Products (ZF075) mostly found in environmentally controlled areas. Follow manufacturer's recommendations for preparation, priming and coating.

3.2.2.9.9. Heavy Coated Zinc Z275 (G90) for high humidity areas and as specified. Follow manufacturer's recommendations for preparation, priming and coating.

3.2.2.9.10. Metal Doors: Remove doors before painting to paint bottom and top edges and re-hang once dry. Do not paint stainless steel or bronze door butts. Paint or finish top and bottom edges of doors. Touch-up or refinish tops and edges after fitting.

3.2.2.10. Previously Finished Surfaces:

3.2.2.10.1. Clean existing interior and exterior surfaces to be repainted or varnished to provide bond. Remove rust, scale, oil, grease, mildew, chemicals and other foreign matter. Remove loose paint and fill flush with suitable patching material. Clean off bubbled, cracked, peeling or otherwise defective paint by stripping with suitable environmental strippers or by burning. Do not burn off paints suspected of having lead content. Treat residue from stripping as Hazardous Waste.

3.2.2.10.2. Flatten gloss paint and varnish with sandpaper and wipe off dust. If previous coatings have failed so as to affect proper performance or appearance of coatings to be applied, remove previous coatings completely and prepare substrates properly and refinish as specified for new work.

3.2.2.10.3. Remove or set screws, nails, hooks, tacks, and fasteners. Make repairs to damaged surfaces.

3.2.2.10.4. Existing gypsum board: Repair cracks and fissures by cutting away broken, damaged or loose material to expose substrate. Fill crack or damaged area with suitable new material in accordance with Section 09 29 00 – Gypsum Board.

3.2.2.10.5. Leave entire surface suitable to receive designated finishes and in accordance with finish manufacturer's instructions.

3.2.2.11. Woodwork:

3.2.2.11.1. Verify and determine wood species, grain direction and structure, properties of finish, application method and exposure to elements. Check moisture content to avoid movement of wood caused by expansion and contraction due to changes in moisture content. Verify grain cut as it may interfere with adhesion of paint.

3.2.2.11.2. Apply wood finishing Product in following order and as needed for specific appearance and application specified herein. Sanding sealer to control penetration of subsequent coats to create more uniform finish. Stain to colour wood and highlight grain for final finish. Filler to fill pores of wood and control penetration of subsequent coats. Apply filler across grain forcing it into pores followed with rubbing and sanding when dried. For staining requirements mix stain with filler before applying for uniform finish. Finish coats to provide protection to wood.

3.2.2.11.3. Wood work for Opaque Coating: Seal knots and sapwood in surfaces to receive paint with alcohol-based primer-sealer. Seal door edges. Sand smooth rough surfaces of woodwork to be finished using No. 150 grit paper followed by a second sanding using No. 220 grit paper. Sand in direction of grain. Clean surfaces free of dust before applying first coat using brush, compressed air or tack rags. Fill nail holes, splits and scratches with non-shrinking filler after first coat is dry.

3.2.2.11.4. Prepare plywood surface by removing dirt and debris. Fill screw and nail holes or minor imperfections with recommended filler and sand properly to receive finish coating. Ensure plywood requiring stained or painted finish is primed with top quality alkyd primer. Use only penetrating quality stain over plywood.

3.2.2.11.5. Woodwork for Clear Finish or Stain: Sand smooth woodwork to be finished using No. 150 grit paper followed by a second sanding using No. 220 grit paper and clean surfaces free of dust using brush, compressed air or tack rags before applying first coat. Abrade surfaces with stiff brush to remove loose fibres and splinters. Fill nail holes, splits and scratches with non-shrinking filler tinted to match local grain condition after first coat is dry. Sand lightly between coats with No. 220 grit sandpaper and remove dust.

3.2.2.11.6. Remove salt deposits that may appear on wood surfaces treated with fire retarder.

3.2.2.11.7. Obtain inspection of glue laminated beams by assigned painting inspector to ensure shop sealer has been applied. Where non-specified shop sealer has been applied to beams or columns, remove and refinish in accordance with manufacturer's written instructions.

3.2.2.11.8. Wood Doors: Remove doors before painting to paint bottom and top edges and re-hang once dry. Paint or finish top and bottom edges of doors to be painted or stained. Touch-up or refinish tops and edges after fitting.

3.2.2.12. Gypsum Board:

3.2.2.12.1. Examine and ensure gypsum board surfaces are without defects or deficiencies and suit able to receive painting applications. Commencement implies acceptance of gypsum board work. Examine surfaces after for imperfections showing through and fill small nicks or holes with patching compound and sand smooth. Examine surfaces after priming for imperfections showing through.

3.2.2.12.2. Clean surfaces dry, free of dust, dirt, powdery residue, grease, oil, wax or any other contaminants.

3.3. APPLICATION

3.3.1. Safety Precautions: When handling solvent coating materials, wear approved vapour/particulate respirator as protection from vapours. Dust respirators do not provide protection from vapours.

3.3.2. Material Compatibility: Provide primers and finish coat materials compatible with each other and substrate including fillers.

3.3.3. Obtain colour chart giving colour schemes and gloss value for various areas from Consultant. Ensure colour chart gives final selection of colours and surface textures of finishes and whether finishes are transparent (natural) or opaque (paint).

3.3.4. Provide finish uniform in sheen, colour and texture, free from streaks, shiners and brush or roller marks or other defects.

3.3.5. Apply materials in accordance with manufacturer's directions and specifications paying particular attention to appropriate time frame after cleaning when environmental conditions encourage flash-rusting, rusting, contamination or manufacturer's paint specifications require earlier applications. Do not use adulterants. Do any reduction of coating’s viscosity in accordance with manufacturer’s directions.

3.3.6. Use up paints within period of shelf life recommended by paint manufacturer.

3.3.7. Ensure successive coatings are harmonious chemical compositions and materials of same manufacturer.

3.3.8. Apply primer coat soon after surface preparation is completed to prevent contamination of substrate.

3.3.9. Primer/Sealers: Apply primer-sealer coats by brush or roller. Permit to dry in accordance with manufacturer’s recommendations before applying succeeding coats. Touch up suction spots and sand between coats with No. 120 sandpaper.

3.3.10. Sand and dust between each coat to provide an anchor for next coat and to remove defects visible from a distance up to 1 m (39").

3.3.11. Ensure each coat is dry and hard before a following coat is applied.

3.3.12. Continue through paint finish behind wall-mounted items (e.g. chalk and tack boards).

3.3.13. Finish listed surfaces indicated on Room Finish Schedule(s) and/or noted on Drawing(s) and as specified. Refer to Finish Room Schedule for type, location and extent of finishes required and include touch-ups and field painting necessary to complete work shown, scheduled or specified.

3.3.14. Finishes and number of coats specified in Room Finish Schedule are intended as minimum requirements guide only. Refer to manufacturer's recommendations for exact instructions for thickness of coating to obtain optimum coverage and appearance. Some materials and colours may require additional coats and deeper colours may require use of manufacturers' special tinted primers. Apply additional paint coats, beyond number of coats specified for any surface, to completely cover and hide substrate and to produce a solid, uniform appearance

3.3.15. Painting previously painted surfaces:

3.3.15.1. Paint entire plane of wall or ceiling.

3.3.15.2. Where there has been patching or repair work – paint entire plane of wall or ceiling. Patching is not acceptable.

3.3.16. Do not paint baked paint surface, chrome plated, stainless steel, aluminum or other surfaces finished with final finish in factory. Finish paint primed surfaces.

3.3.17. Metals:

3.3.17.1. Apply primer coat to unprimed ferrous metal surfaces. Where sandblast preparation is specified, apply specified primer immediately after blast cleaning.

3.3.18. Woodwork:

3.3.18.1. Fill open grain woods with filler tinted to match wood and work well into grain. Wipe excess from surface before filler sets.

3.3.18.2. Sand smooth paint and varnish undercoats prior to recoating.

3.3.18.3. Prime woodwork designated for painting as soon as possible after delivery to site and before installation. Prime cut surfaces, whether exposed or not, i.e. 6 edges of wood doors, before installation. Prime cut surfaces of woodwork to receive transparent finish with 1 coat of transparent finish reduced 25% or as directed by manufacturer.

3.3.18.4. Apply final coats on smooth surfaces by roller or brush. Hand brush wood trim surfaces.

3.3.19. Allow each coat of paint to cure and become dry and hard before application of succeeding coats (unless manufacturer's directions require otherwise).

3.3.20. Before finishing paint coats are applied, inspect and touch-up shop coats of primers previously applied by other trades or fabricators.

3.3.21. Provide paint coating thicknesses indicated, measured as minimum DFT.

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

3.3.23. Ledges: Finish projecting ledges, both above and below sight lines, as specified for adjacent surfaces.

3.3.24. Light Coves: Paint light coves white whether a light lens is installed or not, unless otherwise indicated.

3.3.25. Interior Columns: Finish interior columns same as walls of room unless otherwise indicated.

3.3.26. Mechanical and Electrical Services:

3.3.26.1. Co-ordinate painting of mechanical and electrical equipment, piping, conduit, system Identification with appropriate Mechanical and Electrical Specification Sections. Unless otherwise specified or noted, paint "unfinished" conduits, piping, hangers, ductwork and other mechanical and electrical equipment with colour and texture to match adjacent surfaces, where exposed-to-view in exterior and interior areas.

3.3.26.2. Prime and paint exposed, unfinished electrical raceways, fittings, outlet boxes, junction boxes, pull boxes and similar items.

3.3.26.3. Take steps to protect gauges, identification plates and similar items from being painted over or paint splattered.

3.3.26.4. Remove grilles, covers, access panels for mechanical and electrical systems from installed location and paint separately, if these items are not factory finished. Paint adjacent surfaces after removal and reinstall when surfaces are dry.

3.3.26.5. Paint work to match surfaces they are seen against unless directed otherwise.

3.3.26.6. Paint interior surfaces of air ducts visible through grilles and louvres, with 1 coat of flat black metal paint to limit of sight line.

3.3.26.7. In unfinished areas leave exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment in original finish and touch up scratches and marks.

3.3.26.8. Touch up scratches and marks on factory painted finishes and equipment with paint as supplied by manufacturer of equipment.

3.3.26.9. Do not paint over nameplates.

3.3.26.10. Paint behind louvres grilles and diffusers for minimum of 460 mm (18”) or beyond sight line, whichever is greater, to be painted with primer and 1 coat of matt black (non-reflecting) paint.

3.3.26.11. Paint each surface inside of light valances.

3.3.26.12. Paint disconnect switches for fire alarm system and exit light systems in red enamel.

3.3.26.13. Paint or band fire protection piping and sprinkler lines in accordance with mechanical requirements. Keep sprinkler heads free of paint.

3.3.26.14. Paint yellow or band natural gas piping in accordance with mechanical requirements.

3.3.26.15. Back prime and paint face and edges of plywood service panels for telephone and electrical equipment before installation to match adjacent wall surface. Leave equipment in original finish except for touch-up as required and paint conduits, mounting accessories and other unfinished items.

3.4. SITE QUALITY CONTROL

3.4.1. Non-Conforming Work:

3.4.1.1. Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction to Consultant at no cost to Owner. Touch up small affected areas, repaint large affected areas or areas without sufficient DFT of paint. Remove runs, sags of damaged paint by scraper or by sanding prior to application of paint.

3.4.1.2. Following are considered non-conforming qualities:

3.4.1.2.1. Lack of Uniformity:

3.4.1.2.1.1. Brush/roller marks, streaks, laps, runs, sags, drips, heavy stippling, hiding or shadowing by inefficient application methods, skipped or missed areas and foreign materials in paint coatings.

3.4.1.2.1.2. Evidence of poor coverage at rivet heads, plate edges, lap joints, crevices, pockets, corners and re-entrant angles.

3.4.1.2.1.3. Damage due to touching before paint is sufficiently dry or any other contributory cause.

3.4.1.2.1.4. Damage due to application on moist surfaces or caused by inadequate protection from weather.

3.4.1.2.1.5. Damage and/or contamination of paint due to blown contaminants (dust, spray paint, etc.).

3.4.1.2.2. Aesthetic Problems: If following are evident under final lighting source (including daylight) for interior surfaces:

3.4.1.2.2.1. Visible defects are evident on vertical surfaces when viewed at normal viewing angles from a distance of not less than 1 m (39”).

3.4.1.2.2.2. Visible defects are evident on horizontal surfaces when viewed at normal viewing angles from a distance of not less than 1 m (39”).

3.4.1.2.2.3. Visible defects are evident on ceiling, soffit and other overhead surfaces when viewed at normal viewing angles.

3.4.1.2.2.4. When final coat on any surface exhibits a lack of uniformity of colour, sheen, texture and hiding across full surface area.

3.5. CLEANING

3.5.1. Keep waste rags in covered metal drums containing water and remove from building at end of each Day. Remove other combustible rubbish materials and empty paint cans each Day from site and safely dispose of same in accordance with requirements of authorities having jurisdiction.

3.5.2. Clean equipment and dispose of wash water/solvents as well as other cleaning and protective materials (e.g. rags, drop cloths, masking papers, etc.), paints, thinners, paint removers/strippers in accordance with safety requirements of authorities having jurisdiction.

3.5.3. Clean containers used for storage, mixing and application of materials free of foreign materials and residue.

3.5.4. Keep work area free from an unnecessary accumulation of tools, equipment, surplus materials and debris.

3.5.5. Clean adjacent surfaces which have been painted, soiled or otherwise marred. Remove spilled, splashed, splattered or sprayed paint as work progresses using means and materials that are not detrimental to affected surfaces.

3.5.6. Remove masking and other protection provided under this Section.

3.5.7. Remove temporary protective wrappings provided by others for protection of work after completion of painting operations unless instructed otherwise.

3.5.8. Painting work will not be considered complete until spatters, drippings, smears and overspray have been cleaned and removed to satisfaction of Consultant.

3.5.9. Make Good any damage to structure building surfaces or furnishings resulting from painting operations at no cost to Owner.

3.5.10. Waste Management:

3.5.10.1. Dispose paint waste in accordance with local regulations.

3.5.10.2. Set aside and protect surplus and uncontaminated finish materials not required by Owner and deliver or arrange collection for verifiable re-use or re-manufacturing.

END OF SECTION

APPENDIX A – Door Hardware Schedule

ÉÉC Notre Dame Interior Renovations & Exterior Doors Replacement

400 Cumberland Ave,
Hamilton, ON L8M 2A2

DRAFT

FINISHING HARDWARE SPECIFICATION

FOR

INTERIOR RENOVATIONS & EXTERIOR DOOR REPLACEMENTS

EEC NOTRE DAME

400 CUMBERLAND AVE.

HAMILTON ON. L8M 2A2

SUBJECT TO APPROVAL

ARCHITECT:

AMRA J. ARCHITECT INC.
63 STOWBRIDGE CRESCENT
ANCASTER, ONT. L9G 5E1
PH# 905.920.5121

CONTRACTOR:

SUPPLIER:

GROUP 87
ARCHITECTURAL HARDWARE INC.
UNIT #1 – 3245 HARVESTER RD,
BURLINGTON, ON. L7N 3T7
PH# 905.639.4676
FAX# 905.639.7561
E-MAIL: craig@group87.ca
WEB: www.group87.ca

CONSULTANT: **CRAIG S. WILSON AHC**

COORDINATOR: DERRILL A. WILSON

DATE: March 12, 2025

REVISION:

DEVELOPED FROM ARCHITECTURAL DRAWING DATED: A | ISSUED FOR REVIEW | 25/03/06

Abbreviations (Categorized)

FRAMES: ALUMINUM

Frame Hands

Abbreviation	Definition
RHRA	Right Hand Reverse Active

FRAMES: HOLLOW METAL

Frame Hands

Abbreviation	Definition
LHR	Left Hand Reverse
LHRA	Left Hand Reverse Active
RHRA	Right Hand Reverse Active

HARDWARE

Door Type

Abbreviation	Definition
ALD	ALUMINUM DOOR
HMD	HOLLOW METAL DOOR

Fire Ratings

Abbreviation	Definition
NON-RTD	NON RATED

Frame Type

Abbreviation	Definition
ALF	ALUMINUM FRAME
HMF	HOLLOW METAL FRAME

Handing

Abbreviation	Definition
D/A	Double Acting
LH	Left Hand
LHA	Left Hand Active
LHI	Left Hand InActive
LHR	Left Hand Reverse
LHRA	Left Hand Reverse Active
LHRI	Left Hand Reverse InActive
RH	Right Hand
RHA	Right Hand Active
RHI	Right Hand InActive
RHR	Right Hand Reverse
RHRA	Right Hand Reverse Active
RHRI	Right Hand Reverse InActive

Hardware Finishes

Abbreviation	Definition
32D	SATIN STAINLESS STEEL, 300 SERIES
626	SATIN CHROMIUM PLATED OVER NICKEL
627	SATIN ALUMINUM, CLEAR COATED
628	SATIN ALUMINUM, CLEAR ANODIZED
630	SATIN STAINLESS STEEL

Abbreviations (Categorized)

HARDWARE

Hardware Finishes

Abbreviation	Definition
689	ALUMINUM PAINTED
BLK	BLACK
CL	CLEAR ANODIZED

Hardware Mfrs

Abbreviation	Definition
CAM	CAMDEN DOOR CONTROLS
G87	GROUP 87 ARCHITECTURAL HARDWARE INC.
GLY	GLYNN-JOHNSON
IVE	H.B. IVES
KMT	K.M. THOMAS
KNC	K.N. CROWDER MFG. INC.
LCN	LCN COMMERCIAL DIVISION
MIC	MICOM [AUTO OPERATORS]
PLI	POST LATCH INDUSTRIES
SCH	SCHLAGE LOCK COMPANY
SMH	STANDARD METAL HARDWARE MANUFACTURING
UNK	UNKNOWN
VON	VON DUPRIN

Hardware Miscellaneous

Abbreviation	Definition
EO	EXIT ONLY
HW	HEAVY WEIGHT
NRP	NON-REMOVEABLE PIN (IN HINGE)
TB	THROUGH BOLTS
TBC	TO BE CONFIRMED.

Hardware Remark

Abbreviation	Definition
SS	STAINLESS STEEL

Heading Remark

Abbreviation	Definition
AL	ALUMINUM
BE	BLANK ESCUTCHEON
DE	DOUBLE EGRESS; ALSO DESIGNATED AS "DBLE EG"D
EL	ELECTRIC; ALSO DESIGNATED AS "ELEC"
EX	EXISTING
RU	ROLL-UP DOOR

Modes of Operation

Abbreviation	Definition
PR	PAIR OF DOORS
SGL	SINGLE DOOR

SPECIFICATION NOTES

1) To be bid **as per specification**.
Substitution, and/or omission, of products **requires Architects/Consultants approval.**

Request for Substitutions **must be made a minimum of 10 days prior to Tender Close.**

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"*** [AHC] to co-ordinate and oversee scheduling, ordering and the supplying of finishing hardware.

3) All locks to be keyed to the existing system.Temporary lock cylinders to be provided. Permanent Medeco cylinders to be provided by Able Lock under separate contract.

4) Auto Door Operator Installation [if required]:

Automatic operators are supplied and installed by the finishing hardware supplier. Rough-in, 110V to head of frame, conduit, backboxes and low voltage wire runs by electrical division. Backing and reinforcement for operator by General Contractor Work must be completed prior to the arrival of the Operator Installation Technician. Installation company must employ an AAADM certified technician.

5) ***Installation of frames** to be site confirmed by G.C. to be Plumb & True prior to commencement of door & hardware installation.

6) Standard mounting heights [unless otherwise noted]

A.	Locks/Latches	40-5/16" [1023mm] to center line of strike from finished floor.
B.	Deadlocks	47 1/4" [1200mm] to center line of strike from finished floor.
		*Unless otherwise noted.
C.	Exit Devices	40-5/16" [1023mm] to center line of strike from finished floor.
D.	Door Pulls	42" [1067mm] to center line of pull from finished floor.
		Where a deadlock is located at the 40-5/16" [1023mm] location
		install the door pull immediately above the lock body/case.
E.	Push Plate	45" [1143mm] to center line of Push Plate from finished floor.
F.	Coat Hook	47" [1200mm] to center line of Hook from finished floor.
G.	Door Viewer	43" [1100mm] to center line of Viewer from finished floor.

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

Index

Mark#	Outside Location	Inside Location	Hand	Hdg
113-A	EXTERIOR	CORRIDOR 113	LHR	01
114-A	EXTERIOR	VESTIBULE 114	RHRA	02
137-A	EXTERIOR	EX. CORRIDOR 137	RHRA	03
138-A	EXTERIOR	EX GYMNASIUM 138	LHRA	04

Heading 01 (HwSet)

	Hand	Degree Act	Degree InAct
1 SGL DOOR(S) 113-A EXTERIOR FROM CORRIDOR 113 920 x 2100 x 44 x HMD x HMF x NON-RTD	LHR	90	

TYPE B

Totals	Each Assembly to have:					
(3)	3	EA	HINGE	5BB1HW 127 X 114 NRP	630	IVE
(1)	1	EA	PANIC HARDWARE	HDSI 98NL-OP *C/W INDICATOR	626	VON
(1)	1	EA	GLASS BEAD KIT	99GBK-R/M	689	VON
(1)	1	EA	RIM CYLINDER	20-021 KWY TBC	626	SCH
(1)	1	EA	PERMANENT CYLINDER	MEDECO BY OWNER		
(1)	1	EA	OFFSET PULL	3015-2	32D	SMH
(1)	1	EA	CLOSER-STOP	4040XP.S CUSH *SPRINGSTOP	689	LCN
(1)	1	EA	KICKPLATE	K10A 203 X 870 TAPE MTD	32D	SMH
(1)	1	SET	WEATHERSTRIP	W-17N 1/920 X 2/2100	628	KNC
(1)	1	EA	DOOR SWEEP	W-24S 920	628	KNC
(1)	1	EA	THRESHOLD	CT-10 920 X 10 X 1 1/2" FHSD TAP CON	627	KNC

INSTALL WEATHERSTRIP PRIOR TO DOOR CLOSER, DO NOT CUT FOR CLOSER SHOE.

Heading 02 (HwSet)

	Hand	Degree Act	Degree InAct
1 PR DOOR(S) 114-A EXTERIOR FROM VESTIBULE 114 2-920 x 2080 x 44 x HMD x HMF x NON-RTD Opening Remark: ACCESS CONTROLLED OPENING	RHRA/LHRI	90	90

TYPE D

Totals	Each Assembly to have:						Act	InAct
(6)	6	EA	HINGE	5BB1HW 127 X 114 NRP	630	IVE	3	3
(1)	1	EA	FIXED MULLION	BY FRAME PROVIDER		UNK		
(1)	1	EA	PANIC HARDWARE	HDSI 98EO *C/W INDICATOR	626	VON		1
(1)	1	EA	PANIC HARDWARE	HDSI 98NL-OP *C/W INDICATOR	626	VON	1	
(2)	2	EA	GLASS BEAD KIT	99GBK-R/M	689	VON	1	1
(1)	1	EA	RIM CYLINDER	20-021 KWY TBC	626	SCH	1	
(1)	1	EA	PERMANENT CYLINDER	MEDECO BY OWNER			1	
(1)	1	EA	ELECTRIC STRIKE	6300	630	VON	1	
(2)	2	EA	OFFSET PULL	3015-2	32D	SMH	1	1
(2)	2	EA	CLOSER-STOP	4040XP.S CUSH *SPRINGSTOP	689	LCN	1	1
(2)	2	EA	KICKPLATE	K10A 203 X 870 TAPE MTD	32D	SMH	1	1
(2)	2	SET	WEATHERSTRIP	W-17N 1/920 X 2/2080	628	KNC	1	1

Heading 02 (HwSet) Continued.....

							Hand	Degree Act	Degree InAct
(2)	2	EA	DOOR SWEEP	W-24S 920	628	KNC	1	1
(2)	2	EA	THRESHOLD	CT-10 920 X 10 X 1 1/2" FHSD TAP CON	627	KNC	1	1
(1)	1	EA	CARD READER	EXISTING			1	

INSTALL WEATHERSTRIP PRIOR TO DOOR CLOSER, DO NOT CUT FOR CLOSER SHOE.

Heading 03 (HwSet)

		Hand	Degree Act	Degree InAct
1 PR	DOOR(S) 137-A EXTERIOR FROM EX. CORRIDOR 137 2-1000 x 2125 x 50 x ALD x ALF x NON-RTD Opening Remark: ACCESS CONTROLLED OPENING TYPE A	RHRA/LHRI	95	95

Totals Each Assembly to have:

							Act	InAct
(2)	2	EA	CONTINUOUS HINGE	027XY 2108MM	628	IVE	1	1
(1)	1	EA	FIXED MULLION	BY FRAME PROVIDER		UNK		
(1)	1	EA	PANIC HARDWARE	HDSI 35A-EO X 1200MM *C/W INDICATOR	626	VON		1
(1)	1	EA	PANIC HARDWARE	HDSI 35A-NL-OP X 1200MM *C/W INDICATOR	626	VON	1	
(1)	1	EA	RIM CYLINDER	20-021 KWY TBC	626	SCH	1	
(1)	1	EA	PERMANENT CYLINDER	MEDECO BY OWNER			1	
(1)	1	EA	ELECTRIC STRIKE	6300	630	VON	1	
(1)	1	EA	TJ CLOSER	4021	689	LCN		1
(1)	1	EA	ADAPTER PLATE	4020-18G	689	LCN		1
(1)	1	EA	AUTOMATIC OPERATOR	SW800	CL	MIC	1	
(2)	2	EA	OVERHEAD STOP	105S	630	GLY	1	1
(2)	2	EA	DOOR SWEEP	W-24S 1000	628	KNC	1	1
(1)	1	EA	THRESHOLD	CT-805 2000MM X 10 X 1 1/2" FHSD TAP CON	627	KNC		
(1)	1	EA	INTEGRATION BOX	TA2902G3 E-CR-AO		KMT		
(2)	2	EA	MOUNTING BOX SQR.	CM-43CBLA		CAM		
(2)	2	EA	SQR. ACTUATOR	CM-45/4	32D	CAM		
(1)	1	SET	WIRING DIAGRAMS	AS REQUIRED		G87		
(1)	1	EA	INSTALLATION	AUTO OPERATOR		G87		
(1)	1	EA	WEATHERSTRIP	BY DOOR SUPPLIER				
(1)	1	EA	BELL	EXISTING				
(1)	1	EA	CARD READER	EXISTING				

THRESHOLD TYPE TO BE CONFIRMED.

AUTOMATIC OPERATOR IS SUPPLIED & INSTALLED BY THE FINISHING HARDWARE SUPPLIER.

Heading 03 (HwSet) Continued.....

	Hand	Degree Act	Degree InAct

ROUGH-IN, 115V TO HEAD OF FRAME, CONDUIT, BACKBOXES, LOW VOLTAGE WIRE RUNS AND DEDICATED 15AMP CIRCUIT BY G.C./ELECTRICAL DIVISION.
BACKING AND REINFORCEMENT FOR OPERATOR BY GENERAL CONTRACTOR.
ACCESS CONTROL SUPPLIER TO TERMINATE @ INTEGRATION BOX.
PRESENTING CREDENTIAL TO THE CARD READER RELEASES THE ELECTRIC STRIKE AND ENABLES THE OPERATOR BUTTON. *TBC

Heading 04 (HwSet)

	Hand	Degree Act	Degree InAct
1 PR DOOR(S) 138-A EXTERIOR FROM EX GYMNASIUM 138 1865 x 2125 x 44 x HMD x HMF x NON-RTD	LHRA/RHRI	95	95

TYPE C - UNEQUAL LEAVES 1/1000 X 1/865

Totals	Each	Assembly to have:					Act	InAct
(6)	6	EA	HINGE	5BB1HW 127 X 114 NRP	630	IVE	3	3
(1)	1	EA	REMOVABLE MULLION	42-7-CNI-LK *KEY REMOVABLE	PT	PLI		
(1)	1	EA	PANIC HARDWARE	HDSI 98EO *C/W INDICATOR	626	VON		1
(1)	1	EA	PANIC HARDWARE	HDSI 98EO X 1220MM *C/W INDICATOR	626	VON	1	
(1)	1	EA	MULLION CYLINDER	20-001 32MM KWY TBC	626	SCH		
(2)	2	EA	CLSR-HLDR-STOP	4040XP.S H CUSH.TBSRT	689	LCN	1	1
(1)	1	EA	KICKPLATE	K10A 203 X 815 TAPE MTD	32D	SMH		1
(1)	1	EA	KICKPLATE	K10A 203 X 950 TAPE MTD	32D	SMH	1	
(1)	1	SET	WEATHERSTRIP	W-17N 1/1865 X 2/2125	628	KNC		
(2)	2	SET	WEATHERSTRIP	W-22 X 2125MM *APPLY TO MULLION	BLK	KNC		
(1)	1	EA	DOOR SWEEP	W-24S 1000	628	KNC	1	
(1)	1	EA	DOOR SWEEP	W-24S 865	628	KNC		1
(1)	1	EA	THRESHOLD	CT-10 1865 X 10 X 1 1/2" FHSD TAP CON	627	KNC		

*EXIT ONLY, NO ACCESS FROM EXTERIOR.
INSTALL WEATHERSTRIP PRIOR TO DOOR CLOSER, DO NOT CUT FOR CLOSER SHOE.

End of Schedule