







SPRINGHILL SERVICE CENTRE RENOVATION

Sringhill, NS

Technical Specifications
2020-03-03

DESIGN PLUS ARCHITECTURE

LICENSED ARCHITECT
LÉO B. GOGUEN
NOVA SCOTIA ASSOCIATION OF ARCHITECTS

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END OF SECTION

Part 1 General

1.1 INVITATION TO TENDER

.1 The Municipality of the County of Cumberland invites tenders for the renovation work Springhill Service Centre in Springhill NS.

.2 Offers signed under seal, executed, and dated will be received by the Owner, at the offices of the Owner located at 1395 Blair Lake Rd, Upper Nappan, Cumberland County, Nova Scotia, before 2:00 p.m. local time as designated by the reception desk clock on the March 25th, 2020.

PROJECT NAME:
Springhill Service Centre Renovations
Springhill, Nova Scotia
Tender no. T-MCC-2004

.3 A site visit will be held on March 16th, 2020 at 2:00 pm at the Springhill Service Centre. This will be the only opportunity for review of existing conditions. The consultant's representative will be available to answer questions arising from the review of the site and the Contract Documents.

.4 Bid Documents may be viewed at the Upper Nappan Service Centre and on the Construction Association of Nova Scotia website.

.5 The Bid Depository will not be used for this project.

.6 A Bid Bond in the amount equal to 10% of Bid Price (excluding HST) must accompany each Bid. The successful bidder will be required to provide a Performance Bond and Labour and Materials Payment Bond as specified in the Bid Documents.

.7 The requirements of the Canadian Standard Construction Document CCDC-2 (2008) shall apply to the contract.

.8 The lowest/highest or any tender will not necessarily be accepted.

END OF SECTION

Part 1 Invitation

1.1 BID CALL

.1 Offers signed under seal, executed, and dated will be received by the Owner, at the offices of the Owner located at 1395 Blair Lake Rd, Upper Nappan, Cumberland County, Nova Scotia, before 2:00 p.m. local time as designated by the reception desk clock on the 3rd day of March, 2020.

.2 Offers submitted after the above time shall be returned to the Bidder unopened.

.3 The Low Bidder to submit the Supplementary Bid information, as requested below, to the offices of the Consultant no later than 48 hours after the time for receipt of bids.

.4 Offers will be opened publicly immediately after the time of receipt of bids, at the office of the Owner.

.5 Any corrections or additions to any submitted Tender will not be accepted unless it is initialed by the person signing the Tender.

1.2 INTENT

.1 The intent of this bid call is to obtain an offer to perform work to complete Office Renovations located at 43 Main Street, Springhill, Cumberland County, Nova Scotia, for a Stipulated Price contract, in accordance with the Contract Documents.

.2 Perform the Work within the time stated in Section 01 11 00.

Part 2 Contract and Bid Documents

2.1 DEFINITIONS

.1 Contract Documents: as defined in the Contract.

.2 Bid Documents: as defined in Section 00 71 00.

.3 Bid Price: defined as the monetary sum identified by the Bidder in the Bid Form.

2.2 AVAILABILITY

.1 Bid Documents may be obtained at Acadian Printing, located at 46 Anson Avenue, Unit 7, Amherst, Nova Scotia (tel: (902)667-3556).

.2 One set of Bid Documents can be obtained by Bidders for the sum of 100$

.3 Electronic copies will be available at no cost upon request.

.4 Bid Documents are made available only for the purpose of obtaining offers for this project. Their use does not confer a license or grant for other purposes.

2.3 EXAMINATION

.1 Electronic Bid Documents will be available on the NS Procurement and MCC websites.

.2 Upon receipt of Bid Documents verify that documents are complete; notify Consultant should the documents be incomplete.

.3 Immediately notify the Consultant upon finding discrepancies or omissions in the Bid Documents.

2.4 QUERIES AND ADDENDA

.1 Direct questions in writing, by way of fax, or email to: Design Plus Architecture Inc. at jamie@designplus.pro & (506) 384-3535.

.2 Addenda may be issued during the bidding period. All addenda become part of the Contract Documents. Include costs in Bid Price.

.3 Verbal answers are only binding when confirmed by written addenda.

.4 Clarifications requested by Bidders must be in writing not less than 4 Working Days before date set for receipt of bids. The reply will be in the form of an addendum, which electronic copies will be posted on the NS Procurement and MCC Web Site for Bidders no later than 2 Working Days before receipt of bids.

2.5 UNSOLICITED ALTERNATIVES DURING BIDDING

.1 Where Bid Documents stipulate a particular Product, requests to use unsolicited alternatives will not be considered by the Consultant less than 7 days before receipt of bids.

.2 When a request to use an unsolicited alternative is made, the Consultant may approve the unsolicited alternative and will issue an Addendum to known Bidders.

.3 When requesting an alternative to specified Products, include any changes required in the Work to accommodate such unsolicited alternatives. A later claim by the Bidder for an addition to the Contract Price resulting from changes in the Work necessitated by use of unsolicited alternative Products will not be considered.

.4 Product or system alternatives proposed by Bidders at the time of receipt of bids may be considered by Consultant if submitted as an attachment to the Bid Form. Unsolicited alternatives not approved in writing by the Consultant prior to the receipt of bids shall not be included in the Bid Price.

.5 Requests for unsolicited alternatives submitted with the Bid Form will be evaluated and will be either included in, or excluded from, the Contract. The Consultant will be the sole judge as to their acceptability.

.6 Provide sufficient information to enable the Consultant to determine acceptability of unsolicited alternatives. Include information identifying:

.1 Compliance with codes and standards.

.2 Compatibility with contiguous materials and systems.

.3 Product history.

.4 Corporate history.

.5 Life cycle costing.

.6 Environmental considerations.

.7 Provide complete information on required revisions to other work to accommodate each unsolicited alternative, and the dollar amount of additions to or reductions from the Bid Price, including revisions to other work.

.8 Unless requests to use unsolicited alternatives are submitted prior to, or as part of the bid submission, and subsequently accepted, provide the specified Products or assemblies.

.9 Prior approval to submit unsolicited alternatives is not required.

Part 3 Site Assessment

3.1 SITE EXAMINATION

.1 Visit the Place of the Work and surrounding area before submitting a bid.

.2 A visit to the Place of the Work has been arranged for all Bidders on March 16th, 2020 at 2:00pm local time.

.1 Meet at the main entrance lobby.

.3 Bidders visiting the Place of the Work will be required to be accompanied at all times by a representative of the Owner.

.4 The Owner will not consider any claims for additional payments during the execution of the Work for extra work or difficulties encountered resulting from conditions which were either visible or could be reasonably inferred from an examination of the Place of the Work prior to the submission of bids.

.5 Upon completion of site examination, reinstate the Place of the Work to its original condition. Pay for costs of repair to damaged Products and systems

Part 4 Bid Submission

4.1 BID INELIGIBILITY

.1 Bids that are unsigned, improperly signed or sealed, conditional, illegible, obscure, contain arithmetical errors, erasures, alterations, or irregularities of any kind may, at the discretion of the Owner, be declared informal.

.2 Bids with Bid Forms and enclosures which are improperly prepared may, at the discretion of the Owner, be declared informal.

.3 Bids based upon prices seeming to be so unbalanced as to adversely affect the interests of the Owner may, at the discretion of the Owner, be declared informal.

.4 Bids based upon an unreasonable period of time for completion of the Work may, at the discretion of the Owner, be declared informal.

4.2 SUBMISSIONS

.1 Bidders shall be solely responsible for the delivery of their bids in the manner and time prescribed.

.2 Submit one copy of the executed offer on the Bid Forms provided, signed and corporate sealed together with the required security in a closed opaque envelope, clearly identified with Bidder's name, project name and Owner's name on the outside.

.3 Insert the closed and sealed Bid Form envelope and requested bid bond in a larger opaque envelope and label this envelope as noted above.

.4 Improperly completed information, or irregularities in bid bond, may be cause not to open the bid envelope and to declare the bid informal.

4.3 BID DEPOSITORY

.1 Not used.

Part 5 Bid Enclosures and Requirements

5.1 SECURITY DEPOSIT

.1 Bids shall be accompanied by a Bid Bond in the amount amount equal to 10% of the Bid Price (excluding HST) in Canadian funds.

.2 Endorse the Bid Bond in the name of the Owner as obligee, signed and sealed by the principal (Contractor) and surety.

.3 Use Bid Bond Form CCDC 220, or a form of equal content acceptable to Owner.

.4 Include the cost of the Bid Bond in the Bid Price.

.5 The security deposit will be returned after delivery to the Owner of the required Performance and Labour and Materials Payment Bond(s) by the accepted Bidder.

.6 If no contract is awarded, all security deposits will be returned.

5.2 AGREEMENT TO BOND

.1 Submit with the Bid Form and Bid Bond a Agreement to Bond, stating that the surety providing the Bid Bond is willing to supply the Performance Bond and Labour and Material Payment Bond required.

5.3 PERFORMANCE ASSURANCE

.1 The accepted Bidder shall provide a Performance Bond and a Labour and Materials Payment Bond as described in the Supplementary Conditions.

.2 Include the cost of bonds in the Bid Price.

5.4 WORKPLACE SAFETY INSURANCE

.1 Provide a signed and dated Clearance Certificate issued by the provincial or territorial jurisdiction having authority, confirming that, at the date of the bidding, the Bidder maintains an account, and is in good standing.

.2 Provide a valid Letter of Good Standing from Construction Safety Nova Scotia or equal.

5.5 TAXES

.1 The General Conditions of the Contract specifically excludes Value Added Taxes, such as the federal government's Goods and Services Tax, from the Contract Price.

5.6 BID FORM REQUIREMENTS

.1 The Bidder, in submitting an offer, agrees to attain Substantial Performance of the Work by the date indicated in the Contract Documents.

.2 The Owner requires that the Work be completed as quickly and expeditiously as possible.

5.7 BID FORM SIGNING

.1 Sign and seal the Bid Form prior to submission using the most appropriate of the following methods:

.1 Sole Proprietorship: signature of sole proprietor in the presence of a witness who will also sign. Insert the words "Sole Proprietor" under the signature. Affix seal if deemed necessary by local practice.

.2 Partnership: signature of all partners in the presence of a witness who will also sign. Insert the word "Partner" under each signature, and affix seal to each signature if deemed necessary by local practice.

.3 Limited Company: signature of the duly authorized signing officer(s). Insert under each signature the officer's capacity to act on behalf of the company. Affix the corporate seal. If the bid is signed by officials other than the President and Secretary of the company, or the President-Secretary-Treasurer of the company, a copy of the by-law resolution of the Board of Directors authorizing them to do so, must also be submitted with the Bid in the Bid envelope.

.4 Joint Venture: each party of the joint venture shall execute the Bid under their respective seals in a manner appropriate to such party as described above, similar to the requirements of a Partnership.

5.8 SUPPLEMENTARY BID SUBMISSION[S]

.1 The lowest Bidder will be requested to complete and submit the documents listed below at the time and place for the supplementary bid submission described in Article 1.1 - Bid Call.

.2 Supplementary Bid Submissions:

.1 Supplementary Information Form, Section 00 43 00 – Supplementary Information

.2 Verification of qualifications.

.3 Verification of superintendent's experience / resume.

.4 Workers compensation board clearance form.

.3 Failure to submit the requested documents before the designated time may result in the Bidder's bid being declared informal by the Owner.

Part 6 Offer Acceptance or Rejection

6.1 DURATION OF OFFER

.1 Bids shall remain open to acceptance and shall be irrevocable for a period of sixty (60) days after the bid closing date.

6.2 ACCEPTANCE OF OFFER

.1 The Owner reserves the right to reject any or all Bidders or to accept any bid should it be deemed to be in its best interest to do so, and to waive irregularities and omissions, if in so doing, the best interest of the Owner will be served.

.2 Bidders expressly waive any right to make any claim against the Owner for any matter arising from the Owner exercising its rights, as stated above.

.3 After acceptance by the Owner, the successful Bidder will be notified in writing.

.4 After a bid has been accepted, all rejected bids will be returned to the respective Bidders with submitted bid securities and other requested enclosures.

END OF SECTION

1.1 EXISTING CONDITIONS

.1 Drawings for the original building construction are available for review by Bidders at the Owner's office. Electronic copies can be made available upon request.

.2 These drawings are from the original construction and do not incorporate subsequent changes. These should be considered in coordination with onsite conditions.

.3 These documents were prepared by others and neither the Owner nor the Consultant take responsibility for their accuracy, nor verify that they represent the actual construction at the Place of the Work.

END OF DOCUMENT

STIPULATED AND UNIT PRICE BID FORM

Project: **Springhill Service Centre Renovations**
Springhill, NS
Tender no. T-MCC-2004

Project No.: **dp_18022**

From (Bidder): _____
(company name)

_____
(street address or postal box number)

_____
(city / town, province, and postal code)

To (Owner): Municipality of the County of Cumberland.

1395 Blair Lake Rd, Upper Nappan, Cumberland County, Nova Scotia

STIPULATED PRICE

We, the undersigned, having examined the Bid Documents for the above named project/contract, including Addendum Number(s) _____ to _____ inclusive; hereby offer to perform the Work in accordance with the Bid Documents, for the stipulated (base bid) price of:

_____Dollars_____Cents
(WRITE OUT IN FULL) in Canadian dollars, not including Value Added Taxes

A signed copy of each Addendum covering letter must be included with Tender submission.

SAFETY CERTIFICATION

We acknowledge the requirement for Safety Certification in accordance with Section 01 35 29.06 – Health and Safety Requirements and have attached a Construction Safety Association Letter of Good Standing or approved alternative from province of work, as evidence of compliance for all projects with a tender value greater than $10,000.00. The Contractor shall maintain a Certification of Recognition (COR) Program and it shall remain in force until certificate of final completion.

SIGNATURES

We, the undersigned, declare that:

(a) we further agree that this tender is to continue "open to acceptance" and irrevocable until twenty-one (21) days after the day set for opening of tenders.
(b) we agree to be substantially completed and ready for occupancy by Owner no later than August 17th, 2020.
(c) we have arrived at this bid without collusion with any competitor,
(d) this Bid is open to acceptance by the Owner for a period of 60 working days from the date of bid closing, and
(e) all bid form supplements called for by the Bid Documents form an integral part of this bid.
(f) we include here with a Bid Bond in the amount of ten percent (10%) of the total tender price.

Signed and submitted by:

_____
(company name)

_____
(street address or postal box number)

_____
(telephone number)

_____
(printed name and title of authorized signing officer)

_____
(signature of authorized signing officer)

Dated this_____ day of_____2020.

Note: affix corporate seal as required by Bid Documents.

Part 1 General

1.1 AGREEMENT

.1 CCDC 2 - 2008, Stipulated Price Contract, as amended below, forms the basis of Agreement between the Owner and Contractor.

END OF SECTION

Part 1 General

1.1 STANDARD DEFINITIONS

.1 CCDC 2 - 2008, Stipulated Price Contract, as amended below, includes the Definitions of specific words and terms.

1.2 SUPPLEMENTARY DEFINITIONS

.1 Add a new Definition for Make Good, as follows: "Make Good means to restore new or existing work after being damaged, cut, patched, or rejected by the Consultant. Use materials identical to the original materials, with visible surfaces matching the appearance of the original surfaces in all details, and with no apparent junctions between new and original surfaces. Where original materials are not available, the contractor shall submit a proposal of materials for review by the Consultant."

END OF SECTION

Part 1 General

1.1 GENERAL CONDITIONS

.1 The General Conditions of CCDC 2 - 2008, Stipulated Price Contract is the General Conditions between the Owner and Contractor.

1.2 SUPPLEMENTARY CONDITIONS

.1 Refer to Document 00 73 00 - Supplementary Conditions for amendments to these General Conditions.

END OF SECTION

Part 1 Supplements to General Conditions

1.1 GC 1.1 - CONTRACT DOCUMENTS

.1 Revise Paragraph 1.1.8 as follows: “The *Owner* shall provide the *Contractor*, without charge, five (5) copies of the *Contract Documents* to perform the *Work*. If the *Contractor* requires additional copies, they will be at the *Contractor's* cost and based on the cost of impression.”

1.2 GC 2.4 - DEFECTIVE WORK

.1 Add Paragraph 2.4.4 as follows: "If the *Consultant* determination is not accepted by either party, then the matter shall be settled in accordance with the requirements of Part 8 of the General Conditions."

1.3 GC 5.2 - APPLICATIONS FOR PROGRESS PAYMENT

.1 Add Paragraph 5.2.8 as follows: "For each application for progress payment, except for the first, provide a completed Statutory Declaration in the form of CCDC 9A - 2001."

1.4 GC 5.4 - SUBSTANTIAL PERFORMANCE OF THE WORK

.1 Add Paragraph 5.4.2.3 as follows: "Seven (7) working days before the *Contractor* submits the application for *Substantial Performance of the Work*, all Operations and Maintenance Manual materials shall be submitted to the *Consultant* in accordance with the Contract Documents. The certificate of *Substantial Performance of the Work* will not be issued until the *Consultant* receives the required documents."

.2 Add Paragraph 5.4.2.4 as follows: “If, in the *Consultant’s* opinion, a reasonable list of outstanding deficiencies can be prepared, a date of *Substantial Performance of the Work* or designated portion of the *Work* may be established. The *Consultant* will prepare the list of deficiencies which will form part of the Substantial Performance Documentation. A holdback amount for each individual deficiency item will be determined at the discretion of the *Consultant* and will be established at a value that is a minimum of two times the *Consultant’s* opinion of probable construction cost for the deficiency item.”

1.5 GC 5.7 - FINAL PAYMENT

.1 Replace Paragraph 5.7.1 with the following: "When the *Contractor* considers that the Work is completed, the *Contractor* shall submit an application for final payment. The *Contractor*'s application for final payment is considered to be valid when:

.1 Work has been completed in compliance with the Contract Documents and the *Consultant* is satisfied that all the requirements of the Contract have been fulfilled by the *Contractor*.

.2 Defects have been corrected and deficiencies have been completed.

.3 Equipment and systems have been tested, adjusted and balanced and are fully operational and written reports as outlined in the Contract Documents have been provided to the *Consultant*.

.4 Certificates required by utility companies, manufacturer's representatives and inspectors have been submitted.

.5 Spare parts, maintenance materials, warranties and maintenance bonds, if applicable, have been provided.

.6 Final copies of maintenance manuals and as-built documents have been provided."

.2 Renumber existing Paragraph 5.7.2 to 5.7.4.

.3 Renumber existing Paragraph 5.7.3 to 5.7.5.

.4 Renumber existing Paragraph 5.7.4 to 5.7.6.

.5 Add new Paragraph 5.7.2 as follows: "If Work is deemed incomplete by the *Consultant*, complete outstanding items and re-submit application for final payment."

.6 Add new Paragraph 5.7.3 as follows: "If, in the opinion of the *Consultant*, it is not expedient to correct defective Work, or Work is not performed in accordance with the requirements of the Contract, the *Owner* may deduct from the Contract Price the difference in value between Work performed and that called for by the Contract Documents, the amount of which shall be determined by the *Consultant*."

1.6 GC 6.3 - CHANGE DIRECTIVE

.1 Replace Subparagraph 6.3.6.3 as follows: "The *Contractor*'s fee mark-up shall be a percentage of the net increase in the *Contractor*'s cost to the following limits:

.1 Work completed by *Contractor*'s own forces: 15%

.2 Work completed by *Subcontractor*: 5%

1.7 GC 8.2 - NEGOTIATION, MEDIATION AND ARBITRATION

.1 Add new Paragraph 8.2.9 as follows: "Within five days of receipt of the notice of arbitration by the responding party under Paragraph 8.2.6, the Owner and the Contractor shall give the Consultant a written notice containing:

.1 a copy of the notice of arbitration;

.2 a copy of supplementary conditions 8.2.9 to 8.2.15 of this Contract, and;

.3 any claims or issues which the Contractor or the Owner, as the case may be, wishes to raise in relation to the Consultant arising out of the issues in dispute in the arbitration."

.2 Add new Paragraph 8.2.10 as follows: "The Owner and the Contractor agree that the Consultant may elect, within ten days of receipt of the notice under Paragraph 8.2.9, to become a full party to the arbitration under Paragraph 8.2.6 if the Consultant;

.1 has a vested or contingent financial interest in the outcome of the arbitration;

.2 gives the notice of election to the Owner and the Contractor before the arbitrator is appointed;

.3 agrees to be a party to the arbitration within the meaning of the rules referred to in Paragraph 8.2.6, and;

.4 agrees to be bound by the arbitral award made in the arbitration."

.3 Add new Paragraph 8.2.11 as follows: "If the Consultant is not given the written notice required under Paragraph 8.2.9, both the Owner and the Contractor are prevented from pursuing an action, counterclaim or other proceeding or making an application against the Consultant arising out of the issues in dispute in the arbitration between the Owner and the Contractor under Paragraph 8.2.6."

.4 Add new Paragraph 8.2.12 as follows: "If an election is made under Paragraph 8.2.10, the Consultant may participate in the appointment of the arbitrator and, notwithstanding the rules referred to in Paragraph 8.2.6, the time period for reaching agreement on the appointment of the arbitrator shall begin to run from the date the respondent receives a copy of the notice of arbitration."

.5 Add new Paragraph 8.2.13 as follows: "The arbitrator in the arbitration in which the Consultant has elected under Paragraph 8.2.10 to become a full party may:

.1 on application of the Owner or the Contractor, determine whether the Consultant has satisfied the requirements of Paragraph 8.2.10, and;

.2 make any procedural order considered necessary to facilitate the addition of the Consultant as a party to the arbitration."

.6 Add new Paragraph 8.2.14 as follows: "The provisions of Paragraph 8.2.9 shall apply mutatis mutandis to written notice to be given by the Consultant to any sub-consultant."

.7 Add new Paragraph 8.2.15 as follows: "In the event of notice of arbitration given by the Consultant to a sub-consultant, the sub-consultant is not entitled to any election with respect to the proceeding as outlined in Paragraph 8.2.10, and is deemed to be bound by the arbitration proceeding."

.8 Add new Paragraph 8.2.16 as follows: "The cost of arbitration shall be apportioned against the parties hereto or against any one of them as the arbitrator may decide, as outlined in the latest edition of the Rules for Mediation of CCDC 2 Construction Disputes, except that those costs shall not include counsel fees for any of the parties to the arbitration. Counsel fees shall be paid by each party."

1.8 GC 10.1 - TAXES AND DUTIES

.1 Add new Paragraph 10.1.3 as follows: "Where the Owner is entitled to any available exemptions for rebates of sales tax or customs duty or both of them, the Contractor shall supply to the Owner full particulars of all sales tax or customs duty paid, in order to facilitate the application by the Owner for such refund. The Owner will retain such funds for its own use."

1.9 GC 11.1 - INSURANCE

.1 Revise Subparagraph 11.1.1.1 as follows: “General liability insurance in the name of the *Contractor* and include, or in the case of a single, blanket policy, be endorsed to name, the *Owner* and the *Consultant* as insureds but only with respect to liability, other than legal liability arising out of their sole negligence, arising out of the operations of the *Contractor* with regard to the Work. General liability insurance shall be maintained from the date of commencement of the Work until one year from the date of *Substantial Performance of the Work*. Liability coverage shall be provided for completed operations hazards from the date of *Substantial Performance of the Work*, as set out in the certificate of

Substantial Performance of the Work, on an ongoing basis for a period of 1 year following *Substantial Performance of the Work*.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Title and description of Work.

.2 Contract method.

.3 Contractor use of premises.

.4 Owner occupancy.

.5 Substantial Performance.

.6 Documents and terminology.

.7 Associated requirements.

1.2 RELATED SECTIONS

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

1.3 RELATED DOCUMENTS

.1 Agreement, General Conditions, and Supplementary Conditions.

.2 Other Division 1 specification sections.

1.4 WORDS AND TERMS

.1 Refer to and acknowledge other words, terms, and definitions in CCA 17 Definitions.

1.5 PERFORMANCE OF THE WORK

.1 Substantial Performance of the Work is required on November 15th, 2019.

1.6 DESCRIPTION OF THE WORK

.1 Work of this Contract comprises renovation of the Springhill Service Centre, located at 43 Main street, Springhill NS, and further identified as project site.

- .1 Ventilation upgrade to the entire building, including ancillary electrical work;
- .2 Exterior windows and doors retrofit;
- .3 Replace aluminum entrance systems
- .4 Add new windows to boardroom on upper floor
- .5 Interior renovation of the upper floor.

.2 Division of the Work among Subcontractors and Suppliers is solely the Contractor's responsibility, and the Consultant assumes no responsibility to act as an arbiter to establish subcontract limits between Sections or Divisions of work.

.3 The Contract Documents were prepared by the Consultant for the account of the Owner. The material contained herein reflects the Consultant’s best judgement in light of the information available to him at the time of preparation. Any use

which a third party makes of the Contract Documents, or any reliance on or decisions to be made based on them, are the responsibility of such third parties. The Consultant accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on the Contract Documents.

.4 These specifications are written in imperative mood in an abbreviated form. The imperative language of the technical sections is directed to the Contractor, unless specifically noted otherwise. Incomplete sentences shall be completed by inserting "shall", "the Contractor shall", and "shall be", and similar mandatory phrases by inference in the same manner as they are applied to notes on the drawings. The words "shall be" will be supplied by inference where a colon (:) is used within sentences and phrases. Except where worded to the contrary, fulfil and perform all indicated requirements whether stated imperatively or otherwise.

.5 The Owner will supply the Contractor with five (5) sets of Contract Documents for construction purposes. The Contractor may obtain additional sets of Contract Documents at the cost of printing, handling and shipping.

1.7 CONTRACT METHOD

.1 Construct Work under single, stipulated price contract.

1.8 CONTRACTOR USE OF PREMISES

.1 Contractor has unrestricted use of site of Upper Floor until Substantial Performance of the Work.

.2 Contractor shall limit use of premises to allow Owner occupancy of the remainder of the building.

.3 Coordinate use of premises under direction of Owner.

.4 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.

1.9 OWNER OCCUPANCY

.1 Owner and other users will occupy premises other than the Upper floor during entire construction period for execution of normal operations.

.2 Cooperate with Owner in scheduling operations to minimize conflict and to facilitate building usage.

.3 Maintain fire and life safety systems and public access to exits during all stages of the Work.

.4 All work related to / near or within RCMP facility will require to comply with RCMP security requirements prior to commencing any work.

1.10 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

.1 Execute work with least possible interference or disturbance to building operations, public and normal use of premises. Arrange with Owner to facilitate execution of work.

1.11 DOCUMENTS REQUIRED

.1 Maintain at job site, one copy each document as follows:

.1 Contract Drawings.
.2 Specifications.
.3 Addenda.
.4 Reviewed Shop Drawings.
.5 List of Outstanding Shop Drawings.
.6 Change Orders.
.7 Other Modifications to Contract.
.8 Field Test Reports.
.9 Copy of Approved Work Schedule.
.10 Health and Safety Plan and Other Safety Related Documents.
.11 Other documents as specified.

1.12 COMPLEMENTARY DOCUMENTS

.1 Drawings, specifications, and schedules are complementary each to the other and what is called for by one to be binding as if called for by all. Should any discrepancy appear between documents which leaves doubt as to the intent or meaning, obtain direction from the Consultant.

.1 In the event of conflict between documents, the decision of the Consultant shall be final.

.2 Drawings indicate general location and route of conduit and wire/conductors. Install conduit or wiring/conductors and plumbing piping not shown or indicated diagrammatically in schematic or riser diagrams to provide an operational assembly or system.

.3 Install components to physically conserve headroom, to minimize furring spaces, or obstructions.

.4 Locate devices with primary regard for convenience of operation and usage.

.5 Examine all discipline drawings, specifications, and schedules and related Work to ensure that Work can be satisfactorily executed. Conflicts or additional work beyond work described to be brought to attention of Consultant.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 ACCESS AND EGRESS

.1 Design, construct and maintain temporary "access to" and "egress from" work areas, including stairs, runways, ramps or ladders and scaffolding, independent of finished surfaces and in accordance with relevant municipal, provincial and other regulations.

1.2 USE OF SITE AND FACILITIES

.1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Consultant to facilitate work as stated.

.2 Maintain existing services to building and provide for personnel and vehicle access.

.3 Where security is reduced by work, provide temporary means to maintain security. Security in spaces occupied by RCMP shall comply with RCMP’s requirements. Persons entering into RCMP spaces will be required to have FA2 security clearance and have an escort. Contractor shall pay cost of escort. Hours of work are to be restricted to regular business hours. Space shall be maintained secure at all times. Any window removals shall be completed during the same shift. Secure hoarding shall be in place to make exterior secure when window out of place.

.4 Consultant will assign sanitary facilities for use by Contractor's personnel. Keep facilities clean.

.5 Use only stairs existing in building for moving workers and material.

.6 Closures: protect work temporarily until permanent enclosures are completed.

1.3 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

.1 Execute work with least possible interference or disturbance to building operations occupants, public and normal use of premises. Arrange with Consultant to facilitate execution of work.

1.4 EXISTING SERVICES

.1 Notify, Consultant Owner and utility companies of intended interruption of services and obtain required permission.

.2 Where Work involves breaking into or connecting to existing services, give Consultant 48 hours’ notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions.

.1 Carry out work at times as directed by governing authorities with minimum disturbance to pedestrian, vehicular traffic and Owner operations.

.2 Carry out interruptions after normal working hours of occupants, preferably on weekends.

.3 Establish location and extent of service lines in area of work before starting Work. Notify Consultant of findings.

.4 Submit schedule to and obtain approval from Consultant for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.

.5 Where unknown services are encountered, immediately advise Consultant and confirm findings in writing.

.6 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.

.7 Record locations of maintained, re-routed and abandoned service lines.

.8 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.5 SPECIAL REQUIREMENTS

.1 Ensure that Contractor personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.

.2 Keep within limits of work and avenues of ingress and egress.

.3 Ingress and egress of Contractor vehicles at site to be arranged with Consultant.

1.6 BUILDING SMOKING ENVIRONMENT

.1 Comply with smoking restrictions.

.1 Smoking is prohibited in or near the building structure and all other enclosed facilities without exceptions.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE

.1 Schedule and administer project meetings throughout the progress of the work.

.2 Prepare agenda for meetings.

.3 Distribute written notice of each meeting four days in advance of meeting date to Consultants.

.4 Provide physical space and make arrangements for meetings.

.5 Preside at meetings.

.6 Record the meeting minutes.

.1 Include significant proceedings and decisions.

.2 Identify actions by parties.

.7 Reproduce and distribute copies of minutes within three days after meetings and transmit to meeting participants and, affected parties not in attendance.

.8 Representative of *Contractor*, *Subcontractor* and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.2 PRE-CONSTRUCTION MEETING

.1 Within 15 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.

.2 *Consultant, Contractor*, major *Subcontractors*, field inspectors and supervisors will be in attendance.

.3 Establish time and location of meeting and notify parties concerned minimum 5 days before meeting.

.4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.

.5 The *Consultant* will arrange, chair, and distribute minutes for the pre-construction meeting.

.1 Agenda to include but not limited to:

.1 Appointment of official representative of participants in the Work.

.2 Schedule of Work

.3 Schedule of submission of shop drawings, samples, colour chips. in accordance with Section 01 33 00 - Submittal Procedures.

.4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 50 00 - Temporary Facilities and Controls.

.5 Delivery schedule of specified equipment.

.6 Site security in accordance with Section 01 50 00 - Temporary Barriers and Enclosures.

.7 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.

.8 Owner provided products.

.9 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.

.10 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.

.11 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.

.12 Monthly progress claims, administrative procedures, photographs, hold backs.

.13 Appointment of inspection and testing agencies or firms.

.14 Insurances, transcript of policies.

1.3 PROGRESS MEETINGS

.1 During course of Work and weeks prior to project completion, schedule progress meetings tri-weekly.

.1 Meeting chaired by *Contractor*.

.2 *Contractor*, major *Subcontractors* involved in Work, *Consultant*, and *Owner* are to be in attendance.

.3 Notify parties minimum 5 days prior to meetings.

.4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within 2 days after meeting.

.5 Agenda to include the following:

.1 Review, approval of minutes of previous meeting.

.2 Review of Work progress since previous meeting.

.3 Field observations, problems, conflicts.

.4 Problems which impede construction schedule.

.5 Review of off-site fabrication delivery schedules.

.6 Corrective measures and procedures to regain projected schedule.

.7 Revision to construction schedule.

.8 Progress schedule, during succeeding work period.

.9 Review submittal schedules: expedite as required.

.10 Maintenance of quality standards.

.11 Review proposed changes for affect on construction schedule and on completion date.

.12 Other business.

END OF SECTION

Part 1 General

1.1 REFERENCE

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2008, Stipulated Price Contract

1.2 ADMINISTRATIVE

.1 Submit to Consultant submittals listed for review.

.1 Submit promptly and in orderly sequence to not cause delay in Work.

.2 Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

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

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

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

.5 Review submittals prior to submission to Consultant.

.1 This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents.

.2 Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.

.3 Submittals for products other than those specified in Contract Documents will be rejected. Contractor will be charged a minimum of 3 hours of Consultant’s time for review of said shop drawings.

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

.7 Verify field measurements and affected adjacent Work are co-ordinated.

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

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

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

1.3 SHOP DRAWINGS AND PRODUCT DATA

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

.2 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Nova Scotia.

.3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work.

.1 Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed.

.2 Indicate cross references to design drawings and specifications.

.4 Allow 10 days for Consultant's review of each submission.

.5 Adjustments made on shop drawings by Consultant are not intended to change Contract Price.

.1 If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.

.6 Make changes in shop drawings as Consultant may require, consistent with Contract Documents.

.1 When resubmitting, notify Consultant in writing of revisions other than those requested.

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

.1 Specification Section number(s)

.2 Date.

.3 Project title and number.

.4 Contractor's name and address.

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

.6 Other pertinent data.

.8 Submissions include:

.1 Specification Section number(s)

.2 Date and revision dates.

.3 Project title and number.

.4 Name and address of:

.1 Subcontractor.

.2 Supplier.

.3 Manufacturer.

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

.6 Details of appropriate portions of Work as applicable:

.1 Fabrication.

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

.3 Setting or erection details.

.4 Capacities.

.5 Performance characteristics.

.6 Standards.

.7 Operating weight.

.8 Wiring diagrams.

.9 Single line and schematic diagrams.

.10 Relationship to adjacent work.

.9 After Consultant's review, distribute copies.

.10 Electronic submittal will be in PDF or high quality images (JPEG, TIFF or PNG) and content will be clear and readable.

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

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

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

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

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

.14 Submit electronic copy of certificates for requirements requested in specification Sections and as requested by Consultant.

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

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

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

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

.16 Submit electronic copy of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Consultant.

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

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

.19 Delete information not applicable to project.

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

.21 If upon review by Consultant, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed.

.1 If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

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

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

.2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.4 SAMPLES

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

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

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

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

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

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

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

1.5 MOCK-UPS

.1 Field erected example of work complete with specified materials and workmanship.

.2 Erect mock-ups at locations acceptable to Consultant.

.3 Reviewed and accepted mock-ups will become standards of workmanship and material against which installed work will be verified

1.6 PHOTOGRAPHIC DOCUMENTATION

.1 Submit electronic copy of colour digital photography in jpg format, fine resolution monthly with Progress Claim and as directed by Consultant.

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

.3 Number of viewpoints: as many locations as required to show daily progress of the work but not less than 6.

.4 Frequency of photographic documentation: daily and as directed Consultant.

1.7 CERTIFICATES AND TRANSCRIPTS

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

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

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 FIRE DEPARTMENT BRIEFING

.1 Consultant will coordinate arrangements for contractor to be briefed on Fire Safety at their pre-work conference before any work is commenced.

1.2 REPORTING FIRES

.1 Know location of nearest telephone, including emergency phone number.

.2 Report immediately all fire incidents to Fire Department as follows:

- .1 Activate nearest fire alarm pull station; and
- .2 When reporting fire by telephone, give location of fire, name or number of building and be prepared to verify the location.

.3 Person activating fire alarm box will remain on site to direct Fire Department to scene of fire.

1.3 INTERIOR AND EXTERIOR FIRE PROTECTION AND ALARM SYSTEMS

.1 Fire protection and alarm system will not be:

- .1 Obstructed;
- .2 Shut off; and
- .3 Left inactive at end of working day or shift without authorization from Fire Chief.

.2 Fire hydrants, standpipes and hose systems will not be used for other than fire fighting purposes unless authorized by Fire Chief.

1.4 FIRE EXTINGUISHERS

.1 Supply fire extinguishers, as called by authority, necessary to protect work in progress and contractor’s physical plant on site.

1.5 BLOCKAGE OF ROADWAYS

.1 Advise Fire Chief of work that would impede fire apparatus response. This includes violation of minimum overhead clearance, as prescribed by Fire Chief, erecting of barricades and digging of trenches.

1.6 SMOKING PRECAUTIONS

.1 Observe smoking regulations.

1.7 RUBBISH AND WASTE MATERIALS

.1 Rubbish and waste materials are to be kept to a minimum.

.2 Burning of rubbish is prohibited.

.3 Remove rubbish from work site at end of work day or shift or as directed.

.4 Storage:

.1 Store oily waste in approved receptacles to ensure maximum cleanliness and safety.

.2 Deposit greasy or oily rags and materials subject to spontaneous combustion in approved receptacles and remove as required.

1.8 FLAMMABLE AND COMBUSTIBLE LIQUIDS

.1 Handling, storage and use of flammable and combustible liquids are to be governed by the current National Fire Code of Canada.

.2 Flammable and combustible liquids such as gasoline, kerosene and naphtha will be kept for ready use in quantities not exceeding 45 litres provided they are stored in approved safety cans bearing Underwriters' Laboratory of Canada or Factory Mutual seal of approval.

.3 Transfer of flammable and combustible liquids is prohibited within buildings.

.4 Transfer of flammable and combustible liquids will not be carried out in vicinity of open flames or any type of heat producing devices.

.5 Flammable liquids having a flash point below 38ºC such as naphtha or gasoline will not be used as solvents or cleaning agents.

.6 Flammable and combustible waste liquids, for disposal, will be stored in approved containers located in a safe ventilated area.

.1 Quantities are to be kept to a minimum and Fire Department is to be notified when disposal is required.

1.9 HAZARDOUS SUBSTANCES

.1 Work entailing use of toxic or hazardous materials, chemicals and/or explosives, or otherwise creating hazard to life, safety or health, will be in accordance with National Fire Code of Canada.

.2 Obtain a "Hot Work" permit for work involving welding, burning or use of blow torches and salamanders, in buildings or facilities.

.3 When Work is carried out in dangerous or hazardous areas involving use of heat, provide fire watchers equipped with sufficient fire extinguishers.

.1 Determination of dangerous or hazardous areas along with level of protection necessary for Fire Watch is at discretion of the Fire Chief.

.2 Contractors are responsible for providing Fire Watch service.

.4 Where flammable liquids, such as lacquers or urethanes are to be used, proper ventilation will be assured and all sources of ignition are to be eliminated.

1.10 QUESTIONS AND/OR CLARIFICATION

.1 Direct any questions or clarification on Fire Safety in addition to above requirements to Fire Chief.

1.11 FIRE INSPECTION

.1 Site inspections by Fire Chief will be coordinated through Fire Chief.

.2 Allow Fire Chief unrestricted access to work site.

.3 Cooperate with Fire Chief during routine fire safety inspection of work site.

.4 Immediately remedy all unsafe fire situations observed by Fire Chief

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Health and safety considerations required to ensure that the contractor shows due diligence towards health and safety on construction sites, and meets the requirements laid out by the Occupantional Health & Safety Division of Nova Scotia.

1.2 REFERENCES

.1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations

.2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

.3 Province of Nova Scotia

.1 Occupational Health and Safety Act, 1996.

1.3 SUBMITTALS

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

.2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work.

.1 Health and Safety Plan must include:

.1 Results of site specific safety hazard assessment.

.2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.

.3 Submit electronic copy of Contractor's authorized representative's work site health and safety inspection reports to Consultant weekly.

.4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.

.5 Submit copies of incident and accident reports.

.6 Consultant will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 7 days after receipt of plan.

.1 Revise plan as appropriate and resubmit plan to Consultant within 7 days after receipt.

.7 Consultant's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.

.8 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Consultant.

.9 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

1.4 FILING OF NOTICE

.1 File Notice of Project with Provincial authorities prior to beginning of Work.

1.5 SAFETY ASSESSMENT

.1 Perform site specific safety hazard assessment related to project.

1.6 MEETINGS

.1 Schedule and administer Health and Safety meeting with Consultant prior to commencement of Work.

1.7 GENERAL REQUIREMENTS

.1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site.

.1 Health and Safety Plan must address project specifications.

.2 Consultant may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.8 RESPONSIBILITY

.1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.

.2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.9 COMPLIANCE REQUIREMENTS

.1 Comply with Occupational Health and Safety Act, Occupational Safety General Regulations, N.S. Reg.

.2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

1.10 UNFORSEEN HAZARDS

.1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Consultant verbally and in writing.

1.11 HEALTH AND SAFETY CO-ORDINATOR

.1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator.

.1 Health and Safety Co-ordinator must:

.1 Have site-related working experience specific to activities associated with project.

.2 Have working knowledge of occupational safety and health regulations.

.3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully

completing required training are not permitted to enter site to perform Work.

.4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.

.5 Be on site during execution of Work.

1.12 POSTING OF DOCUMENTS

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

1.13 CORRECTION OF NON-COMPLIANCE

.1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Consultant.

.2 Provide Consultant with written report of action taken to correct non-compliance of health and safety issues identified.

.3 Consultant may stop Work if non-compliance of health and safety regulations is not corrected.

1.14 POWDER ACTUATED DEVICES

.1 Use powder actuated devices only after receipt of written permission from Consultant.

1.15 WORK STOPPAGE

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

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Definitions:

.1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade environment aesthetically, culturally and/or historically.

.2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

.2 Reference Standards:

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2008 Stipulated Price Contract.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Prior to commencing construction activities or delivery of materials to site, provide Environmental Protection Plan for review by Consultant.

.3 Ensure Environmental Protection Plan includes comprehensive overview of known or potential environmental issues to be addressed during construction.

.4 Address topics at level of detail commensurate with environmental issue and required construction tasks.

.5 Include in Environmental Protection Plan:

.1 Names of persons responsible for ensuring adherence to Environmental Protection Plan.

.2 Names and qualifications of persons responsible for manifesting hazardous waste to be removed from site.

.3 Names and qualifications of persons responsible for training site personnel.

.4 Descriptions of environmental protection personnel training program.

.5 Drawings showing locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on site.

.6 Traffic Control Plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather.

.1 Ensure plans include measures to minimize amount of mud transported onto paved public roads by vehicles or runoff.

.7 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use.

.1 Ensure plan includes measures for marking limits of use areas and methods for protection of features to be preserved within authorized work areas.

.8 Spill Control Plan including procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.

.9 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.

.10 Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, are contained on project site.

.11 Contaminant Prevention Plan identifying potentially hazardous substances to be used on job site; intended actions to prevent introduction of such materials into air, water, or ground; and detailing provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.

.12 Waste Water Management Plan identifying methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines.

.13 Historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands.

.14 Pesticide treatment plan to be included and updated, as required.

1.3 FIRES

.1 Fires and burning of rubbish on site not permitted.

1.4 SITE CLEARING AND PLANT PROTECTION

.1 Protect trees and plants on site and adjacent properties.

.2 Wrap in burlap, trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 2 m minimum.

.3 Protect roots of designated trees to drip line during excavation and site grading to prevent disturbance or damage.

.1 Avoid unnecessary traffic, dumping and storage of materials over root zones.

1.5 POLLUTION CONTROL

.1 Maintain temporary erosion and pollution control features installed under this Contract.

.2 Control emissions from equipment and plant to local authorities' emission requirements.

.3 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.

.1 Provide temporary enclosures where required and as directed by Consultant.

.4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.

1.6 NOTIFICATION

.1 Consultant will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.

.2 Contractor: after receipt of such notice, inform Consultant of proposed corrective action and take such action for approval by Consultant.

.1 Do not take action until after receipt of written approval Consultant.

.3 Consultant will issue stop order of work until satisfactory corrective action has been taken.

.4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 CLEANING

.1 Clean in accordance with Section 01 74 11 - Cleaning.

.2 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal

.3 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.

END OF SECTION

Part 1 General

1.1 REFERENCES AND CODES

.1 Perform Work in accordance with National Building Code of Canada (NBC) including amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.

.2 Meet or exceed requirements of:

.1 Contract documents.

.2 Specified standards, codes and referenced documents.

1.2 HAZARDOUS MATERIAL DISCOVERY

.1 Asbestos: demolition of spray or trowel-applied asbestos is hazardous to health.

.1 Stop work immediately when material resembling spray or trowel-applied asbestos is encountered during demolition work.

.2 Notify Consultant.

.2 PCB: Polychlorinated Biphenyl: stop work immediately when material resembling Polychlorinated Biphenyl is encountered during demolition work.

.1 Notify Consultant.

.3 Mould: stop work immediately when material resembling mould is encountered during demolition work.

.1 Notify Consultant.

1.3 BUILDING SMOKING ENVIRONMENT

.1 Comply with smoking restrictions and municipal by-laws.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2008, Stipulated Price Contract.

1.2 INSPECTION

.1 Refer to CCDC 2, GC 2.3.

.2 Allow Consultant access to Work.

.1 If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.

.3 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Consultant instructions, or law of Place of Work.

.4 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

.5 Consultant will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents.

.1 If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction.

.2 If such Work is found in accordance with Contract Documents, Consultant shall pay cost of examination and replacement.

1.3 INDEPENDENT INSPECTION AGENCIES

.1 Independent Inspection/Testing Agencies will be engaged by Consultant for purpose of inspecting and/or testing portions of Work.

.1 Owner will pay for services except for the following:

.1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.

.2 Inspection and testing performed exclusively for Contractor's convenience.

.3 Mill tests and certificates of compliance.

.4 Tests specified to be carried out by Contractor under the supervision of Consultant.

.2 Provide equipment required for executing inspection and testing by appointed agencies.

.3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.

.4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect.

.1 Correct defect and irregularities as advised by Consultant at no cost to Owner.

.2 Pay costs for retesting and reinspection.

1.4 ACCESS TO WORK

.1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.

.2 Co-operate to provide reasonable facilities for such access.

1.5 PROCEDURES

.1 Notify appropriate agency and Consultant in advance of requirement for tests, in order that attendance arrangements can be made.

.2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.

.3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.6 REJECTED WORK

.1 Refer to CCDC, GC 2.4.

.2 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Consultant as failing to conform to Contract Documents.

.1 Replace or re-execute in accordance with Contract Documents.

.3 Make good other Contractor's work damaged by such removals or replacements promptly.

.4 If in opinion of Consultant it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Consultant .

1.7 REPORTS

.1 Submit 4 copies of inspection and test reports to Consultant.

.2 Provide copies to subcontractor of work being inspected or tested manufacturer or fabricator of material being inspected or tested.

1.8 TESTS AND MIX DESIGNS

.1 Furnish test results and mix designs as requested.

.2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Consultant and may be authorized as recoverable.

1.9 MOCK-UPS

.1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock-ups.

.2 Construct in locations acceptable to Consultant as specified in specific Section.

.3 Prepare mock-ups for Consultant's review with reasonable promptness and in orderly sequence, to not cause delays in Work.

.4 Failure to prepare mock-ups in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

.5 If requested, Consultant will assist in preparing schedule fixing dates for preparation.

.6 Remove mock-up at conclusion of Work. Mock-up will not remain as part of the work.

.7 Do not proceed with the work until mock-up has been approved.

1.10 MILL TESTS

.1 Submit mill test certificates as required of specification Sections.

1.11 EQUIPMENT AND SYSTEMS

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

.2 Refer to specification Sections for definitive requirements.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 CAN/CSA-Z321-96 (R2001), Signs and Symbols for the Workplace.

1.2 CONTRACTOR'S SITE OFFICE

.1 Provide area heated to 22ºC, lighted 750 Lx and ventilated, of sufficient size to accommodate site meetings and furnished with drawing lay-down table and telephone, pay telephone not acceptable.

1.3 SITE STORAGE/LOADING

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

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

.3 Existing elevator not to be used by construction personnel and transporting of materials. Co-ordinate use with Consultant.

.4 Provide adequate weathertight sheds with raised floors, for storage of materials, tools and equipment which can not be stored in area of work and are subject to damage by weather.

1.4 SANITARY FACILITIES

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

.1 Permanent facilities on Upper Floor may be used on approval of Consultant / Owner.

.2 Post notices and take such precautions as required by local health authorities.

.1 Keep area and premises in sanitary condition.

1.5 PARKING

.1 Contractor parking on site as directed by Consultant.

1.6 ENCLOSURE OF STRUCTURE

.1 Provide temporary weathertight enclosures and protection for exterior openings until permanently enclosed.

.2 Erect enclosures to allow access for installation of materials and working inside enclosure.

.3 Design enclosures to withstand wind pressure.

1.7 POWER AND WATER SUPPLY

.1 Existing electrical system may be used if outlets are capable of supplying sufficient power for the equipment or apparatus used.

.2 Owner will provide temporary electrical power and water required for construction purposes.

.3 Arrange for connection with appropriate utility company. Pay cost for installation maintenance and removal.

.4 Consultant will determine delivery points and quantitative limits.

.1 Consultant's written permission is required before any connection is made.

.2 Connect to existing power supply in accordance with Canadian Electrical Code.

.5 Supply of temporary services by Consultant is subject to Consultant's requirements and may be discontinued at any time without notice, without acceptance of any liability for damage or delay caused by such withdrawal of temporary services.

1.8 HEATING AND VENTILATING

.1 Pay for costs of temporary heat and ventilation used during construction, including costs of installation, fuel, operation, maintenance and removal of equipment.

.1 Use of direct-fired heaters discharging waste products into work areas will not be permitted unless prior approval is given by Consultant.

.2 Provide temporary heat and ventilation in enclosed areas as required to:

.1 Facilitate progress of work.

.2 Protect work and products against dampness and cold.

.3 Prevent moisture condensation on surfaces.

.4 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.

.5 Provide adequate ventilation to meet health regulations for safe working environment.

.3 Maintain minimum temperature of 10ºC or higher where specified as soon as finishing work is commenced and maintain until acceptance of structure by Consultant.

.4 Maintain ambient temperature and humidity levels as required for comfort of office personnel.

.5 Ventilating:

.1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.

.2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.

.3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.

.4 Ventilate storage spaces containing hazardous or volatile materials.

.5 Ventilate temporary sanitary facilities.

.6 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.

.6 Maintain strict supervision of operation of temporary heating and ventilating equipment to:

.1 Conform to applicable Codes and standards.

.2 Enforce safe practices.

.3 Prevent abuse of services.

.4 Prevent damage to finishes.

.5 Vent direct-fired combustion units to outside.

.7 Use of permanent system for temporary heating and ventilating will not be permitted, unless Consultant's written permission is obtained stating conditions of use, provisions relating to guarantees on equipment and operation and maintenance of system.

1.9 SITE SIGNS AND NOTICES

.1 Safety and Instruction Signs and Notices:

.1 Signs and notices for safety and instruction shall be in both official languages.

.2 Graphic symbols shall conform to CAN/CSA-Z321.

.2 Maintenance and Disposal of Site Signs:

.1 Maintain approved signs and notices in good condition for duration of project, and dispose of off site on completion of project or earlier if directed by Consultant.

1.10 SCAFFOLDING

.1 Scaffolding in accordance with CAN/CSA-S269.2.

.2 Construct and maintain scaffolding in rigid, secure and safe manner.

.3 Erect scaffolding independent of walls.

.4 Remove promptly when no longer required.

1.11 REMOVAL OF TEMPORARY FACILITIES

.1 Remove temporary facilities from site when directed by Consultant

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2008, Stipulated Price Contract.

.2 Within text of each specifications section, reference may be made to reference standards.

.3 Conform to these reference standards, in whole or in part as specifically requested in specifications.

.4 If there is question as to whether products or systems are in conformance with applicable standards, Consultant reserves right to have such products or systems tested to prove or disprove conformance.

.5 Cost for such testing will be born by Consultant in event of conformance with Contract Documents or by Contractor in event of non-conformance.

1.2 QUALITY

.1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended.

.1 If requested, furnish evidence as to type, source and quality of products provided.

.2 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition.

.1 Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.

.3 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections.

.1 Inspection does not relieve responsibility, but is precaution against oversight or error.

.2 Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.

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

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

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

1.3 AVAILABILITY

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

.1 If delays in supply of products are foreseeable, notify Consultant of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.

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

1.4 STORAGE, HANDLING AND PROTECTION

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

.2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact.

.1 Do not remove from packaging or bundling until required in Work.

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

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

.5 Store and mix paints in heated and ventilated room.

.1 Remove oily rags and other combustible debris from site daily.
.2 Take every precaution necessary to prevent spontaneous combustion.

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

.7 Touch-up damaged factory finished surfaces to Consultant's satisfaction.

.1 Use touch-up materials to match original.
.2 Do not paint over name plates.

1.5 TRANSPORTATION

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

.2 Transportation cost of products supplied by Owner will be paid for by Consultant.

.1 Unload, handle and store such products.

1.6 MANUFACTURER'S INSTRUCTIONS

.1 Unless otherwise indicated in the specifications, install or erect products in accordance with manufacturer's instructions.

.1 Do not rely on labels or enclosures provided with products.
.2 Obtain written instructions directly from manufacturers.

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

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

1.7 QUALITY OF WORK

.1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed.

.1 Immediately notify Consultant if required Work is such as to make it impractical to produce required results.

.2 Do not employ anyone unskilled in their required duties.

.1 Consultant reserves right to require dismissal from site, workers deemed incompetent or careless.

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

1.8 CO-ORDINATION

.1 Ensure co-operation of workers in laying out Work.

.1 Maintain efficient and continuous supervision.

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

1.9 CONCEALMENT

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

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

1.10 REMEDIAL WORK

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

.1 Co-ordinate adjacent affected Work as required.

.2 Perform remedial work by specialists familiar with materials affected.

.1 Perform in a manner to neither damage nor put at risk any portion of Work.

1.11 LOCATION OF FIXTURES

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

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

1.12 FASTENINGS

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

.2 Prevent electrolytic action between dissimilar metals and materials.

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

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

.5 Wood, or any other organic material plugs are not acceptable.

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

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

1.13 FASTENINGS - EQUIPMENT

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

.2 Use heavy hexagon heads, semi-finished unless otherwise specified.

.1 Use No. 304 stainless steel for exterior areas.

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

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

.1 Use resilient washers with stainless steel.

1.14 PROTECTION OF WORK IN PROGRESS

.1 Prevent overloading of parts of building.

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

1.15 EXISTING UTILITIES

.1 When breaking into or connecting to existing services, execute Work at times directed by Consultant, with minimum of disturbance to Work, and/or building occupants.

.2 Protect, relocate or maintain existing active services.

.1 When services are encountered, cap off in manner approved by authority having jurisdiction.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2008, Stipulated Price Contract.

.2 Owner's identification of existing survey control points and property limits.

1.2 SURVEY REFERENCE POINTS

.1 Existing base horizontal and vertical control points are designated on drawings.

.2 Locate, confirm and protect control points prior to starting site work. Preserve permanent reference points during construction.

.3 Make no changes or relocations without prior written notice to Consultant.

.4 Report to Consultant when reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.

.5 Require surveyor to replace control points in accordance with original survey control.

1.3 SURVEY REQUIREMENTS

.1 Establish two permanent bench marks on site, referenced to established bench marks by survey control points.

.1 Record locations, with horizontal and vertical data in Project Record Documents.

.2 Establish lines and levels, locate and lay out, by instrumentation.

.3 Stake for grading, fill and topsoil placement and landscaping features.

.4 Stake slopes and berms.

.5 Establish pipe invert elevations.

.6 Stake batter boards for foundations.

.7 Establish foundation column locations and floor elevations.

.8 Establish lines and levels for mechanical and electrical work.

1.4 EXISTING SERVICES

.1 Before commencing work, establish location and extent of service lines in area of Work and notify Consultant of findings.

.2 Remove abandoned service lines within 2 m of structures.

.1 Cap or otherwise seal lines at cut-off points as directed by Consultant.

1.5 LOCATION OF EQUIPMENT AND FIXTURES

.1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.

.2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.

.3 Inform Consultant of impending installation and obtain approval for actual location.

.4 Submit field drawings to indicate relative position of various services and equipment when required by Consultant.

1.6 RECORDS

.1 Maintain a complete, accurate log of control and survey work as it progresses.

.2 On completion of foundations and major site improvements, prepare a certified survey showing dimensions, locations, angles and elevations of Work.

.3 Record locations of maintained, re-routed and abandoned service lines.

1.7 SUBMITTALS

.1 On request of Consultant, submit documentation to verify accuracy of field engineering work.

.2 Submit certificate signed by surveyor certifying and noting those elevations and locations of completed Work that conforms and do not conform with the Contract Documents.

1.8 SUBSURFACE CONDITIONS

.1 Promptly notify Consultant in writing if subsurface conditions at Place of Work differ materially from those indicated in Contract Documents, or a reasonable assumption of probable conditions based thereon.

.2 After prompt investigation, should Consultant determine that conditions do differ materially, instructions will be issued for changes in Work as provided in Changes and Change Orders

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 SUBMITTALS

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

.2 Submit written request in advance of cutting or alteration which affects:

- .1 Structural integrity of elements of project.
- .2 Integrity of weather-exposed or moisture-resistant elements.
- .3 Efficiency, maintenance, or safety of operational elements.
- .4 Visual qualities of sight-exposed elements.
- .5 Work of Owner or separate contractor.

.3 Include in request:

- .1 Identification of project.
- .2 Location and description of affected Work.
- .3 Statement on necessity for cutting or alteration.
- .4 Description of proposed Work, and products to be used.
- .5 Alternatives to cutting and patching.
- .6 Effect on Work of Owner or separate contractor.
- .7 Written permission of affected separate contractor.
- .8 Date and time work will be executed.

1.2 MATERIALS

.1 Required for original installation.

1.3 PREPARATION

.1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.

.2 After uncovering, inspect conditions affecting performance of Work.

.3 Beginning of cutting or patching means acceptance of existing conditions.

.4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.

.5 Provide protection from elements for areas which are to be exposed by uncovering work; maintain excavations free of water.

1.4 EXECUTION

.1 Execute cutting, fitting, and patching including excavation and fill, to complete Work.

.2 Fit several parts together, to integrate with other Work.

.3 Uncover Work to install ill-timed Work.

.4 Remove and replace defective and non-conforming Work.

.5 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.

.6 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.

.7 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.

.8 Cut rigid materials using masonry saw or core drill.

.1 Pneumatic or impact tools not allowed on masonry work without prior approval.

.9 Restore work with new products in accordance with requirements of Contract Documents.

.10 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

.11 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material, full thickness of the construction element.

.12 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.

.13 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2008, Stipulated Price Contract.

1.2 PROJECT CLEANLINESS

.1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by other Contractors.

.2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Project Manager.

.1 Do not burn waste materials on site.

.3 Clear snow and ice from access to building, bank/pile snow in designated areas only.

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

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

.6 Provide and use marked separate bins for recycling.

.1 Refer to Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.7 Dispose of waste materials and debris off site.

.8 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.

.9 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

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

.1 Use of building ventilation systems is not permitted for this purpose.

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

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

1.3 FINAL CLEANING

.1 Refer to CCDC 2

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

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

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

.5 Remove waste products and debris including that caused by other Contractors.

.6 Remove waste materials from site at regularly scheduled times or dispose of as directed by Project Manager.

.1 Do not burn waste materials on site.

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

.8 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures.

.1 Replace broken, scratched or disfigured glass.

.9 As a result of Work:

.1 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floors.

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

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

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

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

.6 Remove dirt and other disfiguration from exterior surfaces.

.7 Clean and sweep roofs, gutters, areaways, and sunken wells.

.8 Sweep and wash clean paved areas.

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

.10 General Cleaning

.1 Clean all existing aluminum framing inside and out.

.2 Clean interior structural steel prior to painting.

.3 Clean heater enclosures prior to painting.

.4 Remove snow and ice from access to building.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 WASTE MANAGEMENT GOALS

.1 Accomplish maximum control of solid construction waste.

.2 Preserve environment and prevent pollution and environment damage.

.3 Part of this requirement is to re-direct as much as possible of the construction debris away from landfill back to manufacturers and to re-direct and/or recycle all reusable materials to appropriate sites as possible.

1.2 SUMMARY

.1 The Consultant established that this Project shall generate the least amount of waste possible and that processes shall be employed that ensure the generation of as little waste as possible including prevention of damage due to mishandling, improper storage, contamination, inadequate protection or other factors as well as minimizing over packaging and poor quantity estimating.

.2 Of the inevitable waste that is generated, the waste materials designated in this specification shall be salvaged for reuse and/or recycling. Waste disposal in landfills or incinerators shall be minimized. Provide supervised recycling of job site waste.

.3 Develop a Waste Management Plan (WMP)/Waste Reduction Workplan (WRW) for this Project. The goals and strategies of the WMP/WRW will be reviewed by the Consultant to verify that the waste reduction goals of the Consultant have been realized. Where the Consultant determines the WMP/WRW to be deficient, revise WMP/WRW as required by the Consultant.

.4 Accomplish maximum control of solid construction waste.

.5 Preserve environment and prevent pollution and environment damage.

1.3 DEFINITIONS

.1 Class III: non-hazardous waste - construction renovation and demolition waste.

.2 Cost/Revenue Analysis Workplan (CRAW): based on information from WRW, and intended as financial tracking tool for determining economic status of waste management practices.

.3 Demolition Waste Audit (DWA): relates to actual waste generated from project.

.4 Inert Fill: inert waste - exclusively asphalt and concrete.

.5 Materials Source Separation Program (MSSP): consists of series of ongoing activities to separate reusable and recyclable waste material into material categories from other types of waste at point of generation.

.6 Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.

.7 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.

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

.9 Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:

.1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.

.2 Returning reusable items including pallets or unused products to vendors.

.10 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.

.11 Separate Condition: refers to waste sorted into individual types.

.12 Source Separation: acts of keeping different types of waste materials separate beginning from first time they became waste.

.13 Waste Audit (WA): detailed inventory of materials in building. Involves quantifying by volume/weight amounts of materials and wastes generated during construction, demolition, deconstruction, or renovation project. Indicates quantities of reuse, recycling and landfill. Refer to Schedule A.

.14 Waste Management Co-ordinator (WMC) : contractor representative responsible for supervising waste management activities as well as coordinating related, required submittal and reporting requirements.

.15 Waste Reduction Workplan (WRW): written report which addresses opportunities for reduction, reuse, or recycling of materials.

1.4 SUBMITTALS

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

.2 Prepare and submit completed Waste Reduction Workplan (WRW): Schedule B, prior to project start-up

.3 Prepare a list of each material proposed to be salvaged, reused, or recycled during the course of the project.

1.5 WASTE REDUCTION WORKPLAN (WRW)

.1 Prepare WRW prior to project start-up.

.2 WRW should include but not limited to:

.1 Destination of materials listed.

.2 Schedule for deconstruction/disassembly.

.3 Location.

.4 Security.

.5 Protection.

.6 Clear labelling of storage areas.

.7 Details on materials handling and removal procedures.

.3 Structure WRW to prioritize actions and follow 3R's hierarchy, with Reduction as first priority, followed by Reuse, then Recycle.

.4 Describe management of waste.

.5 Post WRW or summary where workers at site are able to review content.

.6 Set realistic goals for waste reduction, recognize existing barriers and develop strategies to overcome these barriers.

1.6 MATERIALS SOURCE SEPARATION PROGRAM (MSSP)

.1 Prepare MSSP and have ready for use prior to project start-up.

.2 Implement MSSP for waste generated on project in compliance with approved methods and as reviewed by Consultant.

.3 Provide on-site facilities for collection, handling, and storage of anticipated quantities of reusable and recyclable materials.

.4 Provide containers to deposit reusable and recyclable materials.

.5 Locate containers in locations, to facilitate deposit of materials without hindering daily operations.

.6 Locate separated materials in areas which minimize material damage.

.7 Collect, handle, store on-site, and transport off-site, salvaged materials in separate condition.

.1 Transport to approved and authorized recycling facility or to users of material for recycling.

.8 Collect, handle, store on-site, and transport off-site, salvaged materials in combined condition.

.1 Materials must be immediately separated into required categories for reuse or recycling.

1.7 STORAGE, HANDLING AND PROTECTION

.1 Store, materials to be reused, recycled and salvaged in locations as directed by Consultant.

.2 Unless specified otherwise, materials for removal becomes Contractor's property.

.3 Protect, stockpile, store and catalogue salvaged items.

.4 Separate non-salvageable materials from salvaged items.

.1 Transport and deliver non-salvageable items to licensed disposal facility.

.5 Protect structural components not removed for demolition from movement or damage.

.6 Support affected structures.

.1 If safety of building is endangered, cease operations and immediately notify Consultant.

.7 Protect surface drainage, mechanical and electrical from damage and blockage.

.8 Separate and store materials produced during dismantling of structures in designated areas.

.9 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated facilities.

.1 On-site source separation is recommended.

.2 Remove co-mingled materials to off-site processing facility for separation.

1.8 DISPOSAL OF WASTES

.1 Do not bury rubbish or waste materials.

.2 Do not dispose of waste volatile materials mineral spirits oil paint thinner into waterways, storm, or sanitary sewers.

.3 Remove materials from deconstruction as deconstruction/disassembly Work progresses.

1.9 USE OF SITE AND FACILITIES

.1 Execute work with least possible interference or disturbance to normal use of premises.

.2 Maintain security measures established by existing facility.

1.10 SCHEDULING

.1 Co-ordinate Work with other activities at site to ensure timely and orderly progress of Work.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 APPLICATION

.1 Do Work in compliance with WRW.

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

3.2 CLEANING

.1 Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition.

.2 Clean-up work area as work progresses.

.3 Source separate materials to be reused/recycled into specified sort areas.

3.3 DIVERSION OF MATERIALS

.1 From following list, separate materials from general waste stream and stockpile in separate piles or containers, as reviewed by Consultant and consistent with applicable fire regulations.

.1 Mark containers or stockpile areas.

.2 Provide instruction on disposal practices.

.2 On-site sale of salvaged recovered reusable recyclable materials is not permitted.

.3 Demolition Waste:

Material Type	Recommended Diversion %	Actual Diversion %
Acoustic Tile	[50]	[___]
Acoustical Insulation	[100]	[___]
Carpet	[100]	[___]
De-mountable Partitions	[80]	[___]
Doors and Frames	[100]	[___]
Electrical Equipment	[80]	[___]
Furnishings	[80]	[___]
Marble Base	[100]	[___]
Mechanical Equipment	[100]	[___]
Metals	[100]	[___]
Rubble	[100]	[___]
Wood (uncontaminated)	[100]	[___]
Other		[___]

.4 Construction Waste:

Material Type	Recommended Diversion %	Actual Diversion %
Cardboard	[100]	[___]
Plastic Packaging	[100]	[___]
Rubble	[100]	[___]
Steel	[100]	[___]
Wood (uncontaminated)	[100]	[___]
Other		[___]

3.4 WASTE REDUCTION WORKPLAN (WRW)

.1 Schedule B:

Material Category	**Material(s) Destination**
Wood and Plastics Material Description	
Warped Pallet Forms	
Plastic Packaging	
Card- board Packaging	
Other	
Doors and Windows Material Description	
Painted Frames	
Glass	
Wood	
Metal	
Other	

Part 4 Products

4.1 NOT USED

.1 Not Used.

Part 5 Execution

5.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2008, Stipulated Price Contract.

1.2 ADMINISTRATIVE REQUIREMENTS

.1 Acceptance of Work Procedures:

.1 Contractor's Inspection: Contractor and Subcontractors to conduct inspection of Work, identify deficiencies and defects.

.1 Provide list to Consultant for review, complete work outlined and as required to conform to Contract Documents.

.2 Request Consultant’s review for Substantial Performance.

.3 Submit written certificates in English that tasks have been performed as follows:

.1 Equipment and systems: tested, adjusted and fully operational.

.2 Certificates required by Fire Commissioner: submitted.

.3 Operation of systems: demonstrated to Owner's personnel.

.2 Consultant’s Substantial Performance Review:

.1 Consultant and Contractor to review Work and identify obvious defects and deficiencies.

.2 Contractor to correct Work as directed.

.3 The costs associated with extra site reviews shall be borne by the Contractor.

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

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

.5 Contractor’s completion Tasks: submit written certificates in English that tasks have been performed as follows:

.1 Work: completed and review for compliance with Contract Documents.

.2 Defects: corrected and deficiencies completed.

.3 Work: complete and ready for final inspection.

.6 Final Inspection:

.1 When all Contractor’s completion tasks are done, request final inspection of Work by Consultant with the Contractor.

.2 When Work incomplete according to Owner and Consultant, complete outstanding items and request new review.

.3 The costs associated with extra site reviews shall be borne by the Contractor.

.7 Final Payment:

.1 When Consultant considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.

.8 Payment of Holdback: after issuance Substantial Performance of Work Documentation, submit application for payment of holdback amount in accordance with contractual agreement.

1.3 FINAL CLEANING

.1 Clean in accordance with Section 01 74 11 - Cleaning.

.1 Remove surplus materials, excess materials, rubbish, tools and equipment.

.2 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE REQUIREMENTS

.1 Pre-warranty Meeting:

.1 Convene meeting one week prior to contract completion with Consultant to:

.1 Verify Project requirements.

.2 Review manufacturer's installation instructions and warranty requirements.

.2 Consultant to establish communication procedures for:

.1 Notifying construction warranty defects.

.2 Determine priorities for type of defects.

.3 Determine reasonable response time.

.3 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.

.4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 7 working days before application for Substantial Performance of the Work, submit to the Consultant, one copy of operating and maintenance manuals for review in English.

.3 Two weeks prior to Final Completion of the Work, submit to the Consultant, four final copies of operating and maintenance manuals in English.

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

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

1.3 FORMAT

.1 Organize data as instructional manual.

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

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

.1 Identify contents of each binder on spine.

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

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

.6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.

.7 Text: manufacturer's printed data, or typewritten data.

.8 Drawings: provide with reinforced punched binder tab.

.1 Bind in with text; fold larger drawings to size of text pages.

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

1.4 CONTENTS - PROJECT RECORD DOCUMENTS

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

.1 Date of submission;

.2 Names.

.3 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.

.4 Schedule of products and systems, indexed to content of volume.

.2 For each product or system:

.1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

.3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.

.4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.

1.5 AS -BUILT DOCUMENTS AND SAMPLES

.1 Maintain, in addition to requirements in General Conditions, at site for Consultant one record copy of:

.1 Contract Drawings.

.2 Specifications.

.3 Addenda.

.4 Change Orders and other modifications to Contract.

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

.6 Field test records.

.7 Inspection certificates.

.8 Manufacturer's certificates.

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

.1 Provide files, racks, and secure storage.

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

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

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

.1 Do not use record documents for construction purposes.

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

1.6 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

.1 Record information on set of black line opaque drawings.

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

.3 Record information concurrently with construction progress.

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

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

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

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

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

.4 Field changes of dimension and detail.

.5 Changes made by change orders.

.6 Details not on original Contract Drawings.

.7 References to related shop drawings and modifications.

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

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

.2 Changes made by Addenda and change orders.

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

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

1.7 EQUIPMENT AND SYSTEMS

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

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

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

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

.3 Include installed colour coded wiring diagrams.

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

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

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

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

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

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

.8 Include sequence of operation by controls manufacturer.

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

.10 Provide installed control diagrams by controls manufacturer.

.11 Provide Contractor's co-ordination drawings, with installed colour coded piping diagrams.

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

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

.14 Include test and balancing reports as specified in Section 01 45 00 - Quality Control.

.15 Additional requirements: as specified in individual specification sections.

1.8 MATERIALS AND FINISHES

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

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

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

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

.4 Additional requirements: as specified in individual specifications sections.

1.9 MAINTENANCE MATERIALS

.1 Spare Parts:

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

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

.3 Deliver to location as directed; place and store.

.4 Receive and catalogue items.

.1 Submit inventory listing to Consultant.

.2 Include approved listings in Maintenance Manual.

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

.2 Extra Stock Materials:

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

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

.3 Deliver to location as directed; place and store.

.4 Receive and catalogue items.

.1 Submit inventory listing to Consultant.

.2 Include approved listings in Maintenance Manual.

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

.3 Special Tools:

.1 Provide special tools, in quantities specified in individual specification section.

.2 Provide items with tags identifying their associated function and equipment.

.3 Deliver to [site] [location as directed]; place and store.

.4 Receive and catalogue items.

.1 Submit inventory listing to Consultant.

.2 Include approved listings in Maintenance Manual.

1.10 DELIVERY, STORAGE AND HANDLING

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

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

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

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

.5 Remove and replace damaged products at own expense and for review by Consultant.

1.11 WARRANTIES AND BONDS

.1 Develop warranty management plan to contain information relevant to Warranties.

.2 Submit warranty management plan, 30 days before planned pre-warranty conference, Consultant approval.

.3 Warranty management plan to include required actions and documents to assure that Owner receives warranties to which it is entitled.

.4 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.

.5 Submit, warranty information made available during construction phase, to Consultant for approval prior to each monthly pay estimate.

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

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

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

.3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.

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

.5 Co-execute submittals when required.

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

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

.8 Conduct joint 11 month warranty inspection, measured from time of acceptance, by Consultant.

.9 Include information contained in warranty management plan as follows:

.1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.

.2 Provide list for each warranted equipment, item, feature of construction or system indicating:

.1 Name of item.

.2 Model and serial numbers.

.3 Location where installed.

.4 Name and phone numbers of manufacturers or suppliers.

.5 Names, addresses and telephone numbers of sources of spare parts.

.6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.

.7 Cross-reference to warranty certificates as applicable.

.8 Starting point and duration of warranty period.

.9 Summary of maintenance procedures required to continue warranty in force.

.10 Cross-Reference to specific pertinent Operation and Maintenance manuals.

.11 Organization, names and phone numbers of persons to call for warranty service.

.12 Typical response time and repair time expected for various warranted equipment.

.3 Contractor's plans for attendance at 4 and 9 month post-construction warranty inspections.

.4 Procedure and status of tagging of equipment covered by extended warranties.

.5 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.

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

.11 Written verification to follow oral instructions.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Canadian Standards Association (CSA International)

.1 CSA S350-[M1980(R1998)], Code of Practice for Safety in Demolition of Structures.

1.2 SUBMITTALS

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

.2 Submit for approval drawings, diagrams or details showing sequence of demolition work and supporting structures and underpinning, where required by authorities having jurisdiction.

.3 Hazardous Materials: provide description of Hazardous Materials and Notification of Filing with proper authorities prior to beginning of Work as required.

.4 Prior to beginning of Work on site submit detailed Waste Reduction Workplan and indicate:

.1 Descriptions of and anticipated quantities in percentages of materials to be salvaged, reused, recycled and landfilled.

.2 Schedule of selective demolition.

.3 Number and location of dumpsters.

.4 Anticipated frequency of tippage.

.5 Name and address of haulers. And waster receiving organizations.

1.3 SITE CONDITIONS

.1 Review "Designated Substance Report" and take precautions to protect environment.

.2 Should material resembling spray or trowel-applied asbestos or other designated substance listed as hazardous be encountered, stop work, take preventative measures, and notify Consultant immediately.

.1 Do not proceed until written instructions have been received from Consultant.

.3 Structures to be demolished to be based on their condition, at time of examination prior to tendering.

.4 Notify Consultant before disrupting building access or services.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 PREPARATION

.1 Inspect site with Consultant and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.

.2 Disconnect and cap plumbing & electrical services.

3.2 REMOVAL OF HAZARDOUS WASTES

.1 Prior to start of deconstruction work remove contaminated or hazardous materials from site and dispose of in safe manner in accordance with TDGA and other applicable regulatory requirements.

3.3 PROTECTION

.1 Keep noise, dust, and inconvenience to occupants to minimum.

.2 Protect building systems, services and equipment.

.3 Provide temporary dust screens, covers, railings, supports and other protection as required.

.4 Do Work in accordance with Section 01 35 30 - Health and Safety Requirements.

3.4 SALVAGE

.1 Refer to demolition drawings and specifications for items to be salvaged for reuse.

.2 Remove items to be reused, store as directed Consultant.

3.5 DEMOLITION

.1 Remove items as indicated.

.2 Do not disturb items designated to remain in place.

.3 Remove parts of existing building to permit new construction. Sort materials into appropriate piles for reuse.

.4 Trim edges of partially demolished building elements to tolerances as defined by Consultant to suit future use.

3.6 DISPOSAL

.1 Dispose of removed materials, except where specified otherwise, in accordance with authority having jurisdiction.

3.7 PARTIAL DEMOLITION

.1 Demolition work area as indicated on drawings. Remainder of the building is considered occupied.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Metal Fabrications indicated on drawings and/or as required, including plates, profiles and other hidden elements for anchoring.

1.2 RELATED SECTIONS

.1 Section 06 40 00 – Architectural Woodwork

.2 Section 08 11 00 – Metal Doors and Frames

.3 Section 08 50 00 – Windows

.4 Section 08 80 50 - Glazing

.5 Section 09 91 00 - Painting

1.3 REFERENCES

.1 Aluminum Association, Inc. (AA)

.1 Designation System for Aluminum Finishes [1997].

.2 American Society for Testing and Materials International, (ASTM)

.1 ASTM A53/A53M-02, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.

.2 ASTM A269-02, Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.

.3 ASTM A307-02, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.

.3 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.40-97, Anti-corrosive Structural Steel Alkyd Primer.

.2 CAN/CGSB-1.181-92, Ready-Mixed, Organic Zinc-Rich Coating.

.4 Canadian Standards Association (CSA International)

.1 CAN/CSA-G40.20/G40.21-98, General Requirements for Rolled or Welded Structural Quality Steel.

.2 CAN/CSA-G164-M92 (R1998), Hot Dip Galvanizing of Irregularly Shaped Articles.

.3 CAN/CSA-S16.1-01, Limit States Design of Steel Structures.

.4 CSA W48-01, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).

.5 CSA W59-1989 (R2001), Welded Steel Construction (Metal Arc Welding) (Imperial Version).

1.4 SUBMITTALS

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

.2 Shop Drawings:

.1 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

.2 Include erection drawings, elevations, and details where applicable. Indicate welded connections using standard welding symbols.

.3 Indicate net weld lengths.

.3 Product Data: Submit manufacturer's printed product literature, specifications and data sheet.

1.5 QUALITY ASSURANCE

.1 Welders' Certificates certifying welders employed on the Work, verifying qualification within the previous 12 months to CSA W47.1 (steel).

.2 Welded Steel Construction: CSA W59.

.3 Pre-installation Meetings: Conduct pre-installation meeting no later than one week prior to beginning Work, with contractor's representative and Architect to verify project details and requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

.1 Packing, Shipping, Handling and Unloading:

.1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Storage and Protection:

.1 Cover exposed stainless-steel surfaces with pressure sensitive heavy protection paper or apply strippable plastic coating, before shipping to job site.

.2 Leave protective covering in place until final cleaning of building. Provide instructions for removal of protective covering.

1.7 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 20 - Construction Waste Management and Disposal.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal packaging material for recycling in accordance with Waste Management Plan.

.4 Divert unused metal materials from landfill to metal recycling.

Part 2 Products

2.1 MATERIALS

.1 Minimum requirements as follows:

.1 Recycled Content - Steel Materials: Minimum post-consumer recycled content of 75%.

.2 Steel sections and plates: to CAN/CSA-G40.20/G40.21, Grade 350W.

.3 Steel pipe: to ASTM A53/A53M, Schedule 40, standard weight, finish as scheduled.

.4 Welding materials: to CSA W59.

.5 Welding electrodes: to CSA W48 Series.

.6 Bolts, nuts, washers and anchors: to ASTM A307, galvanized to CSA G164 for galvanized components.

.7 Stainless steel tubing: to ASTM A269, Type 302.

.8 Grout: non-shrink, non-metallic, flowable, 15 MPa at 24 hours.

2.2 FABRICATION

.1 Field measure prior to fabrication.

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

.3 Fit and shop assemble items in largest practical sections, for delivery to site.

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

.5 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

.6 Exposed fasteners to be flush countersunk.

.7 Remove all splatter and slag, grind welds smooth and sand.

.1 Do not over-grind or over-sand.

2.3 FABRICATION TOLERANCES

.1 Squareness: 3 mm maximum difference in diagonal measurements.

.2 Maximum Offset between Faces: 1.5 mm.

.3 Maximum Misalignment of Adjacent Members: 1.5 mm.

.4 Maximum Bow: 3 mm in 1.2 m.

.5 Maximum Deviation from Plane: 1.5 mm in 1.2 m.

2.4 FINISHES

.1 Galvanizing: hot dipped galvanizing with zinc coating 600 g/m2 to CAN/CSA-G164.

.2 Shop coat primer: to CAN/CGSB-1.40.

.3 Zinc primer: zinc rich, ready mix to CAN/CGSB-1.181.

.4 Perform finish painting in accordance with Section 09 91 00.

.5 Shop and Touch-Up Primer: SPCC 15, Type 1, red oxide.

.1 VOC Limit < 250 g/l when tested in accordance with USEPA Method 24 and ASTM D2369.

.6 Touch-Up Primer for Galvanized Surfaces: Zinc rich (ZRC) cold galvanizing compound, premixed, UL labelled, liquid organic zinc compound, containing minimum 92% metallic zinc by weight in the dried film, solids content between 65% and 69% by weight.

.1 VOC Limit < 250 g/l when tested in accordance with USEPA Method 24 and ASTM D2369.

2.5 ISOLATION COATING

.1 Isolate aluminum from following components, by means of bituminous paint:

.1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.

.2 Concrete, mortar and masonry.

.3 Wood.

2.6 SHOP PAINTING

.1 Apply one shop coat of primer to metal items, with exception of galvanized or concrete encased items or items to receive fire proofing.

.2 Use primer unadulterated, as prepared by manufacturer. Paint on dry surfaces, free from rust, scale, grease. Do not paint when temperature is lower than 7 degrees C.

.3 Clean surfaces to be field welded; do not paint.

2.7 STRUCTUTAL STEEL ITEMS

.1 **The Contractor must review all architectural drawings and supply and install all structural steels, anchor bolts, etc., required and detailed on drawings.**

.2 Supply and install all steel brackets, columns, supports, steel plates and expansion anchors and all other attachments as indicated on architectural and structural drawings. Drill for countersunk screws and anchor bolts.

.3 Galvanize finish for exterior, prime paint for interior.

.4 Shop drawings shall bear the seal and signature of a registered Structural Engineer licensed to practice in the Province of Nova Scotia.

Part 3 Execution

3.1 ERECTION

.1 Do welding work in accordance with CSA W59 unless specified otherwise.

.2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.

.3 Provide suitable means of anchorage acceptable to Consultant such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.

.4 Exposed fastening devices to match finish and be compatible with material through which they pass.

.5 Provide components for building by other sections in accordance with shop drawings and schedule.

.6 Make field connections with bolts to CAN/CSA-S16.1, or weld.

.7 Hand items over for casting into concrete or building into masonry to appropriate trades together with setting templates.

.8 Touch-up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection with primer.

.9 Touch-up galvanized surfaces with zinc rich primer where burned by field welding.

3.2 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.3 ERECTION TOLERANCES

.1 Maximum Variation from Plumb: 6 mm per story, non-cumulative.

.2 Maximum Offset from True Alignment and or Out-of-Position: 6 mm.

3.4 NON-SCHEDULED ITEMS

.1 This section is general in nature and does not include all miscellaneous items required on the project.

.1 Verify all Sections and drawings for any additional miscellaneous steel requirements.

.2 Review all Drawings and Details which show the majority but not all items.

.3 Provide all miscellaneous metal items required for the project whether shown or identified or not.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES (BUT NOT LIMITED TO)

.1 Blocking in wall.

.2 Wood furring and grounds.

.3 Telephone and electrical panel back boards.

.4 Equipment mounting boards.

.5 Framing and miscellaneous wood blocking, curbs and grounds.

.6 Wall; load bearing and non-load bearing.

.7 Wall sheathing.

.8 All associated fasteners and hardware.

1.2 RELATED SECTIONS

.1 Section 09 21 16 – Gypsum Board Assemblies

1.3 REFERENCES

.1 American Society for Testing and Materials International (ASTM)

.1 ASTM A-307-00, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI tensile strength.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-71.26-M88, Adhesive for Field-Gluing Plywood to Lumber Framing for Floor Systems.

.3 Canadian Plywood Association (CANPLY)

.1 CANPLY – Canadian Plywood Handbook.

.4 Canadian Standards Association (CSA International)

.1 CSA B34, Misc

.2 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.

.3 CAN/CSA-G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.

.4 CSA O80 Series-[97(R2002)] - O80S2-[05], Wood Preservation.

.5 CSA O86-01 (R-2000), Engineering Design in Wood (Limits States Design).

.6 CSA O112 Series-M1977(R2006), CSA Standards for Wood Adhesives.

.7 CSA O121-M1978(R2003), Douglas Fir Plywood.

.8 CSA O141-05, Softwood Lumber.

.9 CSA O151-04, Canadian Softwood Plywood.

.10 CSA O153-M1980(R2003), Poplar Plywood.

.11 CAN/CSA-O325.0-92(R2003), Construction Sheathing.

.12 CSA O437 Series-93(R2006), Standards on OSB and Waferboard.

.5 National Lumber Grades Authority (NLGA)

.1 Standard Grading Rules for Canadian Lumber 2005.

1.4 SUBMITTALS

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

1.5 QUALITY ASSURANCE

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

.2 Plywood, Certified and graded to CANPLY requirements.

.3 OSB in accordance with CSA standards.

.4 Construction requirements: in accordance with Section 01 47 15 - Sustainable Requirements: Construction.

1.6 DELIVERY, STORAGE, AND HANDLING

.1 Waste Management and Disposal:

.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

Part 2 Products

2.1 FRAMING AND STRUCTURAL MATERIALS

.1 Lumber: NLGA Standard Grading Rules for Canadian Lumber.

.1 CSA O141. softwood, SPF species, Grade 2.

.2 Moisture content 19% maximum

.3 Pressure preservative treatment: to CSA-O80 Series, water-borne, for clear finish; Alkaline Copper Quaterneary (ACQ) for use in contact with ground.

.2 Furring, blocking, nailing strips, grounds, rough bucks, cants, curbs, fascia backing and sleepers:

.1 Board sizes: "Standard" or better grade.

.2 Dimension sizes: "Standard" light framing or better grade.

.3 Post and timbers sizes: "Standard" or better grade.

.4 Forestry Stewardship Council (FSC) certified.

2.2 PANEL MATERIALS

.1 Plywood:

.1 Douglas fir plywood (DFP): to CSA O121, standard construction. Urea-Formaldehyde free, thickness as indicated, grade stamped in accordance with CANPLY and as follows:

.1 Electrical, Telephone and Data and equipment mounting boards backboards: Good one-side (G1S).

.2 CSA O151 (CSP), CANPLY Grade SHG; un-sanded, exterior use, thicknesses as indicated; Urea-Formaldehyde free.

.1 General use

.2 Roof Sheathing: tongue and groove, 16 mm thickness minimum or as noted.

.3 Wall Sheathing: thickness as indicated.

.4 Pressure preservative treatment: to CSA O80.9, plywood to CSA O151.

2.3 ACCESSORIES

.1 Fasteners and Anchors:

.1 Fasteners: Hot dipped galvanized steel for high humidity and treated wood locations, unfinished steel elsewhere.

.2 Anchors: Toggle bolt type for anchorage to hollow masonry. Expansion shield and lag bolt type for anchorage to solid masonry or concrete. Bolt fastener for anchorages to steel.

.2 Resilient Furring: to ASTM C645.

.3 Sill Plate Gasket: 6 mm thick, plate width, closed cell polyethylene foam from continuous rolls.

.4 Nails, spikes and staples: to CSA B111.

.5 Framing Anchors:

.1 Framing anchors, truss anchors, and strap ties: galvanized sheet steel. Anchors and strap ties to be of type and thickness as shown on the structural drawings. See details and notes on drawings for details.

Part 3 Execution

3.1 PREPARATION

.1 Store wood products.

3.2 INSTALLATION

.1 Comply with requirements of NBC 2005 Part 9 supplemented by following paragraphs.

.1 Install members true to line, levels and elevations, square and plumb.

.2 Construct continuous members from pieces of longest practical length.

.3 Place foam sill gasket under framed assemblies in contact with concrete surfaces.

.4 Install spanning members with "crown-edge" up.

.5 Select exposed framing for appearance. Install lumber and panel materials so that grade-marks and other defacing marks are concealed or are removed by sanding where materials are left exposed.

.6 Provide solid blocking in walls where required for support of wall-mounted fixtures and assemblies.

.7 Install furring and blocking as required to space-out and support casework, cabinets, wall and ceiling finishes, facings, fascia, soffit, siding electrical equipment mounting boards, and other work as required.

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

.9 Install wood cants, fascia backing, nailers, curbs and other wood supports as required and secure using galvanized fasteners.

.10 Install sleepers as indicated.

.11 Equipment mounting boards:

.1 Plywood, DFP, G1S, grade, square edge minimum 19 mm thick .

.2 Install telephone, data, equipment and electrical panel back boards sized a minimum of 300 mm beyond size of the equipment.

.12 Frame and block openings for support of door and window frames, and other equipment, as indicated.

.13 Secure sheathing to framing members with ends over firm bearing and staggered and as specified on the drawings.

.14 Install roof sheathing as specified on the drawings and in accordance with requirements of Part 9 of the NBC.

.15 Install nails or bolts in each hole provided in each framing anchor, tie down, strap, hold down, etc.

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

3.3 ERECTION

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

.2 Countersink bolts where necessary to provide clearance for other work.

.3 Use nailing disks for soft sheathing as recommended by sheathing manufacturer.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 05 50 00 - Metal Fabrications.

.2 Section 08 11 00 – Metal Frames

.3 Section 08 14 16 – Flush Wood Doors.

.4 Section 09 91 00 - Painting.

1.2 REFERENCES

.1 Architectural Woodwork Manufacturers Association of Canada (AWMAC).

.1 Architectural Woodwork Quality Standards Illustrated, Latest Edition.

.2 American National Standards Institute (ANSI).

.1 ANSI A208.1-1999, Particleboard.

.3 Canadian Plywood Association (CANPLY).

.1 The Plywood Handbook [2005].

.4 Canadian General Standards Board (CGSB).

.1 CAN/CGSB-12.12-M90, Plastic Safety Glazing.

.5 Canadian Standards Association (CSA)

.1 CSA B111-1974 (R1998), Wire Nails, Spikes and Staples.

.2 CSA O153-M1980 (R2003), Poplar Plywood.

.6 National Electrical Manufacturers Association (NEMA).

.1 NEMA LD3-2000, High-Pressure Decorative Laminates.

.7 National Lumber Grades Authority

.1 NLGA Standard Grading Rules for Canadian Lumber [2005].

1.3 QUALITY ASSURANCE

.1 The finish carpenter is to furnish, at the request of the Engineer-Architect, a list of completed projects of equal or more value than this project completed in the last five years.

.2 Where modifications to the AWMAC Quality Standards are included in this specification, such modifications shall govern in case of conflict.

.3 Any reference to Custom or Premium grade in this Section shall be as defined in the AWMAC Quality Standards.

.4 Any item not given a specific quality grade shall be Custom grade as defined by AWMAC Quality Standards.

.5 The finish carpenter is responsible for all field dimensions on site that will affect the work.

.6 Construction requirements: in accordance with Section 01 47 15 - Sustainable Requirements: Construction.

.7 Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.

.8 Plywood identification: by CANPLY (Canadian Plywood Association) certification stamp and in accordance with applicable CSA standards.

.9 Preservative-treated wood to bear a quality assurance grade stamp indicating that the product meets standards for retention and penetration, and that wood moisture content at the time of treatment was conducive to acceptance of chemical preservative.

1.4 SUBMITTALS

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

.1 Submit shop drawings to indicate profiles in full scale.

.2 Shop drawings shall show construction details and general arrangements; typical and special installation conditions; materials being supplied and all connections, attachments, anchorage and location of exposed fastenings, as applicable.

.3 No work shall be fabricated until the shop drawings have been reviewed and all related submittals and samples as required by the specification have been approved by the Engineer-Architect.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver, handle, store and protect materials of this section in accordance with Section 01 61 00 - Common Product Requirements.

.2 Protect materials against dampness during and after delivery.

.3 Store materials in ventilated areas, protected from extreme changes of temperature or humidity.

Part 2 Products

2.1 FINISH LUMBER

.1 Hardwood Lumber: AWMAC QSI Custom grade; White Birch species, maximum moisture content of 11 percent; with plain sawn grain, of quality suitable for transparent finish.

.2 Wood Slat: Wood siding, White Birch species, “V” groove channel, 100 mm nominal width, with factory applied clear finish.

2.2 PANELS

.1 Plywood: to CSA O151 or O153 and CANPLY Sanded Grade or G1S, thickness as indicated, urea-formaldehyde free.

2.3 HARDWARE, FASTENERS AND ACCESSORIES

.1 Fasteners and Anchorages: Provide nails, screws, and other anchoring devices of the type and size required for application indicated to provide secure attachment, concealed where possible.

.2 Wood screws: Type and size to suit application. Provide matching species wood plugs for members to receive stained or clear finishes. Provide coloured vinyl plugs to conceal fastenings in laminate-clad components.

Part 3 Execution

3.1 INSTALLATION

.1 Do finish carpentry to Quality Standards of the Architectural Woodwork Manufacturers Association of Canada (AWMAC), Custom grade, except where specified otherwise.

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

.3 Form joints to conceal shrinkage.

.4 Install items of finish carpentry as scheduled by this Section and as indicated on the Drawings.

3.2 CONSTRUCTION AND FINISH SCHEDULE

.1 Fastening.

.1 Position items of finished carpentry work accurately, level, plumb, true and fasten or anchor securely.

.2 Design and select fasteners to suit size and nature of components being joined. Use proprietary devices as recommended by manufacturer.

.3 Set finishing nails to receive filler. Where screws are used to secure members, countersink screw in round cleanly cut hole and plug.

.4 Replace items of finish carpentry with damage to wood surfaces including hammer and other bruises.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Plastic laminate clad countertops.

.2 Plastic laminate clad casework and miscellaneous components and fixtures.

.3 Cabinet hardware and glazing.

1.2 RELATED SECTIONS

.1 Section 05 50 00 - Metal Fabrications.

.2 Section 07 92 00 – Joint Sealants

.3 Section 08 50 00 – Glazing

.4 Section 09 65 00 – Resilient Flooring

1.3 REFERENCES

.1 American National Standards Institute (ANSI)

.1 ANSI/NPA A208.1-[1999], Particleboard.

.2 ANSI A208.2-[02], Medium Density Fiberboard (MDF) for Interior Applications.

.3 ANSI/HPVA HP-1-[04], Standard for Hardwood and Decorative Plywood.

.2 American Society for Testing and Materials International (ASTM)

.1 ASTM E1333-[96(2002)], Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates From Wood Products Using a Large Chamber.

.2 ASTM D2832-[92(R2005)], Standard Guide for Determining Volatile and Nonvolatile Content of Paint and Related Coatings.

.3 ASTM D5116-[06], Standard Guide For Small-Scale Environmental Chamber Determinations of Organic Emissions From Indoor Materials/Products.

.3 Architectural Woodwork Manufacturers Association of Canada (AWMAC).

.1 North American Architectural Woodwork Standards, v.3.1.

.4 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-71.20-[M88], Adhesive, Contact, Brushable.

.5 Canadian Standards Association (CSA International)

.1 CSA B111-[74(R2003)], Wire Nails, Spikes and Staples.

.2 CSA O112.4 Series-[M1977(R2006)], Standards for Wood Adhesives.

.3 CSA O112.5-Series-M-[1977(R2006)], Urea Resin Adhesives for Wood (Room- and High-Temperature Curing).

.4 CSA O112.7-Series M-[1977(R2006)], Resorcinol and Phenol-Resorcinol Resin Adhesives for Wood (Room- and Intermediate-Temperature Curing).

.5 CSA O121-[M89(R2003)], Douglas Fir Plywood.

.6 CSA O141-[05], Softwood Lumber.

.7 CSA O151-[04], Canadian Softwood Plywood.

.8 CSA O153-[M1980(R2003)], Poplar Plywood.

.6 National Electrical Manufacturers Association (NEMA)

.1 ANSI/NEMA LD-3-[05], High-Pressure Decorative Laminates.

.7 National Hardwood Lumber Association (NHLA)

.1 Rules for the Measurement and Inspection of Hardwood and Cypress [1998].

.8 National Lumber Grades Authority (NLGA)

.1 Standard Grading Rules for Canadian Lumber [2005].

.9 State Standards of the Russian Federation (GOST).

.1 GOST 1055-71 - Birch plywood. Technical Requirements for Export Products.

1.4 SUBMITTALS

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

.2 Fabricator /Manufacturer shall provide a current letter of good standing with the Architectural Woodwork Manufacturers Association of Canada (AWMAC).

.3 Shop drawings.

.1 Shop Drawings to follow the requirement AWMAC Standards Manual

.2 Indicate construction details of all architectural woodwork and general arrangements; typical and special installation conditions; materials being supplied and all connections, attachments, anchorage and location of exposed fastenings, as applicable.

.3 Incorporate plans, elevations, sections, and details for all casework in scale. The details shall show all thicknesses, types and finishes and all cabinet hardware.

.4 Data Sheets.

.1 Provide data sheets on all items used including but not limited to adhesives, laminated, base materials, hardware, finished, etc..

.5 Samples.

.1 Provide duplicate colour samples for colour selection.

.2 Provide duplicate samples of laminated plastic joints, edging, cut-outs and post-formed profiles.

.3 Submit two (2) sample of each hardware item specified.

.6 No work shall be fabricated until the above information noted in items 1 through 6 have been reviewed and all related submittals and samples as required by the specification have been reviewed by the Consultant.

1.5 QUALITY ASSURANCE

.1 All millwork and casework are to be manufactured and fabricated by a company located in the Atlantic Provinces.

.2 The architectural woodwork and casework manufacturer(s) / fabricator(s) must be a current member, in good standing of the Architectural Woodwork Manufacturers Association of Canada (AWMAC).

.3 The architectural casework manufacturer is to furnish, at the request of the Consultant, a list of completed projects of equal or more value than this project completed in the last five years.

.4 Where modifications to the AWMAC QSI are included in this specification, such modifications shall govern in case of conflict.

.5 Any reference to Custom or Premium grade in this Section shall be as defined in the AWMAC QSI.

.6 Any item not given a specific quality grade shall be Custom grade as defined by AWMAC QSI.

.7 Casework manufacturer to maintain a copy of AWMAC QSI on site for reference purposes.

.8 The casework manufacturer is responsible for all field dimensions on site that will affect the work.

.9 Lumber by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.

.10 Plywood, particleboard, OSB and wood based composite panels in accordance with CSA and ANSI standards.

1.6 GUARANTEE

.1 Provide a two (2) year maintenance bond, to the full value of the Work of this Section, certifying that the Work has been manufactured and installed in accordance with the standards incorporated in the AWMAC Quality Standards Manual.

.2 Where the fabricator is an AWMAC member in good standing, a two (2) year AWMAC Guarantee Certificate will be issued instead of the maintenance bond.

.3 The maintenance bond or Guarantee Certificate shall cover replacing, reworking and refinishing to make good defects in Work die to faulty workmanship or defective materials, which appear during a two (2) year period following the date of Interim completion.

1.7 DELIVERY, STORAGE, AND HANDLING

.1 Deliver, handle, store and protect materials of this section in accordance with Section 01 61 00 - Common Product Requirements.

.2 Protect millwork against dampness and damage during and after delivery.

.3 Store millwork in ventilated areas, protected from extreme changes of temperature or humidity.

1.8 PROJECT CONDITIONS

.1 Field Measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings.

.2 Coordinate fabrication schedule with construction progress to avoid delaying the Work.

Part 2 Products

2.1 PANEL PRODUCTS

.1 Canadian softwood plywood (CSP): to CSA O151, standard construction.

.1 Urea-formaldehyde free.

.2 Particleboard: to ANSI A208.1, Grade M3, thicknesses as indicated.

.1 Urea-Formaldehyde free.
.2 EPP certified for interior use.
.3 Formaldehyde emissions maximum 0.01 ppm.
.4 100% recycled and / or recovered wood materials.

.3 Hardboard: to ANSI A208.2 Basic hardboard

.1 Overlay bonded to both faces to prevent warping.
.2 EPP certified for interior use.
.3 100% recycled and / or recovered wood materials.
.4 Melamine faced; colour white

.4 Melamine Panels (MCP): to NEMA LD3, consisting of a decorative paper impregnated and saturated with melamine resin, thermally fused under heat and pressure to Grade M3 particleboard core, thickness as indicated.

.1 Overlay bonded to both faces to prevent warping.

2.2 PLASTIC LAMINATE

.1 High-Pressure Decorative Laminates (HPDL) to NEMA LD3-2000, types as follows:

.1 General purpose type, grade as follows:
  .1 HGS, 1.2 mm thick for horizontal surfaces.
  .2 HGL, 1.0 mm thick for vertical surfaces.
.2 Post-forming type: HGP, 1.0 mm thick.
.3 Cabinet liner type: Grade CLS, 0.5 mm thick.
.4 Backer type, grade as follows:
  .1 BKH, 1.2 mm thick.
  .2 BKV, 0.7 mm thick.

.2 Provide backer sheet of same thickness as face sheet to reverse of all countertops, except post-formed units.

.3 Approved Manufacturers: Formica, WilsonArt, Nevamar, Pionite.

.4 Colour selection will be selected by the architect from full range of colour/pattern/wood finish of the manufacturer. Countertops and cabinets to be in matte finish and from full range of finishes (matte, artisan, microdot, sculpted, etc…) for all cabinets doors and drawers faces.

.1 Up to 3 colours will be selected for the entire project, excluding countertops.

.2 Up to 3 colours will be selected for countertops.

.5 Low VOC Adhesives: Contact adhesive to CAN/CGSB-71.20, semi-rigid (polyvinyl adhesive to CSA O112.4) or rigid adhesives (urea resin adhesive to CSA O112.5, resorcinol resin adhesive to CSA O112.7) may be used.

.1 Consult manufacturer for selection of adhesive for materials and application.

.2 Use waterproof adhesives in wet areas.

.3 Maximum VOC limit SCAQMD Rule 1168, Adhesives and Sealants Applications.

.4 Adhesives urea-formaldehyde free.

2.3 LUMBER

.1 Hardwood Lumber: National Hardwood Lumber Association (NHLA).

.2 AWMAC QSI Premium Grade;

.3 White Birch species, with plain sawn grain, of quality suitable for transparent finish.

.4 Maximum moisture content of 11 percent or less;

.2 Softwood lumber: in accordance with CSA O141.

.1 NLGA Standard Grading Rules for Canadian Lumber.

.2 AWMAC [premium] grade,

.2 S4S,

.3 Maximum moisture content 19 % or less

2.4 ACCESSORIES

.1 Nails and staples: to CSA B111.

.2 Wood screws: steel type and size to suit application.

.3 Sealant: in accordance with Section 07 92 00 - Joint Sealants and SCAQMD Rule 1168 - Adhesives and Sealants Applications.

2.5 COUNTERTOPS

.1 Laminate-Clad Countertops:

.1 Countertop core: minimum 19 mm plywood, or thickness indicated.

.2 Finish: General purpose HPL, HGS Grade.

.3 Backer sheet: HPL

.4 Colour and pattern: As selected by Consultant from unrestricted range.

.5 Provide backsplashes and aprons as indicated.

.6 Provide matching laminate to exposed edges.

.7 Edgebanding: 3 mm, PVC banding.

.1 Colour: As selected by Architect from full range of colours and patterns.

2.6 FABRICATION - GENERAL

.1 Shop assemble casework and other components for delivery to site in units easily handled and to permit passage through building openings.

.2 Joinery to be in accordance with the AWMAC QSI.

.3 When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trip for scribing and site cutting.

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

.5 Natural and manufacturing defects in excess of those permitted in the grade specified are permitted if such defects are to be covered by adjoining members or otherwise concealed.

.6 Carefully fit equipment to be installed. Provide filler pieces when required.

.7 Set nails and countersink screws, apply colour matched wood filler to indentations, sand smooth and leave ready to receive finish.

.8 Shop install cabinet hardware for doors, shelves and drawers.

.9 Recess shelf standards leaving 2 mm above surface of panel.

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

2.7 MANUFACTURED UNITS

.1 General

.1 Fabricate caseworks to AWMAC Quality Standards Custom Grade.

.2 Flush full overlay design as defined by Section 400-G-4 in the AWMAC Quality Standards.

.3 Furring, blocking, nailing strips, grounds and rough bucks and sleepers as required and as indicated.

.1 Board sizes: "standard" or better grade.

.2 Dimension sizes: "standard" light framing or better grade.

.3 Urea-formaldehyde free.

.4 Thickness: Thickness for panels identified on Drawings shall govern.

.5 Edgebanding:

.1 Matching colour 2 or 3 mm PVC unless otherwise noted.

.1 Shop-bonded to core using hot-melt edgebanding machine. Other methods not acceptable.

.2 All four sides of doors and drawer fronts are to be edgebanded.

.6 Joinery:

.1 Assembly of casework with screws, nails or staples is not acceptable unless used in combination with recommended AWMAC joinery methods listed in the AWMAC Quality Standards.

.2 Exposed fasteners are not acceptable.

.7 Shelving:

.1 All shelving to be adjustable.

.2 All shelving to be full depth of unit.

.2 Case Body:

.1 Exposed Ends: Not less than 16 mm thick particle board.

.2 Unexposed Ends: Not less than 16 mm thick particle board.

.3 Tops and Bottoms: Not less than 16 mm thick particleboard, fully supported and secured in rabbets in panels.

.4 Unexposed Tops and Bottoms: Melamine finish.

.5 Backs: Not less than 13 mm thick particleboard fastened to machined rear edge of ends, top and bottom case partitions.

.6 Exterior Exposed Finish: HPL, VGS grade, colour and pattern selection by Engineer-Architect.

.7 Interior Finish: HPL, CLS grade, white colour.

.8 Edge banding: Laminate tape, colour match to exposed finish.

.3 Doors and Applied Drawer Fronts: Both faces of solid slab panel doors and drawer fronts to be finished in plastic laminate of same thickness, to prevent warpage:

.1 Panel: Solid, not less than 19mm thick.

.2 Exposed Finish: HPL, colour and pattern selection by Consultant.

.3 Concealed Finish: to match exposed finish.

.4 Edge banding: Matching colour 3 mm PVC unless otherwise noted

.4 Drawers: box-type construction with applied drawer fronts.

.1 Sides, Backs and Sub-fronts: Baltic Birch Plywood, 13 mm thickness.

.2 Sub-front and back rabbeted into sides and secured with glue and mechanical fasteners.

.3 Fasten applied front to sub-front with zinc mounting screws from interior of body.

.4 Bottoms: Hardboard, no less than 6mm thickness, set into rabbets in back, sides and fronts.

.5 Shelving: Melamine.

.1 Semi-exposed finish, shelves within cabinets:

.1 White melamine finish both faces of panel

.2 Matching 3 mm PVC edgebanding all four sides

.3 Colour: White.

.2 Exposed finish, exposed shelving without doors:

.1 HPDL, VGS grade, colour and pattern selected by Consultant.

.2 Matching PVC edgebanding all four sides.

.3 Thickness:

.1 19 mm thick for up to 915 mm unsupported length,

.2 25 mm thick for unsupported lengths between 915 mm and 1066 mm, unless otherwise indicated.

.6 Toe Kicks: Not less than 19 mm CSP plywood or lumber, full height of toe space, for applied resilient or hard tile base.

.7 Corner Blocks: CSP plywood; glued and fastened in each of four top corners to maintain cabinet squareness and rigidity.

.8 Support Brackets: Supplied by Section 05 50 00; installed by this Section.

2.8 HARDWARE AND COMPONENTS

.1 Hinges: 125° opening angle, nickel plated steel with self closing spring mechanism, fully concealed and adjustable, c/w mounting plates.

.1 Provide hinges for flush overlay casework design as indicated.

.1 Acceptable Product: Blum Clip.

.2 Drawer Slides:

.1 Drawer slides for light and medium duty drawers, 610 mm wide or less: Accuride 7432 ball bearing, rail mount, full extension, 45 kg load rating. Clear zinc finish.

.2 Drawer slides for file drawers or heavy duty drawers, 1100 mm wide or less: Accuride 3640 ballbearing, rail mount, full extension with 25 mm over travel, 90 kg load rating. Clear zinc finish.

.3 Door and Drawer Pulls:

.1 D-shaped wire pull,

.2 Stainless steel with satin finish,

.3 Acceptable product: Richelieu, model #6132896195 or approved alternate.

.4 Shelving Standards: Adjustable, recessed, steel with zinc finish, length as required with heavy duty metal shelf clips with retainer clips (4 per shelf).

.5 Cable grommet:

.1 Black PVC, with sliding cover

.2 Minimum 50 mm dia. unless otherwise shown.

.6 Keyboard Tray:

.1 Shall conform to section 4.13 (test 12, drawers and trays) of ANSI/BHMA A156.9.

.2 Colour: Black

.3 Undermount installation.

.4 Standard with built-in mouse tray (min depth: 11’’, min width: 27”)

Part 3 Execution

3.1 FABRICATION

.1 Set nails and countersink screws apply colour matched wood filler to indentations, sand smooth and leave ready to receive finish.

.2 Shop install cabinet hardware for doors, shelves and drawers.

.3 Recess shelf standards leaving 2 mm above surface, unless noted otherwise.

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

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

.6 Natural and manufacturing defects in excess of those permitted in the grade specified are permitted if such defects are to be covered by adjoining members or otherwise concealed.

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

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

.9 Carefully fit equipment to be installed. Provide filler pieces when required.

.10 Ensure adjacent parts of continuous laminate work match in colour and pattern.

.11 Veneer laminated plastic to core material in accordance with adhesive manufacturer's instructions.

.1 Ensure core and laminate profiles coincide to provide continuous support and bond over entire surface.

.2 Use continuous lengths up to 2400 mm.

.3 Keep joints 600 mm from sink cutouts.

.12 Apply laminate backing sheet to reverse side of core of plastic laminate work.

3.2 FINISHING

.1 SCAQMD Rule 1113 - Architectural Coatings.

3.3 PREPARATION

.1 Verify adequacy of backing and support framing.

3.4 INSTALLATION

.1 Do architectural woodwork to Quality Standards of the Architectural Woodwork Manufacturers Association of Canada (AWMAC), except where specified otherwise.

.2 Install prefinished millwork at locations shown on drawings.

.1 Position accurately, level, plumb straight.

.3 Fasten and anchor millwork securely.

.1 Provide heavy duty fixture attachments for wall mounted cabinets.

.4 Use draw bolts in countertop joints.

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

.6 At junction of plastic laminate counter back splash and adjacent wall finish, apply small bead of sealant.

.7 Apply water resistant building paper over wood framing members in contact with masonry or cementitious construction.

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

.9 Adjust doors, drawers, hardware, shelving, fixtures and other moving or operating parts to function smoothly and correctly.

3.5 CLEANING

.1 Proceed in accordance with Section 01 74 11 - Cleaning.

.2 Clean casework, counters, shelves, hardware, fittings and fixtures.

.3 Clean surfaces of plastic laminate with a damp cloth or ordinary bar soap and water.

.1 Harsh abrasive cleansers shall not be used.

.4 Remove excess glue from surfaces.

3.6 PROTECTION

.1 Protect work from damage until final inspection.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Firestopping at all penetrations and perimeter locations of fire resistance rated assemblies, including firestopping of mechanical and electrical service penetrations.

1.2 SUMMARY

.1 Provide firestop systems consisting of materials, or combination of materials, installed to retain the integrity of fire-rated construction by maintaining an effective barrier against the spread of flame, smoke, and hot gases through penetrations, blank openings, construction joints, or at perimeter fire containment in or adjacent to fire-rated barriers in accordance with the requirements of the Building Code and authorities applicable to this project.

.2 Provide firestop systems at locations including, but not limited to, the following:

.1 Penetrations through fire-resistance-rated floor and roof assemblies requiring protected openings including both empty openings and openings that contain penetrations.

.2 Penetrations through fire-resistance-rated wall assemblies including both empty openings and openings that contain penetrations.

.3 membrane penetrations in fire-resistance-rated wall assemblies where items penetrate one side of the barrier.

.4 Joints in fire-resistance-rated assemblies to allow independent movement.

.5 Perimeter Fire Barrier System between a rated floor/roof and an exterior wall assembly, including curtain wall.

.6 Joints, through penetrations and membrane penetrations in Smoke Barriers and Smoke Partitions.

.3 Section does not include provision of ULC/UL Listed components which are part of penetrating item assembly, i.e. fire dampers in ductwork, etc.

1.3 RELATED SECTIONS

.1 Section 09 21 16 - Gypsum Board Assemblies: Blocking required in walls to comply with System Design.

1.4 REFERENCES

.1 Underwriters' Laboratories of Canada (ULC).

.1 Guide BXUVC, Fire Resistance Ratings.

.2 Guide XHEZC, Firestop Systems.

.3 CAN/ULC-S101, Standard Methods of Fire Endurance Tests of Building Construction and Materials.

.4 CAN/ULC-S102, Standard Test Method for Surface Burning Characteristics of Building Materials.

.5 CAN/ULC-S115, Standard Method of Fire Tests of Firestop Systems.

.2 Underwriters Laboratories Inc. (UL).

.1 Guide BXUV7, Fire Resistance Ratings Certified for Canada.

.2 Guide XHEZ7, Through-penetration Firestop Systems Certified for Canada.

.3 UL 2079, Tests for Resistance of Building Joint Systems.

.3 American Society for Testing and Materials (ASTM).

.1 ASTM E2174, Standard Practice for On-site Inspection of Installed Fire Stops.

.2 ASTM E2307, Standard Test Method for Determining Fire Resistance of Perimeter Fire Barrier Systems Using Intermediate-Scale, Multi-story Test Apparatus.

.3 ASTM E2393, Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers.

.4 International Firestop Council (IFC).

.1 Guidelines for Evaluating Firestop Systems Engineering Judgments

1.5 DEFINITIONS

.1 Firestopping: Material or combination of materials used to retain integrity of fire-rated construction by maintaining an effective barrier against the spread of flame, smoke, water and hot gases through penetrations and joints between fire rated wall, floor and roof assemblies.

.2 System Design: An assembly of products designed to maintain the integrity of fire-rated construction when tested in accordance with CAN/ULC-S115, designed by a voting IFC member, certified by an independent ULC licensed testing agency, and ULC/UL Listed.

1.6 QUALITY ASSURANCE

.1 Firestop installation must meet requirements of CAN/ULC-S115 tested assemblies.

.2 For firestop applications for which no ULC or UL System Design is available through a manufacturer, a manufacturer's Engineering Judgment to be submitted to local Authorities Having Jurisdiction for review and approval prior to installation. Engineering Judgment drawings must follow requirements set forth by the International Firestop Council.

.3 Installer Qualifications: Company specializing in performing the work of this section with minimum five years documented experience, certified by the firestop manufacturer.

1.7 QUALITY CONTROL

.1 Inspection: The Engineer-Architect may retain an independent inspection agency to examine penetration and joint firestopping in accordance with ASTM E2174 and ASTM E2393.

.2 Testing will be paid by Engineer-Architect, except where testing reveals non-compliant installation, for which replacement is to be paid by Installer.

1.8 SUBMITTALS

.1 Submit in accordance with Section 01 33 00.

.2 Product Data: Provide data on product characteristics, performance and limitation criteria.

.3 Shop Drawings: Submit System Design listings, indicating ULC or UL design number and including illustrations, applicable to each firestop configuration. Where there is no System Design available for a particular firestop configuration, the Installer to pay for and obtain, from the firestop manufacturer, an Engineering Judgment (EJ) or Equivalent Fire Resistance Rated Assembly (EFRRA) for submittal.

.4 Schedule: Provide schedule indicating material to be used, building elements to be protected, hourly rating and appropriate references.

.5 Manufacturer's Installation Instructions: Indicate preparation and installation instructions.

.6 Submit material safety data sheets (MSDS) provided with products delivered to job site.

1.9 PERFORMANCE REQUIREMENTS

.1 Penetrations: Provide and install firestopping systems produced to resist the spread of fire, and the passage of smoke and other gases according to requirements indicated, including but not limited to the following:

.1 Firestop all penetrations passing through fire resistance rated wall and floor assemblies and other locations as indicated on the drawings.

.2 Provide and install complete penetration firestopping systems that have been tested and approved by third party testing agency.

.3 F - Rated Through-Penetration Firestop Systems: Provide through-penetration firestop systems with F ratings indicated, but not less than one hour or the fireresistance rating of the construction being penetrated.

.4 T - Rated Through-Penetration Firestop Systems: Provide firestop systems with T ratings, in addition to F ratings, where required by Code.

.5 L – Rated Through-Penetration Firestop Systems: Provide firestop systems with L ratings, in addition to F and T ratings, where required by Code.

.6 W – Rated Through-Penetration Firestop Systems: Provide firestop systems with W Water Resistance ratings, in addition to F, T and L ratings, where indicated.

.2 Perimeter Fire Containment Systems: Provide interior perimeter joint systems with fireresistance ratings indicated, but not less than the fire-resistance rating of the floor construction.

.3 Fire-Resistive Joints: Provide joint systems with fire-resistance ratings indicated, but not less than the fire-resistance rating of the construction in which the joint occurs.

.4 For firestopping exposed to view, traffic, moisture, and physical damage, provide appropriate firestop systems for these conditions.

1.10 ENVIRONMENTAL REQUIREMENTS

.1 VOC Limitations: for all materials supplied by this Section, the total VOC content must be less than or equal to 250 g/L, less water, when tested to ASTM D2369.

.2 Comply with manufacturer's recommended requirements for temperature, relative humidity and substrate moisture content during application and curing of materials.

.3 Do not proceed with installation of firestopping materials when temperatures or weather conditions exceed manufacturer's recommendations.

.4 Ventilate solvent based and moisture-cure firestopping per manufacturer's instructions by natural means or, where inadequate, by forced air circulation.

1.11 SINGLE SOURCE RESPONSIBILITY

.1 Obtain firestop systems for each kind of penetration and construction condition indicated from a single primary firestop systems manufacturer.

.2 Where selected firestop system manufacturer cannot provide a System Design to suit site conditions, provide a tested and listed firestop System Design from an alternate manufacturer before using an Engineering Judgment (EJ) or Equivalent Fire Resistance Rated Assembly (EFRRA).

1.12 SEQUENCING AND SCHEDULING

.1 Do not cover up firestopping installations until receipt of written notice from the Engineer-Architect.

1.13 PRE-INSTALLATION CONFERENCE

.1 Conduct conference at Project site. Review methods and procedures related to firestopping including, but not limited to, the following:

.2 Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

.3 Review methods and procedures related to firestopping installation.

.4 Verify reinforcement, blocking and other ancillary components required by the System Design, installed by others, are in place.

Part 2 Products

2.1 ACCEPTABLE MANUFACTURERS

.1 Provide firestopping and smoke seal systems only from manufacturers publishing ULC Listed or UL Certified for Use in Canada System Designs tested in accordance with CAN/ULC-S115:

.1 VOC Limit: 250 g/L.

.2 Acceptable Manufacturers: A/D Fire, Grace, Hilti, 3M.

2.2 ACCEPTABLE PRODUCTS

.1 Selection of appropriate system to maintain required fire resistance rating is the responsibility of the Installer. All systems or EJs are to be submitted for review.

.2 Selection to be based on specified performance requirements and is limited to ULC Listed or UL Certified for Use in Canada System Designs tested in accordance with CAN/ULCS115.

.3 Substitution of products, components or accessories forming part of a System Design is not acceptable, unless accompanied by an EJ or EFRRA from the system manufacturer.

2.3 ACCESSORIES

.1 Primer: Type recommended by firestopping manufacturer for specific substrate surfaces.

.2 Installation Accessories: Clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place, as required by System Design.

Part 3 Execution

3.1 EXAMINATION

.1 Verify openings are ready to receive the work of this section.

.2 Examine substrates and conditions for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of firestopping.

.3 Verify that blocking, anchoring devices, back-up materials, clips, sleeves, supports and other related materials is in place where required by System Design.

.4 Do not apply firestopping to painted surfaces or surfaces treated with sealers, curing compounds, water repellent or other coatings unless compatibility of materials has been verified.

.5 Notify the Engineer-Architect of unsatisfactory conditions. Do not proceed with installation until unsatisfactory conditions have been corrected.

.6 Commencement of Work will be considered acceptance of conditions.

3.2 PREPARATION

.1 Prime substrates where recommended by firestopping manufacturer using manufacturer's recommended products and methods. Limit priming to area of bond.

.2 Use masking tape to prevent firestopping from contacting adjoining surfaces scheduled to remain exposed. Remove tape on completion of installation, without disturbing the firestopping seal with substrates.

.3 Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter which may affect bond of firestopping material.

.4 Remove incompatible materials which may affect bond.

3.3 INSTALLATION - GENERAL

.1 Install firestopping material and components in accordance with System Design and manufacturer's written instructions.

.2 Install permanent warning labels, provided by firestopping manufacturer, adjacent to openings that may be re-penetrated or disturbed. Include following information:

.1 Warning that opening has being firestop protected.

.2 System Design number.

.3 F rating or FT rating.

.4 Fire stop products used.

.5 Contact person and phone number in case of modification or new penetration of firestop system.

3.4 INSTALLING PENETRATION FIRESTOPS

.1 Verify that pipes, conduit, cable, and other items penetrating fire rated construction have been permanently installed prior to firestopping.

.2 Schedule work so partitions and other construction that conceals penetrations are not erected prior to firestopping.

.3 Install forming/damming materials and other accessories in accordance with manufacturers written instructions.

.4 Completely fill voids and cavities formed by openings, forming materials, accessories, and penetrating items.

.5 Install materials to contact and adhere to substrates formed by openings and penetrating items.

.6 Finish to produce smooth, uniform surfaces for fill materials to remain exposed.

3.5 INSTALLING FIRESTOP JOINT SYSTEMS

.1 Install joint fillers to provide support of firestop materials during application.

.2 Install in full contact with joint substrates.

.3 Completely fill recesses provided for joint configuration.

.4 Provide uniform, cross-sectional shapes and depths relative to joint width that optimize movement capability.

.5 Tool immediately after application and prior to skinning. Form smooth, uniform beads of configuration required to produce fire-resistance rating, eliminate air pockets and ensure contact and adhesion with sides of joint.

3.6 INSTALLING PERIMETER FIRE BARRIER SYSTEMS

.1 Install metal framing, curtain wall insulation, mechanical attachments, safing materials and firestop materials in accordance with System Design.

3.7 FIELD QUALITY CONTROL

.1 Notify Engineer-Architect when completed installations are ready for inspection prior to concealing or enclosing area containing firestopping materials.

.2 Arrange for inspections by Engineer-Architect’s independent inspection agency.

.3 Where no deficiencies are found, provide repair of inspected installations, paid by Engineer-Architect, as required to comply with requirements of the System Design.

.4 Where deficiencies are found, repair or replace the firestopping, at no cost to Engineer- Architect, to comply with requirements of the System Design.

3.8 CLEANING

.1 Clean excess materials as work progresses and upon completion of Work.

3.9 PROTECTION OF FINISHED WORK

.1 Protect firestopping during and after curing period from contact with contaminating substances. If damage caused by others, make appropriate repairs at no cost to Engineer- Architect.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Preparing substrate surfaces.

.2 Sealant and joint backing.

1.2 RELATED SECTIONS

.1 Section 06 40 00 – Architectural Woodwork

.2 Section 07 62 00 - Sheet Metal Flashing and Trim.

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

.4 Section 08 41 00 - Aluminum Framed Entrances and Storefronts.

.5 Section 08 50 00 - Windows.

.6 Section 09 21 16 - Gypsum Board Assemblies.

1.3 REFERENCES

.1 American Society for Testing of Materials (ASTM).

.1 ASTM C834-00e1, Standard Specification for Latex Sealants.

.2 ASTM C919-02, Standard Practice for Use of Sealants in Acoustical Applications.

.3 ASTM C920-02, Standard Specification for Elastomeric Joint Sealants.

.4 ASTM D2369-04, Standard Test Method for Volatile Content of Coatings.

.5 ASTM D5893-96, Standard Specification for Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements.

.2 United States Environmental Protection Agency (USEPA)

.1 Reference Test Method 24 - Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings.

1.4 SUBMITTALS FOR REVIEW

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

.2 Product Data: Provide data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations, and colour availability.

.3 Samples: Submit two sample ribbons of sealant, illustrating sealant colours for selection.

.4 Submit laboratory tests or data validating product compliance with performance criteria specified. Include SWRI validation certificate where required.

1.5 QUALITY ASSURANCE

.1 Installer Qualifications: Qualified to perform work specified by reason of experience or training provided by product manufacturer. Submit reference list including minimum three projects of similar size and scope.

.2 Adhesion Pull Tests: the number of adhesion pull tests to be determined by manufacturers weather seal warranty. Adhesion pull tests to be conducted by or in the presence of manufacturers representative. Manufacturer to supply Consultant with results of adhesion pull tests. Sealant installer responsible for repairing areas where adhesion pull tests are conducted, without change to the Contract price.

.3 Manufacturer’s Representative: Coordinate with manufacturer’s representative to provide access to completed work areas until adhesion pull tests can be completed.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.

.2 Store products in a location protected from freezing, damage, construction activity, precipitation, and direct sunlight in strict accordance with manufacturer's recommendations.

.3 Condition products to approximately 16 to 21°C for use in accordance with manufacturer's recommendations.

1.7 ENVIRONMENTAL AND SAFETY REQUIREMENTS

.1 VOC Limitations: for all materials supplied by this Section, the total VOC content must be less than or equal to 250 g/L, less water, when tested to ASTM D2369.

.2 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of material safety data sheets acceptable to Labour Canada.

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

.4 Dispose used sealants and cartridges in accordance with Section 01 74 19.

Part 2 Products

2.1 SEALANT MATERIALS

.1 VOC Limit - Typical for all sealants: 250 g/l (2.08 lb/gal) when tested in accordance with USEPA Method 24 and ASTM D2369.

.2 Acoustical sealant: to ASTM C919, single component, non-hardening, non-skinning, synthetic rubber.

.3 Acrylic latex: to ASTM C 834, single component general purpose siliconized acrylic latex sealant.

.4 Butyl Sealant: to ASTM C1311, single component, solvent release, non-skinning, nonsagging, black colour.

.5 Epoxy, flexible: Poured flexible 100% solids epoxy joint filler.

.6 Polyurethane, self-levelling: to ASTM C 920, Type S, Grade P, Class 25, single component self-levelling polyurethane sealant with plus or minus 25 percent movement capability for horizontal joints.

.7 Silicone, one part: to ASTM C 920, Type S, Grade NS, Class 25, single component neutral cure silicone sealant, plus minus 50% joint movement capability.

.8 Silicone, mildew resistant: to ASTM C 920, single component mildew resistant silicone sealant, +/- 25% movement capability.

2.2 ACCESSORIES

.1 Primer: Type recommended by the sealant manufacturer and compatible with joint forming materials.

.2 Joint Cleaner: Non-corrosive and non-staining type recommended by sealant manufacturer and compatible with joint forming materials.

.3 Soft Backer Rod: to ASTM C 1330, non-gassing, reticulated closed-cell polyethylene rod designed for use with cold-applied joint sealants. Size required for joint design.

.4 Closed-Cell Backer Rod: to ASTM C 1330, closed-cell polyethylene rod designed for use with cold-applied joint sealants for on-grade or below-grade applications. Size required for joint design.

.5 Joint Filler: closed-cell polyethylene joint filler designed for use in cold joints, construction joints, or isolation joints wider than 6 mm. Size required for joint design.

.6 Bond Breaker: Pressure-sensitive tape recommended by sealant manufacturer to suit application.

2.3 COLOURS

.1 Unless indicated otherwise in respective technical specification sections, colour selection is at the option of the Engineer-Architect.

2.4 SEALANT SCHEDULE

.1 Perimeters of exterior openings where frames meet exterior facade of building. All other exterior applications.

.1 Sealant type: Silicone, one part.

.2 Perimeters of interior door/window frames and surfaces, where required.

.1 Sealant type: Acrylic latex or Silicone, one part; refer to technical specification section.

.3 Perimeter of washroom fixtures, countertop backsplash at wall.

.1 Sealant type: Silicone, mildew resistant.

.4 Building envelope applications (vapour barrier/vapour barrier, vapour barrier/wall opening, etc):

.1 Sealant type: Acoustical sealant.

.5 Interior partitions and acoustic applications:

.1 Sealant type: Acoustical sealant.

.6 Interior concrete control joints and saw cuts.

.1 Sealant type: Epoxy, flexible.

.7 Perimeter of interior concrete slab.

.1 Sealant type: Polyurethane, self-levelling.

.8 For locations not included in this schedule, consult with Architect for proper selection of sealants.

Part 3 Execution

3.1 EXAMINATION

.1 Verify that substrate surfaces and joint openings are clean, dry, and free of frost and ready to receive work.

.2 Verify that joint backing and release tapes are compatible with sealant.

3.2 PREPARATION

.1 Remove loose materials and foreign matter which might impair adhesion of sealant.

.2 Clean and prime joints in accordance with sealant manufacturer's written instructions.

.3 Perform preparation in accordance with sealant manufacturer's written instructions.

.4 Protect elements surrounding the work of this section from damage or disfiguration.

3.3 INSTALLATION

.1 Install sealant in accordance with sealant manufacturer's written instructions.

.2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.

.3 Measure joint dimensions and size materials to achieve required 2:1 width/depth ratios.

.4 Install joint backing to achieve a neck dimension no greater than 1/3 of the joint width.

.5 Install bond breaker where joint backing is not used.

.6 Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

.7 Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

.8 Tool joints concave.

3.4 FIELD QUALITY CONTROL

.1 Joint Sealants: Perform adhesion tests in accordance with manufacturer's written instructions.

.2 Perform test 21 days after installation at a rate of one test every 300 m of installed sealant.

.3 Remove sealants failing adhesion test, clean substrates, reinstall sealants and perform retesting.

.4 Maintain test log and submit report to Engineer-Architect indicating tests, locations, dates, results, and remedial actions.

3.5 CLEANING

.1 Clean adjacent soiled surfaces.

3.6 PROTECTION OF FINISHED WORK

.1 Remove masking tape and excess sealant.

.2 Protect sealants until cured.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Non-rated steel frames.

1.2 RELATED SECTIONS

.1 Section 06 20 00 – Finish Carpentry

.2 Section 07 92 00 - Joint Sealants.

.3 Section 08 14 16 – Flush Wood Doors.

.4 Section 08 80 50 - Glazing.

.5 Section 08 71 00 - Door Hardware

.6 Section 09 91 00 - Painting: Field painting of doors and frames

1.3 REFERENCES

.1 ASTM A653/A653M-04a - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 CAN4-S104-M80 (R1985) - Fire Tests of Door Assemblies.

.3 CAN4-S105-85 (R1992) - Fire Door Frames Meeting the Performance Required by CAN4-S104.

.4 CAN/ULC-S701-05 - Thermal Insulation, Polystyrene, Boards and Pipe Covering.

.5 CGSB 41-GP-19Ma (1984) - Rigid Vinyl Extrusions for Windows and Doors.

.6 CSA G40.20-04/G40.21-04 - General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.7 CSA O151-04 - Canadian Softwood Plywood.

.8 Canadian Steel Door Manufacturers Association (CSDMA), Recommended Dimensional Standards for Commercial Steel Doors and Frames, 2000.

.9 Canadian Steel Door Manufacturers Association (CSDMA), Selection and Usage Guide for Steel Doors and Frames, 1990.

.10 NFPA 80-1999 - Standard for Fire Doors and Fire Windows.

1.4 SUBMITTALS FOR REVIEW

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

.2 Product Data: Indicate door and frame configurations and finishes, location of cut-outs for hardware reinforcement.

.3 Shop Drawings:

.1 Indicate frame elevations, reinforcement, anchor types and spacing, location of cut-outs for hardware, and finish.

.2 Indicate door elevations, internal reinforcement, closure method, and cut-outs for glazing, and finishes.

1.5 QUALITY ASSURANCE

.1 Conform to requirements of Canadian Steel Door and Frame Manufacturers Association standards.

1.6 REGULATORY REQUIREMENTS

.1 Fire Rated Door and Frame Construction: Labelled and listed to CAN4-S104M.

.2 Installed Door and Frame Assembly: Conform to NFPA 80 for fire rated class as indicated.

1.7 DELIVERY, STORAGE, AND PROTECTION

.1 Remove doors and frames from wrappings or coverings upon receipt on site and inspect for damage.

.2 Store in vertical position, spaced with blocking to permit air circulation between components.

.3 Store materials on planks or dunnage, out of water and covered to protect from damage.

.4 Clean and touch up scratches or disfigurement caused by shipping or handling with zinc rich primer.

1.8 COORDINATION

.1 Coordinate the work with frame opening construction, door, and hardware installation.

.2 Sequence installation to ensure wire connections are achieved in an orderly and expeditious manner.

Part 2 Products

2.1 MATERIALS

.1 Sheet Steel: Galvanized steel to ASTM A653/A653M, commercial grade (CS), Type B:

.1 Coating designation Z275 for exterior doors and frames,

.2 Coating designation ZF001 for interior doors and frames.

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

2.2 ADHESIVES

.1 Cores and Steel Components: Manufacturer’s standard VOC compliant adhesive. Total VOC content of adhesive less than or equal to 250 g/L, less water, when tested to ASTM D2369.

.2 Lock Seam: Manufacturer’s standard VOC compliant sealant. Total VOC content of sealant less than or equal to 250 g/L, less water, when tested to ASTM D2369.

.3 Construction Adhesive: Low VOC polyurethane construction adhesive, resistant to freezing; VOC Limit: 70 g/l (0.58 lb/gal) when tested in accordance with USEPA Method 24 and ASTM D2369.

2.3 ACCESSORIES

.1 Expanding Foam Sealant: to Section 07 21 00, VOC compliant.

.2 Joint Sealers - Interior: Acrylic latex, VOC compliant, to Section 07 92 00.

.3 Joint Sealers - Exterior: Silicone type, VOC compliant, to Section 07 92 00; colour to match adjacent wall finish.

.4 Door Silencers: Single stud rubber/neoprene.

.5 Exterior Top Caps: Rigid polyvinylchloride extrusion conforming to CGSB 41-GP-19MA.

.6 Glazing Stops: Formed galvanized steel channel, minimum 16 mm high, accurately fitted, butted at corners and fastened to frame sections with counter-sunk tamper proof sheet metal screws.

.7 Glass: In accordance with Section 08 80 50; Types as indicated.

2.4 FABRICATION - FRAMES

.1 Interior Frames: Face sheet thickness as indicated, welded type construction.

.2 Exterior Frames: Face sheet thickness as indicated, welded type construction, thermally broken.

.3 Mortised, blanked, reinforced, drilled and tapped for templated hardware, in accordance with templates provided by hardware supplier.

.4 Reinforce frames wider than 1200 mm with roll formed steel channels fitted tightly into frame head, flush with top.

.5 Prepare frames for silencers. Provide three single silencers for single doors and mullions of double doors on strike side. Provide two silencers on frame head at double doors without mullions.

.6 Attach fire rated label to each fire rated frame unit.

.7 Infill Panels: Fabricate infill panels as metal sheet laminated to plywood core using construction adhesive. Field paint to match frames.

2.5 FINISH

.1 Finish: Field painted in accordance with Section 09 91 00

Part 3 Execution

3.1 EXAMINATION

.1 Verify that opening sizes and tolerances are acceptable; check floor area within path of door swing for flatness.

.2 Verify doors and frames are correct size, swing, rating and opening number.

.3 Remove temporary shipping spreaders.

3.2 INSTALLATION

.1 Install doors and frames to CSDMA.

.2 Coordinate with wall construction for anchor placement.

.3 Coordinate installation of glass and glazing.

.4 Coordinate installation of doors and frames with installation of hardware specified in Section 08 71 00

.5 Set frames plumb, square, level and at correct elevation.

.6 Secure anchorages and connections to adjacent construction.

.7 Foam fill shim space at perimeter of frame and open back sections to maintain continuity of thermal envelope.

.8 Brace frames rigidly in position while building-in. Install wood spreaders at third points of frame rebate height to maintain frame width. Provide vertical support at centre of head for openings exceeding 1200 mm in width.

.9 Remove wood spreaders after frames have been built-in.

.10 Make allowance for deflection to ensure structural loads are not transmitted to frame product.

.11 Install doors, and hardware in accordance with hardware templates and manufacturer's instructions.

.12 Adjust operable parts for correct clearances and function.

.13 Install door silencers and glazing.

.14 Finish paint in accordance with Section 09 91 00.

.15 Install roll formed steel reinforcement channels between two abutting frames. Anchor to structure and floor.

3.3 ERECTION TOLERANCES

.1 Maximum Diagonal Distortion: 3 mm measured with straight edges, crossed corner to corner.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Flush wood doors.

1.2 RELATED SECTIONS

.1 Section 06 20 00 - Finished Carpentry.

.2 Section 08 11 10 - Metal Frames: Frames for Wood Doors.

.3 Section 08 71 00 - Door Hardware.

.4 Section 09 91 00 - Painting.

1.3 REFERENCES

.1 AWMAC (Architectural Woodwork Manufacturers Association of Canada) – Quality Standards.

.2 CAN4 S104-80(R1985) - Fire Tests of Door Assemblies.

.3 NFPA 80-1999 - Standard for Fire Doors and Fire Windows.

.4 NFPA 252-1999 - Standard Method of Fire Tests of Door Assemblies.

1.4 SUBMITTALS FOR REVIEW

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

.2 Product Data: Indicate door core materials and construction; veneer species, type and characteristics.

.3 Shop Drawings: Illustrate door opening criteria, elevations, sizes, types, swings, undercuts required, special bevelling, special blocking for hardware, factory machining criteria, factory finishing criteria.

.4 Samples:

.1 Samples full range of factory finished colours available for selection by Architect – Engineer.

1.5 REGULATORY REQUIREMENTS

.1 Fire Door Construction: Conform to NFPA 252.

1.6 QUALITY ASSURANCE

.1 Perform work in accordance with AWMAC Quality Standard, Premium Grade.

.2 Finish doors in accordance with AWMAC Quality Standard.

.3 Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum ten years experience.

1.7 DELIVERY, STORAGE, AND PROTECTION

.1 Protect doors with resilient packaging sealed with heat shrunk plastic. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal

top and bottom edges with tinted sealer if stored more than one week. Break seal on site to permit ventilation.

1.8 PROJECT CONDITIONS

.1 Coordinate the work with door opening construction, door frame and door hardware installation.

Part 2 Products

2.1 ACCEPTABLE PRODUCTS

.1 Acceptable Manufacturers: Baillargeon, Lambton, Algoma.

2.2 NON-RATED FLUSH DOORS

.1 Flush Interior Doors: 45 mm thick;

.1 Face: Plastic laminate, NEMA LD 3, General Purpose Type, minimum 1.3 mm thick, colour and pattern as selected by Architect-Engineer to match existing.

.2 Particleboard Core: AWMAC Section 1300, Type Particleboard Core (PC-5) to ANSI A208.1 Type LD-2, minimum density of 480 kg/m³.

.3 Stiles and Rails: Manufacturer’s optional lifetime anti-warping warranty.

.4 Stiles - Vertical Exposed Edges: Hardwood, close grain, one piece, laminated or veneered; for factory clear finish.

2.3 ACCESSORIES

.1 Glazing: Types and thickness as scheduled; refer to Section 08 80 00. Supplied and installed by this Section.

.2 Glazing Stops: Door manufacturer’s standard hardwood mouldings, species to match veneer, finished to match face veneer.

.3 Occupancy Indicator: Provide occupancy indicator to match existing

.1 Acceptable Products: Flex-Evac by Nothers

.2 Colour by Consultant.

.3 Quantity: Refer to Drawings.

2.4 FABRICATION

.1 Fabricate non-rated doors in accordance with AWMAC Quality Standards requirements.

.2 Fabricate fire rated doors in accordance with AWMAC Quality Standards and to ULC requirements. Attach fire rating label to door.

.3 Factory Preparation for Light Openings and Louvers: Cut and trim openings through doors to comply with NFPA 80 requirements where indicated; maintain door manufacturer's warranty.

.4 Provide lock blocks at lock edge and top of door for closer and for hardware reinforcement.

.5 Vertical Exposed Edge of Stiles: Solid white birch for stained factory finish.

.6 Factory machine doors for finish hardware in accordance with hardware requirements and dimensions. Do not machine for surface hardware. Provide solid blocking for through bolted hardware.

.7 Machine doors for concealed installation of electronic access wiring: Coordinate with Section 08 71 00.

.8 Provide solid blocking for through bolted hardware.

.9 Factory fit doors for frame opening dimensions identified on shop drawings.

.10 Provide edge clearances in accordance with AWMAC.

2.5 FINISHING

.1 Factory pre-finish doors, beading and mouldings in accordance with AWMAC Section 1500, Type TR-6 or OP-6.

.2 Factory pre-finished doors to be individually protected with either transparent or opaque poly-wrap at the factory.

.3 Finish Schedule: Face: HPDL; Stiles (Edges): Transparent.

Part 3 Execution

3.1 EXAMINATION

.1 Verify that opening sizes and tolerances are acceptable.

.2 Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.2 INSTALLATION

.1 Install fire rated and non-rated doors in accordance with AWMAC Quality Standard and NFPA 80 requirements.

.2 Trim non-rated door width by cutting equally on both jamb edges.

.3 Trim door height by cutting bottom edge only to a maximum of 19 mm. Trim fire door height at bottom edge only, in accordance with fire rating requirements.

.4 Machine cut for hardware.

.5 Coordinate installation of doors with installation of frames specified in Section 08 11 00 and hardware specified at Section 08 71 00.

.6 Install glazing.

.7 Install Occupancy Indicators at 460mm above finish floor in accordance with Manufacturer’s recommendations.

3.3 INSTALLATION TOLERANCES

.1 Conform to AWMAC requirements for fit and clearance tolerances.

.2 Conform to AWMAC Section 1300 requirements for maximum diagonal distortion.

3.4 ADJUSTING

.1 Adjust door for smooth and balanced door movement.

.2 Adjust closer for full closure.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Entrance framing with integral door openings.

.2 Integral air barrier and vapour retarder.

.3 Perimeter sealant.

1.2 RELATED SECTIONS

.1 Section 06 20 00 - Finish Carpentry.

.2 Section 07 92 00 - Joint Sealants: System perimeter sealant and back-up materials.

.3 Section 08 71 00 - Door Hardware.

.4 Section 08 80 00 - Glazing.

1.3 REFERENCES

.1 Aluminum Association (AA)

.1 Designation System for Aluminum Finishes.

.2 American Architectural Manufacturers Association (AAMA).

.1 AAMA - Metal Curtain Wall, Window, Store Front and Entrance - Guide Specifications Manual.

.2 AAMA CW-DG-1-[96], Aluminum Curtain Wall Design Guide Manual.

.3 AAMA CW-10 -Curtain Wall Manual #10 - Care and Handling of Architectural Aluminum from Shop to Site.

.4 AAMA 501 - Methods of Test for Exterior Walls.

.5 AAMA 611 - Specifications for Anodized Architectural Aluminum.

.3 American Society for Testing and Materials International, (ASTM).

.1 ASTM B209 - Aluminum and Aluminum-Alloy Sheet and Plate.

.2 ASTM B221/B221M - Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

.3 ASTM E283 - Test Method For Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Differences Across the Specimen.

.4 Canadian Standards Association (CSA International).

.1 CSA A440-00 - Windows.

.2 CSA O151-04 - Canadian Softwood Plywood.

.5 CAN/ULC-S701-97, Thermal Insulation, Polystyrene, Boards and Pipe Coverings.

1.4 PERFORMANCE REQUIREMENTS

.1 System Design: Design and size components to withstand dead loads and live loads caused by positive and negative wind loads acting normal to plane of wall.

.2 Deflection: Limit mullion deflection to flexure limit of glass with full recovery of glazing materials.

.3 System Assembly: Accommodate without damage to system, components or deterioration of seals, movement within system, movement between system and perimeter framing components, dynamic loading and release of loads, deflection of structural support framing, tolerance of supporting components.

.4 Air Infiltration: Limit air infiltration through assembly to 0.03 l/s/sq m of wall area, measured at a reference differential pressure across assembly of 300 Pa as measured in accordance with ASTM E283.

.5 Vapour Seal: Limit vapour seal with interior atmospheric pressure of 25 mm, 22 degrees C, 40 percent RH without seal failure.

.6 Expansion / Contraction: System to provide for expansion and contraction within system components caused by a cycling temperature range of 95 degrees C over a 12 hour period without causing detrimental effect to system components.

.7 System Internal Drainage: Drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to the exterior by a weep drainage network.

.8 Air and Vapour Seal: Maintain continuous air barrier and vapour retarder throughout assembly, primarily in line with inside pane of glass and heel bead of glazing compound.

.9 Not Permitted: 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.

1.5 SUBMITTALS FOR REVIEW

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

.2 Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, internal drainage details and water flow drainage diagrams.

.3 Design Data: Provide framing member structural and physical characteristics, calculations, climatic data and dimensional limitations. Design data to be stamped by a Professional Structural Engineer licensed at the place where the Project is located.

.4 Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, anticipated deflection under load, affected related Work, weep drainage network, expansion and contraction joint location and details, and field welding required.

1.6 QUALITY ASSURANCE

.1 Perform Work in accordance with AAMA - Metal Curtain Wall, Window, Store Front and Entrance - Guide Specifications Manual.

.2 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

.3 Installer Qualifications: Company specializing in performing the work of this section with minimum five years documented experience and approved by manufacturer.

.4 Design structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed at the place where the Project is located.

1.7 DELIVERY, STORAGE, AND PROTECTION

.1 Handle work of this Section in accordance with AAMA - Curtain Wall Manual CW-10.

.2 Protect prefinished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather. Puncture wrappings at ends for ventilation.

1.8 ENVIRONMENTAL REQUIREMENTS

.1 Do not install sealants when ambient temperature is less than 5 degrees C.

.2 Maintain this minimum temperature during and after installation of sealants.

1.9 COORDINATION

.1 Coordinate with other work having a direct bearing on work of this section.

.2 Coordinate the Work with installation of air barrier placement and vapour retarder placement.

1.10 WARRANTY

.1 Provide a five year warranty to include coverage for complete system for failure to meet specified requirements.

Part 2 Products

2.1 CURTAIN WALL SYSTEM

.1 Acceptable Manufacturers & Products:

.1 Anotec series 60i system, c/w series 23M (Monumental Stiles) door

.2 Or approved alternate.

2.2 MATERIALS

.1 Extruded Aluminum: ASTM B221/B221M.

.2 Sheet Aluminum: ASTM B209/B209M.

.3 Fasteners: Stainless steel.

2.3 CURTAIN WALL COMPONENTS

.1 Format: Outside glazed pressure plate format.

.2 Rain Screen: Drainage holes, deflector plates and internal flashings to accommodate internal weep drainage system.

.3 Mullion Profile: 50 mm x 127 mm, nominal dimensions.

.4 Provide internal mullion baffles to eliminate "stack effect" air movement within internal spaces.

.5 Integral Aluminum Doors and Frames:

.1 Exterior Doors: Manufacturer’s thermally broken door, stile and rail sizes as indicated. Thickness 50mm (nominal)

.2 Interior Doors: Manufacturer’s standard door, stile and rail sizes as indicated. Thickness 45mm (nominal)

.3 Manufacturer’s standard thermally broken mullion frame intended for gear hinges, pile weatherstripping at meeting stiles.

.4 19mm built in door adapter secured to curtain wall system, with replaceable pile weather-stripping

.5 Door Hardware: Refer to Section 08 71 00.

.6 Provide a 3mm Extruded Aluminum sill at brick.

2.4 MISCELLANEOUS COMPONENTS

.1 Sills: 3 mm thick extruded aluminum, full contact pressure bonded ensuring flat surface, anodized finish to match curtain wall mullion sections, profile and shape as indicated.

.2 Flashings: 0.80 mm thick aluminum, finish to match curtain wall mullion sections where exposed, secured with concealed fastening method.

.3 Plywood: CSA O151 (CSP), CANPLY Grade SHG; unsanded, exterior use, thicknesses as indicated; Urea-Formaldehyde free.

.4 Construction Adhesive: Low VOC polyurethane construction adhesive, resistant to freezing; VOC Limit: 70 g/l (0.58 lb/gal) when tested in accordance with USEPA Method 24 and ASTM D2369.

2.5 GLASS AND GLAZING MATERIALS

.1 Glass Materials: Insulating glass units for exterior locations, tempered single pane glazing for interior locations; refer to Section 08 80 00.

.2 Glazing Materials: Type to suit application to achieve weather, moisture, and air infiltration requirements.

2.6 SEALANT MATERIALS

.1 Sealant and Backing Materials: as specified in Section 07 92 00 - Sealants;

.1 Perimeter Sealant: Silicone; colour to match aluminum framing.of types described below.

.2 Structural Silicone: SSG Silicone as recommended by curtain wall manufacturer; colour to match aluminum framing.

.2 Expanding Foam Insulation and Sealant: VOC compliant.

2.7 FABRICATION

.1 Fabricate system components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal. Utilize deflection track framing where indicated or otherwise required by design.

.2 Provide dead load anchors and clips to attach curtain wall assembly to floor slab and supporting structural steel; including suspended assemblies not bearing on foundations or footing.

.3 Provide reinforcing steel within tubular extrusions where required by design.

.4 Accurately fit and secure joints and corners. Make joints flush, hairline, and weatherproof.

.5 Prepare components to receive anchor devices. Fabricate anchors.

.6 Arrange fasteners and attachments to ensure concealment from view.

.7 Reinforce interior horizontal head rail to receive drapery track brackets and attachments.

.8 Reinforce framing members for external imposed loads.

2.8 FINISHES

.1 Finish Coatings: Conform to AAMA 611.

.2 Exposed Aluminum Surfaces: AAMA AA-M12C22A31 Class II Clear Anodized

.3 Shop Primer for Steel Components: SPCC Paint 25 red oxide.

.4 Apply one coat of bituminous paint to concealed aluminum and steel surfaces in contact with cementitious or dissimilar materials.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of existing conditions before starting work.

.2 Verify dimensions, tolerances, and method of attachment with other work.

.3 Verify wall openings and adjoining air barrier and vapour retarder materials are ready to receive work of this section.

3.2 INSTALLATION

.1 Install curtain wall system in accordance with manufacturer’s written instructions.

.2 Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

.3 Provide alignment attachments and shims to permanently fasten system to building structure.

.4 Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances and align with adjacent work.

.5 Provide thermal isolation where components penetrate or disrupt building insulation.

.6 Install sill flashings.

.7 Coordinate attachment and seal of perimeter air barrier and vapour retarder materials.

.8 Foam fill shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

.9 Install glass in accordance with Section 08 80 50, to glazing method required to achieve performance criteria.

.10 Install perimeter sealant to method required to achieve performance criteria, to glazing method required to achieve performance criteria.

3.3 ERECTION TOLERANCES

.1 Maximum Variation from Plumb: 1.5 mm/m non-cumulative or 12 mm/30 m, whichever is less.

.2 Maximum Misalignment of Two Adjoining Members Abutting in Plane: 0.8 mm.

.3 Sealant Space Between Curtain Wall Mullions and Adjacent Construction: Maximum of 19 mm and minimum of 6 mm.

3.4 CLEANING

.1 Remove protective material from prefinished aluminum surfaces.

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

.3 Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer.

3.5 PROTECTION OF FINISHED WORK

.1 Protect finished Work from damage.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Aluminum framing system; glazed as scheduled.

.2 Perimeter sealant.

1.2 RELATED SECTIONS

.1 Section 07 92 00 - Joint Sealants.

.2 Section 08 80 50 - Glazing.

1.3 REFERENCES

.1 Aluminum Association (AA), Designation System for Aluminum Finishes (2000)

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-79.1-M91, Insect Screens.

.3 Canadian Standards Association (CSA) International

.1 CSA-A440/A440.1, A440, Windows / Special Publication A440.1, User Selection Guide to CSA Standard A440, Windows.

.2 CAN/CSA-Z91-M90(R2000), Safety Code for Window Cleaning Operations.

1.4 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 01 33 00 – Submittal Procedures.

.2 Shop Drawings: Indicate materials and details in full size scale for head, jamb and sill, profiles of components, interior and exterior trim, junction between combination units, elevations of unit, anchorage details, location of isolation coating, description of related components and exposed finishes fasteners, and caulking.

1.5 TEST REPORTS

.1 Submit test reports for all window types from approved independent testing laboratories, certifying compliance with specifications, for:

.1 Windows classifications.

.2 Weathering characteristics.

.3 Insect screens.

.4 Air tightness.

.5 Water tightness.

.6 Wind load resistance.

.7 Condensation resistance.

.8 Safety drop - vertical sliding windows only.

.9 Sash strength and stiffness.

.10 Ease of operation.

.11 Sash pull-off - vinyl windows.

.12 Forced entry resistance.

.13 Mullion deflection - combination and composite windows.

1.6 CLOSEOUT SUBMITTALS

.1 Provide operation and maintenance data for windows for incorporation into manual specified in Section 01 78 00 – Close-Out Submittals.

Part 2 Products

2.1 ACCEPTABLE PRODUCTS

.1 Acceptable Manufacturers & Products:

.1 Anotec series 80 system, 4 ½" profile.

.2 Or approved alternate.

.2 All windows by same manufacturer.

2.2 MATERIALS

.1 Materials: to CSA-A440/A440.1 supplemented as follows:

.2 Glass: in accordance with Section 08 80 50 and as scheduled.

.3 Screens: to CAN/CGSB-79.1.

.1 Type: 1 - standard duty.

.2 Class: C - fixed.

.3 Style: manufacturer's standard.

.4 Screen frames: aluminum, colour to match window frames.

.5 Fasteners: tamper proof.

.6 Mount screen frames for interior replacement.

2.3 WINDOW CLASSIFICATION

.1 Classification rating: to CSA-A440/A440.1.

.1 Air tightness:

.1 Fixed windows: Fixed

.2 Water tightness: B7.

.3 Wind load resistance: C5.

.2 ENERGY STAR zone C or D.

2.4 FABRICATION

.1 Fabricate in accordance with CSA-A440/A440.1 supplemented as follows:

.2 Fabricate units square and true with maximum tolerance of plus or minus 1.5 mm for units with a diagonal measurement of 1800 mm or less and plus or minus 3 mm for units with a diagonal measurement over 1800 mm.

.3 Face dimensions detailed are maximum permissible sizes.

.4 Brace frames to maintain squareness and rigidity during shipment and installation.

.5 Finish steel clips and reinforcement with shop coat primer to CAN/CGSB-1.40 380 g/m^2 zinc coating to CAN/CSA-G164.

2.5 ALUMINUM FINISHES

.1 Finish exposed surfaces of aluminum components in accordance with Aluminum Association Designation System for Aluminum Finishes.

.1 Black anodized finish

2.6 ISOLATION COATING

.1 Isolate aluminum from following components, by means of isolation coating:

.1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.

.2 Concrete, mortar and masonry.

.3 Wood.

2.7 GLAZING

.1 Glaze windows in accordance with CSA-A440/A440.1.

Part 3 Execution

3.1 WINDOW INSTALLATION

.1 Install in accordance with CSA-A440.1.

.2 Arrange components to prevent abrupt variation in colour.

.3 Install perimeter sheet metal closure into brick mold slot and secure to wall.

3.2 CAULKING

.1 Seal joints between windows at window and metal closure and window sills with sealant. Bed sill expansion joint cover plates and drip deflectors in bedding compound. Caulk between sill upstand and window-frame. Caulk butt joints in continuous sills.

.2 Apply sealant in accordance with Section 07 92 00 - Joint Sealing. Conceal sealant within window units except where exposed use is permitted by Consultant.

.3 Seal exterior joints between windows and masonry and flashings using elastomeric sealant in accordance with Section 07 92 00 - Joint Sealing.

.4 Seal interior joints around window using silicone sealant.

END OF SECTION

Part 1 General

1.1 GENERAL REQUIREMENTS

.1 Comply with requirements of Division 1.

.2 Furnish and delivery of all finish hardware necessary for all doors. Also hardware as specified herein and as enumerated in "Set Numbers" and as indicated and requested by actual conditions of the building. The hardware shall include the furnishing of all necessary screws, special screws, bolts, special bolts, expansion shields, drop plates and all other devices necessary for the proper installation of the hardware.

.3 The Engineer-Architect approval of the schedule will not be construed as certifying that the list is complete. Acceptance of the Hardware Schedule does not relieve the supplier of responsibility of errors or omissions.

.4 Hardware should not be ordered unless a corrected copy of the shop drawings is reviewed and returned from the specification writer and bearing the approval of the Engineer-Architect.

.5 Aluminum Door hardware is to be ordered immediately after approval of shop drawings and shipped directly to the Aluminum Door supplier.

.6 Furnish, deliver and install all finish hardware necessary for all doors, also hardware as specified herein and as enumerated in hardware group indicated by actual conditions at the project site.

.7 The electrical hardware shall include the furnishing of plug in connections and final connections of Low voltage wiring at the door opening. Electrical hardware devices to be installed by section 08 71 00 with all final connection with termination above the frame. Electric hardware devices for the proper operation and application of the hardware noted by connection notes in the hardware schedule. Power, conduit, low voltage wire to junction box above the frame. Connection of the card readers, maglocks and high voltage wire by the electrical section Division 28.

.8 Division 28 to provide high voltage wiring and conduit to the door opening or power supplies including conduit to hardware locations.

1.2 RELATED SECTIONS

.1 03 10 00 – Concrete Forming and Accessories
.2 06 20 00 – Finish Carpentry
.3 08 10 00 – Doors and Frames
.4 08 40 00 – Entrances, Storefronts, and Curtain Walls
.5 08 71 13 – Automatic Door Operators
.6 26 06 00 – Schedules for Electrical
.7 28 00 00 – Electronic Safety and Security

1.3 REFERENCES

.1 American National Standards Institute (ANSI) A117.1 Specification

.1 ANSI/BHMA A156.1-2006, Butts and Hinges.
.2 ANSI/BHMA A156.26-2006, Continuous Hinges.
.3 ANSI/BHMA A156.3-2001, Exit Devices.
.4 ANSI/BHMA A156.4-2000, Door Controls (Closers)
.5 ANSI/BHMA A156.5-2001, Auxiliary Locks and Associated Products.
.6 ANSI/BHMA A156.6-2005, Architectural Door Trim.
.7 ANSI/BHMA A156.7-2003, Template Hinge Dimensions.
.8 ANSI/BHMA A156.8-2005, Door Controls - Overhead Holders.
.9 ANSI/BHMA A156.16-2002, Auxiliary Hardware.
.10 ANSI/BHMA A156.18-2006, Materials and Finishes.
.11 ANSI/BHMA A156.19-2007, Power Assist and Low Energy Power Operated Doors.
.12 ANSI/BHMA A156.21-2006, American National Standards for Thresholds.
.13 ANSI/BHMA A156.22-2005, Door Gasketing and Edge Seal Systems.
.14 ANSI/BHMA A156.25-2002, Electrified Locking Devices.

.2 Canadian Standards Association (CSA)

.1 CAN/CSA-B651-04.Accessible Design for the Built Environment.

.3 Canadian Steel Door Manufacturer's Association (CSDMA).

.1 Standard Hardware Locations in Accordance with the Canadian Steel Door and Frame Association Guidelines.
.2 Recommended locations for Architectural Hardware for Wood Flush Doors.

.4 National Fire Protection Agency(NFPA)

.1 NBC - National Building Code – Latest Edition
.2 NFPA-80 - Standard for Fire Doors and Windows – Latest Edition
.3 NFPA101 - Life Safety Code – Latest Edition
.4 NFPA-105 - Smoke and Draft Control – Latest Edition

1.4 ABBREVIATIONS

.1 The following abbreviations are applicable to this section:

.1	AHC	Architectural Hardware Consultant
.2	ALD ALF	Aluminum Door and Frame
.3	ATMS/STMS	Arm/Strike to Template with Machine Screws
.4	BB or FBB	Ball Bearing Hinges
.5	BC	Back Check
.6	BTB	Back to Back
.7	B3E or B4E	Bevel 3 or 4 sides
.8	C to C, C/L	Centerline to Centerline
.9	CDC	Certified Door Consultant
.10	CMK	Construction Masterkeyed
.11	CSC	Construction Specifications Canada
.12	CSK	Countersunk Screw Holes.

.13	Cyl.	Cylinder of a lock
.14	Deg.	Degree of opening
.15	DEL	Delay Action
.16	DHI	Door and Hardware Institute
.17	DR	Door
.18	FC	Full Cover
.19	FS	Fail Safe
.20	FSE	Fail Secure
.21	FTMS	Full template machine screws
.22	½ TMS	Half template machine screws
.23	GMK	Grand Masterkeyed
.24	KA/KD	Keyed Alike, Keyed Different
.25	HMD/PSF	Hollow Metal Door, Pressed Steel Frame
.26	LH/RH	Left Hand, Right Hand
.27	LHR/RHR	Left Hand Reverse, Right Hand Reverse
.28	MK or MKD	Master Keyed
.29	NBC	National Building Code
.30	NRP	Non removable pin
.31	TB/SB	Thru Bolts, Sex Bolts
.32	TJ	Top Jamb
.33	ULC	Underwriters Laboratories Canada
.34	WD	Wood Door

1.5 SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and data sheets in accordance with Section 01 00 01.

.2 Samples:

.1 Upon Engineer-Architect request submit samples of door hardware. Identify each sample by label indicating applicable specification paragraph number, brand name and number, finish and hardware package number.

.2 After approval samples will be returned for incorporation in the Work.

.3 Hardware List:

.1 Submit detailed hardware list and keying schedule. Hardware Schedule is to be submitted as per DHI vertical format which is in the "Sequence and Format for Hardware Schedules".

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

.3 Furnish other Sections with templates required for hardware preparation and installation. Issue templates when requested so as not to cause any delays but not before hardware list has received final review by Engineer-Architect.

.4 Keying Schedule to be in accordance with DHI manual "Keying Systems Names and Nomenclature". Key schedule is not to hold up the processing of the hardware list.

.5 Wiring Diagrams will only be supplied after the final approval of the Hardware Schedule. Submit wiring diagrams as requested for proper installation of electrical, electrical-mechanical and electrical-magnetic products.

.4 Manufacturer's Instructions: Submit manufacturer's installation instructions.

.5 Closeout Submittals: Provide operation and maintenance data for door closers, locksets, door holders, electrified hardware and fire exit hardware for incorporation into Operations and Maintenance Manuals specified in Section 01 00 01.

.6 Provide guarantee.

.1	Closers	10 year
.2	Mortise Locks	10 year mechanical / 2 year electrical
.3	Electronic Closer	2 year
.4	Exit Device	3 years
.5	Hinges	Lifetime of Building
.6	All other Hardware	1 year

1.6 QUALITY ASSURANCE

.1 Regulatory Requirements: hardware for doors in fire separations and exit doors certified by a Canadian Certification Organization accredited by Standards Council of Canada.

.2 Meet requirements of National Building Code of Canada and other applicable regulations.

.3 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.

.4 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

.5 Pre-installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

.6 Upon completion of finish hardware installation, hardware supplier shall inspect work and shall certify in writing that all items and their installation are in accord with requirements of Contract Documents and are functioning properly.

1.7 PRODUCT DELIVERY, HANDLING & STORAGE

.1 Packing, Shipping, Handling and Unloading:

.1 Deliver, store, handle and protect materials in accordance with Section 01 00 01.

.2 Package each item of hardware including fastenings, separately or in like groups of hardware, with necessary screws, keys, instructions and installation templates.

.3 All items of hardware should be itemized and tagged as per the approved Finish Hardware Schedule.

.4 Hardware for Aluminum Doors to be shipped directly to the Aluminum Door supplier. Hardware for Aluminum Doors will be ordered immediately after approval of shop drawings. Delays in ordering the Aluminum Door hardware will not be accepted.

.5 Shortages will not delay installation.

.6 Items damaged in shipment will be replaced properly with proper material.

.7 All Hardware shall be handled in a manner to avoid damage, marking and scratching.

.8 Hardware is to be inventoried on site and confirmed by the Contractor and Hardware Supplier.

.2 Storage and Protection:

.1 Store hardware in locked, clean and dry area.

1.8 WASTE DISPOSAL AND MANAGEMENT

.1 Separate and recycle waste materials in accordance with Section 01 00 01.

.2 Collect and separate metal, plastic, paper packing and corrugated cardboard and deposit in appropriate on site recycling bins.

.3 Dispose of corrugated cardboard, plastic packaging material in appropriate on-site bin for recycling in accordance with site waste management program.

1.9 MAINTENANCE

.1 Provide maintenance materials in accordance with Section 01 00 01.

.2 Provide three sets of maintenance tools for closers, locks and exit devices as well as a complete set of installation instructions.

.3 After the building is occupied, arrange for an appointment with the owner to instruct them of proper use, service, adjusting and maintenance of the hardware furnished in this section.

.4 Extra Material if required.

1.10 INSPECTION

.1 The hardware supplier shall arrange at least four visits to the job site.

.1 Visit project at time of delivery of hardware and inspect the personnel who will be looking after the installation and issuing of hardware at the job site. Delivered hardware to be received, sorted and itemized at the jobsite with contractor.

.2 Second visit will be required for key meeting with the owner/representative at a location at their request.

.3 Third visit will take place when about sixty percent of hardware is installed.

.4 Check all hardware on site and correct any errors or shortages. Co-ordinate with contractor to determine proper time for visit.

.5 Fourth visit shall take place just prior to building turnover. All hardware shall be checked for proper installation and adjustment. Any errors shall be corrected and

adjustments made. Check the key system and furnish a report along with maintenance manuals detailing any errors found.

.6 Cost of this service will be included as part of this Section and is not covered by any allowance amount.

Part 2 Products

2.1 HARDWARE ITEMS

.1 Only locksets and latchsets listed are acceptable for use on this project.

.2 Use one manufacturer's products only for all similar items.

.3 Manufacturer's Listed:

.1 Hinges

.1 McKinney – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.

.2 Continuous Hinges

.1 McKinney – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.

.3 Locks

.1 Sargent – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.

.4 Exit Devices

.1 Sargent – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.

.5 Closers

.1 Sargent – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.

.6 Power Operators

.1 Besam - ASSA ABLOY Entrance Systems 4020B Sladeview Crescent. Units 3&4 Ontario, L5L 6B1

.7 Flush Bolts

.1 Rockwood Manufacturing – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.

.8 Overhead Stops

.1 Sargent – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.

.9 Flatware

.1 Rockwood Manufacturing – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.

.10 Floor/Wall Stops

.1 Rockwood Manufacturing – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.

.11 Weatherstrip/Thresholds

.1 Pemko – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan, Ontario, L4H 4T9.

.12 Key Cabinet

.1 Telkee, 60 Starlifter Ave. Dover Delaware 19901-9254.

.13 Power Supplies

.1 Securitron – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan Ontario, L4H 4T9.

.14 Electric Strikes

.1 HESS – ASSA ABLOY Door Security Solutions Canada, 160 Four Valley Drive, Vaughan Ontario, L4H 4T9.

2.2 DOOR HARDWARE

.1 All fasteners to come complete with the hardware as described. Hardware supplier must be Advised immediately if required fasteners are not enclosed with hardware.

.2 Hardware must be installed with fasteners supplied by the manufacturer.

.3 Hinges Butts and hinges: to ANSI/BMHA A156.1, as listed in Hardware Schedule.

.1 Non removable pins (NRP) for all exterior and out swinging secure doors.

.2 Exterior hinges and hinges in wet areas of stainless steel, brass or bronze.

.3 Interior hinges of plated steel, unless otherwise noted.

.4 Size and quantity to be as the manufacturers hinge selection guide.

.5 Unless otherwise scheduled, supply (1) hinge for every 762mm of door height.

.6 The width of hinges shall be sufficient to clear all trim.

.7 All hinges to be five-knuckle design and ball bearing.

.8 All electric hinges to be supplied with Electrolynx QC plug in connectors as specified.

.9 Finish to Dull Chrome 26D.

.10 Standard of Acceptance:

.1	Specified	Acceptable Alternates	
.2	McKinney	Hager	Stanley
.3	TA2714	BB1279	FBB179
.4	TA2314	BB1191	FBB191
.5	TA3786	BB1168	FBB168
.6	TA3386	BB11699	FBB199

.4 Continuous Geared Hinges: to ANSI/BMHA A156.26.

.1 Provide continuous hinges of the type and style noted in the Hardware legend.

.2 To be non-handed and completely reversible.

.3 Material: Extruded tempered aluminium.

.4 Material Standard: 6063-T6 Alloy.

.5 Configuration: Three interlocking extrusions in pinless assembly, installed to full height of door.

.6 Type: Full Mortise: 45mm for extra heavy duty weights.

.7 Length: Full height less 25mm.

.8 Strength: Heavy Duty – 27 bearings each leaf for 2108mm, minimum door weight 245 kg.

.9 Mortise Fasteners: TEK, #12 x ¾" inch, FHUC, Philips head screws.

.10 Size to suite door height complete with installation aids and fasteners to suit door an frame conditions.

.11 All electric hinges to be supplied with Electrolynx QC plug in connectors as specified.

.12 Finish to Anodized Aluminum US28.

.13 Standard of Acceptance:

.1	Specified	Acceptable Alternates	
.2	McKinney	Pemko	Hager (Roton)
.3	MCK-12HD	CFM83SLFHD	780-112HD

.5 Bored locks and Preassembled Locks and Latches:

.1 Locks must be certified ANSI/BHMA A156.2 -2003, Series 4000, Grade 2 and shall meet or exceed 2-1/2 times the cycle requirements of ANSI/BHMA A156.2 Series 4000, Grade 2 with all standard trims.

.2 Locks shall be non-handed with bi-directional lever operation, except the "G" and "Y" lever designs.

.3 Lock levers shall be made of solid material.

.4 Lock shall be available in a minimum of five lever designs.

.5 Locks shall comply with UL10C and UBC.

.6 Locks required for fire doors shall be listed by Underwriters Laboratories for ratings of 3 hour (A label) and less.

.7 Locks shall mount in a standard 161 door prep (2-1/8 inch dia.) without additional through-bolt preps.

.8 Locks shall have a 2-3/4 inch (70mm) backset standard, with 2-3/8 inch (60mm) offered as an option.

.9 Strikes shall be non-handed with a curved lip. Provide wrought boxes with strikes.

.10 Locks shall have brass 6-pin cylinder, standard.

.11 Provide two, nickel silver keys with each lock.

.12 Finished to 26D.

.13 Standard of Acceptance:

.1	Specified	Acceptable Alternates	
.2	Sargent	Corbin	Yale
.3	7 - Line	CL3900	5300LN

.6 Tubular Locksets, Grade 1 (Extra-Heavy Duty): ANSI/BHMA A156.2 Series 4000, Grade 1 certified.

.1 Locksets to withstand 3000 inch pounds of torque applied to the locked lever without gaining access.

.2 Locksets to fit a standard 2 1/8" bore without the use of through-bolts.

.3 Lever handles to be made of solid material with no plastic fillers.

.4 Latchbolt head to be one-piece stainless steel construction encased within the lock body.

.5 Extended cycle test: Locks to have been cycle tested in ordinance with ANSI/BHMA A156.2 requirements to 20 million cycles

.6 Furnish with standard 2 3/4" backset and 1/2" throw latchbolt (3/4" at rated paired openings).

.7 Standard of Acceptance:

	Specified	Acceptable Alternates
.1		
.2	Sargent	Corbin
.3	11 Line	CL3100

.7 Mortise locks and latches: to ANSI/BMHA A156.13, Series 1000 mortise lock, grade 1, designed for function as stated in Hardware Schedule.

.1 Locks shall meet or exceed the requirements of ANSI/BHMA A156.13 Series 1000, Operational Grade 1, and Security Grade 1 with all standard trims.

.2 Meets or exceeds impact requirements of ASTM F1577-95b Detention Locks for Swinging Doors.

.3 Locks shall be easily re-handed without opening the lock body.

.4 Multi-functional lock body to make it easy to change functions in the field.

.5 Locks shall comply with UL10C and UBC.

.6 Construction: Lock functions shall be manufactured in a single-sized case formed from 2.6mm steel minimum.

.7 Locks shall have field adjustable, beveled, armored front, with a 3mm thickness minimum.

.8 Locks shall have a one piece, 19mm throw anti-friction stainless steel latch.

.9 Deadbolts, where specified, shall be full one inch 25mm throw made of one-piece hardened stainless steel.

.10 Locks shall have a 70mm backset, standard.

.11 Electrical functions Fail Safe and Fail Secure, Voltage 12VDC or 24VDC Regulated. Full wave rectification installed inside the lockbody. Current .25 at 24VDC and .5 at 12VDC. UL and CUL listed for use on fire doors. Operating temperature: Max 66 (C) degrees and Min. -35(C) degrees.

.12 Strikes shall be non-handed with a curved lip. Strikes for pairs of doors to be supplied with short lip strike (82-0229). Not to extend beyond the face of the door.

.13 To ensure proper alignment, trim, knobs or levers, shall be through-bolted and fully interchangeable between rose and escutcheon.

.14 Lever handles: "LNL" design.

.15 Roses: round.

.16 Finished to 26D.

.17 Standard of Acceptance:

	Specified	Acceptable Alternates	
.1			
.2	Sargent	Corbin	Yale
.3	8200 – Series	ML2200	8800

.8 Exit Devices: to ANSI/BMHA A156.3, Grade 1.

.1 Modern touch pad type, fabricated of brass, bronze, stainless steel or aluminum.

.2 UL listed for Accident Hazard or Fire Exit Hardware as required.

.3 Hex key dogging standard on non fire-rated exit devices. Cylinder dogging where specified.

.4 Exit devices shall be UL listed panic exit hardware. All exit devices for fire rated openings shall be ULC labeled fire exit hardware.

.5 Include all electrified functions as specified.

.6 Device Length as per manufacturer's guidelines.

.7 The design of the exit device shall eliminate the necessity of removing the device from the door for standard maintenance or keying changes.

.8 Trim as specified shall be through-bolted.

.9 All vertical rod in pairs to be less bottom rod where noted.

.10 Extension rods are required as per manufacturer's requirements.

.11 Electronic exit devices to have Linx quick connectors (QC).

.12 Exit devices to suite doors over 45mm where required.

.13 Standard of acceptance:

	Specified	Acceptable Alternates	
.1	Sargent	Corbin	Yale
.2	8800 - Series	ED5200	7100
.3	8700 - Series	ED5400	7110
.4	8600 - Series	ED5800	7120
.5	8500 - Series	ED4200	7200
.6	8400 - Series	ED4800	7220

.9 Door controls (closers): to ANSI/BMHA A156.4 as listed in Hardware Schedule.

.1 Modern type, surface applied.

.2 All closers for both interior and exterior doors shall be the product of one manufacturer and be matched in style.

.3 Surface closers shall be adjustable to provide sizes 1 through 6 and comply with ADA.

.4 Full rack and pinion construction.

.5 Closing speed, latching speed and backcheck shall be controlled by key operated valves.

.6 Captivated valves.

.7 Delayed action feature shall be available and controlled by a separate valve.

.8 Delayed action shall be available in addition to, not in lieu of, backcheck.

.9 The one piece closer body shall be of die cast aluminum alloy with 14% silicon minimum content. An increase of 15% in closing power shall be provided by means of adjustment of the arm leverage at the foot connection. (Standard Arm).

.10 All arms shall be finely finished with heavy duty forged steel main arm.

.11 Two mounting positions of the closer shall meet all requirements. Standard mountings shall provide 120° door opening and alternate mounting 180° door opening.

.12 All closers shall be suitable for standard, top jamb, parallel arm and track type applications when provided with proper brackets and arms.

.13 Closer covers shall be of high impact plastic material of flame retardant grade.

.14 Secured by machine screws.

.15 Spring power shall be continuously adjustable over the full range of closer sizes and allow for reduced opening force for the physically handicapped. Hydraulic regulation shall be tamper proof, non-critical valves. Closers shall have separate adjustment for latch speed, general speed and backcheck.

.16 All closer to have a forged steel main arm and forged forearm for parallel arm closers.

.17 Finish to Aluminum 689.

.18 Standard of acceptance:

.1	Specified	Acceptable Alternates:	
.2	Sargent	Norton	Corbin
.3	1431	8500	DC6200
.4	351	7500	DC3000
.5	422	2800ST	DC5000

.10 Architectural door trim: to ANSI/BHMA A156.6, as listed in Hardware Schedule, finished to stainless steel 32D.

.1 Door protection plates: kickplates type, 1.3 mm thick stainless steel, 203mm high, unbevelled edges, width less 40mm push side, width less 25mm on pull side for single doors. Width less 25mm for pairs. Finished to stainless steel 630.

.1 Standard of acceptance:

.1	Specified	Acceptable Alternates		
.2	Rockwood	Standard Metal	Ives	Hager
.3	K1050	K10A	8400	190S

.2 Push plates: 1.3 mm thick stainless steel, size 89mm x 381mm, finished to stainless steel 630.

.1 Standard of acceptance:

.1	Specified	Acceptable Alternates	
.2	Rockwood	Standard Metal	Ives
.3	70RC	K14A	8200RC

.3 Door Pulls: 19mm round pull, 228.6mm center to center pulls, with 76mm x 305mm protection plate, mount type 1, finished to stainless steel 630.

.1 Standard of acceptance:

.1	Specified	Acceptable Alternates	
.2	Rockwood	Standard Metal	Ives
.3	111 x 73CL	K14 x 2409-1(RC)	8303

.4 Door Pulls: 32mm Round Offset Pull, mount type 1, 1220mm center to center, mounting to be with a security bolt (#4B) for single application and (#5) for back to back, finished to stainless steel 630.

.1 Standard of acceptance: Standard Metal D-352 x Mnt.

.1	Specified	Acceptable Alternates		
.2	Rockwood	Standard Metal	Ives	CBH
.3	BF157	3012-2	8190-12	2012-1

.11 Door controls - overhead stop: to ANSI/BMHA A156.8, heavy duty construction, BHMA Grade 1 Certified, heavy duty architectural bronze construction.

.1 UL Classified: The 590 and 690 stops are UL 10B and UL 10C classified as miscellaneous fire door accessories.

.2 Corrosion resistance: Brass construction provides corrosion resistance in a variety of conditions.

.3 Holder Selector: 590 and 690 series holders are equipped with a turn knob to activate and deactivate the hold open function

.4 Thru bolts capture channel and end caps.

.5 Heavy duty shock spring absorbs load and gradually stops door.

.6 Blade shim required for all Aluminum Doors.

.7 Sized as per manufacturer's guidelines. Take into account other hardware mounted on doors.

.8 Finishes

.1 Exterior to stainless steel, 26D.

.2 Interior to steel sprayed finish, EN.

.9 Standard of acceptance:

.1	Specified	Acceptable Alternates
.2	Rixson	Sargent
.3	#1 (Concealed)	690
.4	#9 (Surface)	590
.5	#2 (Concealed)	1530
.6	#10 (Surface)	1540

.12 Door Stops and Holders and Auxiliary hardware: to ANSI/BMHA A156.16 designated by letter L and numeral identifiers as listed in Hardware Schedule finished to 26D.

.1 Floor stops dome style classification. Low dome or High dome. Die cast brass. Stops to be sized according to door clearances, thresholds or undercuts as noted in the Door Schedule. Fasteners to suite floor conditions.

.1 Standard of acceptance:

.1	Specified	Acceptable Alternates	
.2	Rockwood	Standard Metal	Ives
.3	441	S101	FS13
.4	443	S103	FS17
.5	483	S110	FS441

.2 Wall stops classification, convex or concave, cast brass or bronze. Fasteners to suite wall conditions.

.1 Standard of acceptance:

.1	Specified	Acceptable Alternates	
.2	Rockwood	Standard Metal	Ives
.3	406	S121	WS406CV
.4	409	S123	WS406CC

.13 Power assist and low energy power operated doors: to ANSI/BMHA A156.19.

.1 Automatic operators shall be complete with all components including Operator Housing, Power Operator, Electronic Control, Soft Start, Switching Networks and all Connecting Hardware.

.2 Size and type to be as indicated in Hardware Groups.

.3 Operator Housing shall be complete with finished end caps prepared for mounting to door frame.

.4 Operator shall be factory assembled with all necessary components for proper operation and switching. Relays, wiring harness and other components shall be plug-in type.

.5 Operator controls shall include adjustable time delay, safe-swing circuit as well as provision for accessories as detailed in Hardware Groups.

.6 All wiring shall be of the shielded type with proper number of conductor wires to install all components specified.

.7 Operator shall include sufficient power supplies to operate all hardware and accessory items as detailed in Hardware groups. In the event additional power supplies are required it shall be added at no increase in contract price.

.8 Complete unit shall be mounted with provisions for easy servicing or replacement without removing the door or frame.

.9 Confirm frame detail and if necessary provide a suitable mounting plate to install operator properly.

.10 Standard of acceptance:

.1	Specified	Acceptable Alternates	
.2	Besam	Gyro Tech	Stanley
.3	SW200i	GT-20	Magic Force
.4	SW100i	GT-8710	Magic Access

.14 Thresholds and Weatherstripping Thresholds: to ANSI/BMHA A156.21.

.1 Saddle threshold 152.4 mm wide x full width of door opening, extruded aluminum mill finish, serrated surface, with thermal break of rigid PVC.

.2 Panic threshold 93.7 mm wide x full width of door opening, extruded aluminum mill finish, serrated surface, with lip and vinyl door seal insert.

.3 Standard of acceptance:

.1	Specified	Acceptable Alternates	
.2	PEMKO	KN Crowder	Hager
.3	179AP	CT-39P	552W
.4	252 x 3AFG	CT45A	421S
.5	251 x 226AFG	CT49A	515S

.15 Door Gasketing and Edge Seal Systems: to ANSI/BMHA A156.22.

.1 Head and Jamb seal:

.1 Extruded aluminum frame and neoprene insert, clear anodized finish.

.2 Surface overhead stops and exit device strikes to mount on top of weatherstrip to provide continuous seal.

.3 Adhesive backed black “Santoprene” to provide smoke, light and sound control. Fire labeled 1 1/2hrs.

.4 Standard of acceptance:

.1	Specified	Acceptable Alternates	
.2	PEMKO	KN Crowder	Hager
.3	319S	W-14S	878S
.4	290APK	W20N	881S
.5	2891AS	W20S	881S
.6	S88B	W22	726S
.7	288B	W21	726S

.2 Door bottom seal:

.1 Extruded Aluminum frame and nylon brush sweep, clear anodized finish.

.2 Heavy duty, door seal of extruded aluminum frame and solid closed cell neoprene weather seal, recessed in door bottom, closed ends, automatic retract mechanism when door is open, clear anodized finish.

.3 Standard of acceptance:

.1	Specified	Acceptable Alternates	
.2	PEMKO	KN Crowder	Hager
.3	3452CNB	W35-1	770SB
.4	18100CNB	W24S	801SB
.5	4301	CT-52	747S

.3 Astragal:

.1 Flat overlapping extruded aluminum by door height with pile insert.

.2 Meeting astragal extruded aluminum frame with brush insert by each door by door height, clear anodized finish.

.3 Standard of acceptance:

.1	Specified	Acceptable Alternates	
.2	PEMKO	KN Crowder	Hager
.3	357CS	W8S	835S
.4	18061CNB	W-25S	802SB
.5	3672A	W8P	835

.16 Intergrated Wiegand Output Access Control Locking Devices.

.1 Integrated Wiegand Output Mortise Locks: Wiegand output ANSI A156.13, Grade 1, mortise lockset with integrated proximity card reader, request-to-exit signaling, door position status switch, and latchbolt monitoring in one complete unit. Hard wired, solenoid driven locking/unlocking control of the lever handle trim, 3/4" deadlocking anti-friction latch, and 1" case-hardened steel deadbolt. Lock is U.L listed and labeled for use on up to 3 hour fire rated openings. Available with or without keyed high security cylinder override.

.1 Open architecture, hard wired platform supports centralized control of locking units with new or existing Wiegand compatible access control systems. Latchbolt monitoring and door position switch act in conjunction to report door-in-frame (DPS) and door latched (door closed and latched) conditions.

.2 Reader supports either HID 125 kHz proximity (up to 39 bits, including Corporate 1000) or 13.56 MHz (2K-32K) iClass® credentials.

.3 12VDC external power supply required for reader and lock, with optional 24VDC operation available with iClass® reader (125 kHz reader is always 12VDC). Fail safe or fail secure options.

.4 Energy Efficient Design: Provide lock bodies which have a holding current draw of 15mA maximum, and can operate on either 12 or 24 volts. Locks are to be field configurable for fail safe or fail secure operation.

.5 Installation requires only one cable run from the lock to the access control panel without requirements for additional proprietary lock panel interface boards or modules.

.6 Installation to include manufacturer's access control panel interface board or module where required for Wiegand output protocol.

.7 Standard of acceptance:

.8 Specified Acceptable Alternates:

.9

Sargent	Corbin	Yale
SELP10	Access 600	Symphony S8800

.10

.17 Intergrated Wiegand Output Exit Devices – Multi-Class.

.1 Integrated Wiegand Output Multi-Class Exit Hardware: Wiegand output ANSI 156.3 Grade 1 rim, mortise, and vertical rod exit device hardware with integrated proximity card reader, latchbolt and touchbar monitoring, and request-to-exit signaling, in one complete unit. Hard wired, solenoid driven locking/unlocking control of the lever handle exit trim with 3/4" throw latch bolt. U.L listed and labeled for either panic or "fire exit hardware" for use on up to 3 hour fire rated openings. Available with or without keyed high security cylinder override.

.2 Open architecture, hard wired platform supports centralized control of locking units with new or existing Wiegand compatible access control systems. Inside push bar (request-to-exit) signaling and door position (open/closed status) monitoring (via separately connected DPS).

.3 Integrated reader supports the following credentials:

.1 125kHz proximity credentials: HID, AWID, Indala, and EM4102.

.2 13.56 MHz proximity credentials: HID iClass, HID iClass SE, SE for MIFARE Classic, DESFire EV1.

.4 12VDC external power supply required for reader. 24VDC required for solenoid operated exit trim. Fail safe or fail secure options.

.5 Installation requires only one cable run from the exit hardware to the access control panel without requirements for additional proprietary lock panel interface boards or modules.

.6 Competitor Alternates Allowed Option>Installation to include manufacturer's access control panel interface board or module where required for Wiegand output protocol

.1 Sargent Corbin Yale

.2

SELP10	Access 600	Symphony S8800

.18 Access Control Software.

.1 Server Software

.1 The Server Software may be either installed on a standard pc running Microsoft Windows 7 Home or Higher (Windows 7 Starter Not Supported) or purchased via an embedded hardware server box.

.2 The software shall support Microsoft SQL Server 2008 or SQL Server 2008 Express or newer.

.3 Software may be purchased outright or paid for on a subscription basis.

.4 Software shall be 100% web based and can be accessed via any web enabled device including Cell Phones, Tablets, Laptops, P.C.'s etc. without the need for any additional plug in's, i.e. no active x controls etc.

.5 It shall be possible to select any function, within a given operators permission, independent of the currently displayed screen.

.6 Functions will be accessed via tool bar Icons, which will include Help prompts that will appear when the mouse pointer dwells on the selection button.

.2 Administration Software Features

.1 Unlimited Access Privilege Groups, Assign as many access rules to each user as required, there is no limit.

.2 Unlimited Administrators; Define as many administrators the your system requires, no limit.

.3 Role based administrator security; Initial version supports 2 roles (basic admin, sys admin(root)).

.4 Dual Edit Modes; Simple/Advanced Edit modes for records allowing quick access to edit complex settings for more advanced users or simple guided edit for general users.

.5 Real time notification and status (or close to) support that automatically uses the best available solution for your browser. Also forward compatible with future web sockets implementations once server support is widely available (eta 2013)

.6 Multiple Supported Card Formats; Seamless integration to systems already in place allowing multiple cards from other venders to work on the same readers, ie HID, AWID, HARTANN...., 26Bit,40bit,36bit....

.7 Unlimited Customizable user fields; Add as many user fields as required, ie parking number, employee number, phone number ...

.8 Automatic database backup; System automatically backs up entire system configuration and logs with no user intervention.

.9 Coordinated Universal Time; Automatic time correction according to the panel's Coordinated Universal Time zone and time offset tolerance(configurable)

.10 Daylight Saving Time; Automatic Daylight Saving Time (configurable).

.11 Security Level Lock Down; Support emergency code (Orange, Red…) by using the multiple user security level(configurable).

.12 Unlimited Remote Buildings supported from one single server installation.

.13 Unlimited Doors support.

.14 Unlimited Cardholders; Maximum number of users the system will support for entry control is limited by panel used only, this could be via proximity card, biometric reader, magstripe card, smart card etc.

.15 Unlimited Access Privilege Rules; Rules to define what door a user has access to and at what times he is allowed access.

.16 Unlimited Door Time Zones; These are used for programming when doors will unlock and at what time cards will be granted access via locked door.

.17 Graphical Time Zones.

.1 The system must have separate time zones for user access as well as door schedules.

.2 The system time zones shall be drag and drop graphics allowing for easy viewing, as well as eliminating the chance of programming error.

.3 User time zones will support not allowed and allowed schedules

.4 Door time zones shall support the following modes

.5 Lockdown (no cards other than cards flagged as master will be granted access)

.6 Card Only (valid cards required to grant access)

.7 Pin Only (valid pins required to grant access)

.8 Card Or Pin (valid card or pin required for access)

.9 Unlock (door is in public mode)

.10 First Credential in (door will not follow its public schedule until a card flagged with first card in feature is presented at the door during the public schedule)

.11 Dual Credential (2 valid cards one flagged as supervisor required to grant access)

.18 Unlimited Special Event Time Zones (single zone) ; Program doors to follow unique schedules on special dates, ie an event where you would like certain doors to stay public from 5pm to 8pm.

.19 Transparent Multi Site Control; Remote buildings seamlessly via one Server. Add cards to multiple buildings and doors instantly by assigning them to predefined access privilege groups.

.20 Unlimited System Users; Program as many users with unique logons for system administration or control.

.21 Manual Override Override - Panels, Doors, Auxiliary relays, Inputs/Outputs, Elevators.

.22 Block loading/CSV importing cards Load groups of cards with a single press of a button.

.23 Assa Abloy Aperio Integration System integrates seamlessly with all Aperio hardware including wireless cabinet locks utilizing Aperio RS485 Hub with a one to many connection.

.24 Alarm Integration; Program select users to enable/disable alarm panels via triple swipe actions at door readers.

.25 Auto firmware update utility; Server will automatically flash any number and mix of panels (ODM, ODM-WIFI, TDM) seamlessly without any user interaction. Firmware flashed in less than one minute

.26 Automatic door opener integration; Have selected cards activate both locks and door openers, excellent feature for Handicap persons

.27 User profile pictures on event notifications; Any events generated by user can be accompanied by their picture

.28 Triple Swipe Special Function; Allow certain users to perform various actions by triple swiping at keypad and entering code (up to 5 different actions can be programed).

.29 Integrated backup restore utility; Intuitive utility allowing for full backups of entire system

.30 Dual credential access; Program high security doors to require supervisor as well as another valid card before allowing access, great for any door or cabinet that protects assets.

.31 One time run time zones; Rather than overriding a door and forgetting to set back to normal just set a one time run time zone to for example unlock a door at a certain time, great for board meetings etc.

.32 Event Emailing Fully configurable email engine keeps administrators in the loop no matter where they are.

.33 Totally configurable live event screen Select what events you are interested in monitoring real time as well as which event you want emailed

.34 Generic Alarm Panel Interface Option; The system shall have the ability to program special cardholders to arm/disarm an alarm panel via swiping their card 3 consecutive time at specified readers. If the alarm system is armed only those cards having the alarm interface feature will be allowed access through secured doors. Doors can be excluded from this feature if needed. The system shall monitor a status output from the alarm panel and show visual status that alarm panel is armed at readers. As well as beep readers during arming and disarming of alarm panel to notify users of state change.

.3 Hardware Requirements

.1 Controllers.

.1 The system shall support multiple controllers including, single door with or without built in REX, 2 door controller, wireless single door controller with or without built in REX, Aperio RS485 integration controllers.

.2 Communication to all controllers must utilize the existing LAN or WAN

.3 Communication speed to controllers shall be at least 100 Mbps

.2 Distributed Intelligence. The System selected will utilize distributed intelligent controllers capable of maintaining their normal operation even when off-line from the System's host computer. These controllers being of modular design to easily facilitate future expansion subsequent to the initial installation of the System. Optional hardware being included for units required to supervise monitoring alarm inputs or perform output switching functions. When operated off-line the ability to perform all normal access decisions, including if a cardholder is valid at that door and at that time, along with PIN checking is a requirement. All transactions will be time and date stamped (including seconds) by the controller at the time they occur with this information being the reference used by the System's central History log. Controller clocks will be periodically synchronized System wide

.3 Door Controller Specification

.1 Unlimited Number of Door Time Zones; Unlimited number of Door Time Zone schedules the system will support. These are used for programming when doors will lock/unlock or grant credential access based on mode (Card Only, PIN Only, Card and PIN, Card or PIN, First Card In, Dual Credential, Lockdown).

.2 User Time Zones; Up to 256 User Time Zone schedules the system will support. These are used for programming when and at what time cards will be granted access via locked door.

.3 Holiday User Groups; A card user can follow one of the 50 Holiday Group setting.

.4 Holidays Per Group; Each group supports up to 50 holidays.

.5 Zones per Door Time Zone; 20 door time zones per day.

.6 Zones per User Time Zone (holidays) ; 4 user time zones per day.

.7 Zones per Door Time Zone (holiday) ; 2 door holiday time zones per day.

.8 Zones per User Time Zone (holiday) ; 2 user holiday time zones per day.

.9 Special Event Time Zones (single zone) ; Up to 32 One-Time-Run Time Zones available to program doors to follow unique schedules on special dates (ie: an event that you would like certain doors to stay public from 5pm to 8pm instead of being locked).

.10 Panel Buffer Event Storage; In an event of network failure, the panel will store the least 50,000 events in buffer for later retrieval once network connection to server is re-established.

.11 Multiple Reader Technologies; Supports proximity, biometrics, Wiegand, mag stripes and barcode reader technology.

.12 First Person In; Program to follow their public schedule only after a valid card has been presented (ie: in the case of a snow day the doors do not go public before someone is in the building).

.13 Triple-Swipe Mode; Activate multiple actions by triple swipes from a keypad-reader (configurable).

.14 16-Bit Site Code; Supports 1 ~ 65535

.15 32-Bit Card Number; Supports 0 ~ 4294967295

.16 Hold Name String; Stores up to 30 characters of each users name on-board.

.17 PIN Number; Supports 3 ~ 7 digits

.18 Start Date, Expire Date; Ability to define a credential active date range. Ideal for temporary and contract employees.

.19 Configurable Software Filter for Back-to-Back Reader Interference; Allowed tuning for readers that are close to one another.

.20 Remote Firmware Upgradable; Managed automatically by the software - no user intervention required.

.21 Multi-run Modes for Simplified Trouble-Shooting; Normal, Debug, Diagnose

.22 On-Board UI; Easy check and/or change most parameter values on the panel through on-board push button keys, LEDs, and audible beep.

.23 Password Protection; Changing parameter values are protected by a password.

.24 Output Port (fully configurable) ; Door Strike, Door Opener, External Buzzer, Alarm Interface, Aux Output

.25 Input Port (fully configurable) ; Request to Exit, Door Contact, Handicap Open, Motion, Aux Input, Emewrgency Alarm.

.26 PIN Blocking; Five consecutive incorrect PIN entry blocks PIN input for 30 sec with buzzer sound warning.

.4 Door Controller Physical Specifications

.1 32-Bit Microprocessor-Based

.2 Power over EthernetIEEE 802.3af PoE standard provides up to 15.4 Watts.

.3 DC 12V power output for motion or other devices

.4 Output Port (fully configurable) Lock relay - supply power (12V, 500mA) to the lock, over current protection, SSR Relay2, SSR Relay3 - 60V (TVS circuit limits 24V), 500mA, fully configurable, no mechanical ports.

.5 Input Ports Fully configurable including supervised or digital input setting, includes door contact, exit button, external request to exit motion etc.

.6 Tamper Sensor Photo tamper sensor (configurable)

.7 Readers Ports 2 ports, hardware data monitoring LEDs, configurable reader port mapping (Example: Reader-Port1 maps to Door1-Outside.)

.8 Network 10/100Mbps supporting Static or DHCP

.9 Displays 2 Line x 16 Ch LCD Display (contrast adjustable) with LED back light (brightness adjustable) 4 user LED's, 2 power LED's, 3 relay output indication LED's, 2 Ethernet status LED's

.10 Keyboard Four user push buttons for data entry or output selection.

.11 Time Keeps up to 1 month without power connection. No battery needed.

.12 Supports hardware-level emergency alarm interface.

.13 Sounder On-board piezo buzzer (90dB at 10cm), Optional loud buzzer (100dB at 100 cm)

.14 Multi-purpose Expansion Port Supports WiFi, serial, extra memory, I\Os .. (for future expansions)

.5 System must have the capability to fully integrate to the ASSA Abloy Aperio Wireless lock system. This integration must have the ability to interface with 8 Aperio wireless locks at a time through one interface device.

.6 Standard of acceptance:

.7 Specified Acceptable Alternates

.8 Hartmann

.9 Protector.Net

.19 Electric Strikes.

.1 Standard Electric Strikes: Heavy duty, cylindrical and mortise lock electric strikes conforming to ANSI/BHMA A156.31, Grade 1, UL listed for both Burglary Resistance and for use on fire rated door assemblies. Stainless steel construction with dual interlocking plunger design tested to exceed 3000 lbs. of static strength and 350 ft-lbs. of dynamic strength. Strikes tested for a minimum 1 million operating cycles. Provide strikes with 12 or 24 VDC capability and supplied standard as fail-secure unless otherwise specified. Option available for latchbolt and latchbolt strike monitoring indicating both the position of the latchbolt and locked condition of the strike.

.1 Standard of acceptance:

.1	Specified	Acceptable Alternates
.2	HES	RCI
.3	5200	S6514
.4	1006	F2164
.5	9500	F0162
.6	9600	0162

.20 Power Supplies:

.1 Dual output, field selectable 12 or 24 VDC via clearly marked toggle switch.

.2 Supplies 1 full AMP continuous current output, even while charging back-up batteries.

.3 SPDT AC monitoring output allows for remote monitoring of the power supply's 110V AC input.

.4 Separate voltage inputs for load and battery allow the batteries to charge at a higher output while the load remains at exactly 12 or 24 VDC.

.5 LED indication (AC & DC) showing power supply status UL listed low current fire alarm disconnect requires only a minimum size fire alarm relay and wire gauge Polyswitch type breakers allow for large short duration inrush current if batteries are installed (approx. 20A for 1 second) Line voltage and DC fuses Sealed lead acid-gel battery charging capability (battery not included).

.6 UL Class 2, linear regulated power supply provides the cleanest power available sensitive, active safety and security devices.

.7 UL Listed.

.8 CFAR Relay - Securitron's Fire Alarm reset module interconnects with a Securitron BPS series power supply and a fire alarm (made by others). The purpose is to provide additional safety and control in an installation where activation of the fire alarm is intended to switch off the BPS power supply.

.9 This is often done to release power to magnetic locks which are installed on perimeter doors so as to permit safe evacuation in the event of a fire. The module has three specific functions:

.1 It will maintain the released condition of devices released by activation of the fire alarm even after the fire alarm resets and until the module itself is reset by key.

.2 It allows key controlled release of the same devices (separate from the fire alarm control).

.3 It signals the released or "normal" condition of the devices via a bicolor LED.

.10 Standard of acceptance:

.1	Specified	Acceptable Alternates	
.2	Securitron	Sargent	Schlage Electronics
.3	BPS	3500	PS900

.21 Power Transfer Devices:

.1 Concealed Quick Connect Electric Power Transfers: Provide concealed wiring pathway housing mortised into the door and frame for low voltage electrified door hardware. Furnish with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.

.2 Standard of acceptance:

.1	Specified	Acceptable Alternates	
.2	Securitron	Pemko	Von Duprin
.3	EL-CEPT	EL-CEPT	EPT-10

.22 Electric Door Wire Harnesses:

.1 Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.

.2 Standard of acceptance:

.1	Specified	Acceptable Alternates	
.2	McKinney	Von Duprins	Stanley
.3	QC-C Series	CON	WH Series

.23 Key Switches:

.1 Key switches furnished standard with stainless steel single gang face plate.

.2 Standard with 12 or 24 VDC bi-color LED

.3 Backing bracket permits integration with any 32mm or 28mm mortise cylinder (Not Included)

.4 Additional switch position on backing bracket allows another switch to be activated by turning the key in the opposite direction 5 Amp rated plunger switch UL Listed.

.5 Key switches available as momentary or maintained action and in narrow face plate options.

.6 Standard of acceptance:

	Specified	Acceptable Alternates	
.1	Securitron	Schlage Electronics	Security Door Controls
.2	MK Series	653 Series	800 Series

.24 Door Status Switch:

.1 Monitors door position remotely.

.2 SPDT concealed switch (3 wire).

.3 Contacts rated .25 Amp @24 VDC, requires 25mm diameter hole.

.4 Standard of acceptance:

	Specified	Acceptable Alternates	
.1	Securitron	Sargent	Schlage Electronics
.2	DPS W/M	3287	679 Series

2.3 FASTENINGS

.1 Use only fasteners provided by manufacturer. Failure to comply may void warranties and applicable licensed labels.

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

.3 Exposed fastening devices to match finish of hardware.

.4 Where pull is scheduled on one side of door and push plate on other side, supply fastening devices, and install so pull can be secured through door from reverse side. Install push plate to cover fasteners.

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

2.4 FINISHES

.1	Description	Material	BMHA
.2	Exterior Hinges	Stainless Steel Metal, Satin	630
.3	Interior Hinges	Satin Chromium Plated	626
.4	Locks	Stainless Steel Metal, Satin	630
.5	Exit Devices	Satin Chromium Plated	626
.6	Closers	Aluminum Powder Coated	689
.7	Flatware	Stainless Steel Metal, Satin	630
.8	All other items	Satin Chromium Plated	626

2.5 KEYING

.1 All locks to be masterkeyed to a new factory registered masterkey system. All locks to be masterkeyed as per the owners instructions.

.2 All cylinders to be Sargent Degree Series Series.

.3 All cylinders to be construction master keyed.

.4 All locks and cylinders to be visually keyed.

.5 Consult with the Architect/Engineer and the owner and secure written approval of the complete keying layout prior to placing lock order with the factory.

.6 Grand masterkeys and masterkeys shall be sent directly to the owner by registered mail, return receipt if requested.

.7 Supply:

1.	Masterkeys	5 per group
2.	Construction Masterkeys	5
3.	Control Keys – Construction Cores	3
4.	Control Keys – Permanent Cores	3
5.	Change Keys/Lock	4

2.6 KEY CONTROL

.1 Provide a key control system, including envelopes, labels with self-locking clips, receipt forms, 3-way visible card index, temporary markers and permanent markers and standard metal cabinet. Allow for 150% of the number of locks required on the project.

.2 Provide complete cross index system set up by the Hardware Supplier and place keys on markers and hooks in the key cabinet as determined by the final key schedule.

.3 Install and give instruction to owner on how the system is to be used.

.4 Provide hinged-panel type cabinet for wall mounting.

.5 Standard of acceptance: Lund 1201.

2.7 MANUFACTURER'S INSTRUCTIONS

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

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

.3 Furnish manufacturers' instructions for proper installation of each hardware component.

.4 Wiring Diagrams: Provide any special information, voltage requirements and wiring diagrams to other trades requiring such information.

2.8 INSTALLATION

.1 Install door hardware in accordance with manufacturer's instructions, using special tools and jigs. Fit accurately and apply securely. Ensure that hardware is installed correctly. Issue instructions if required to Sections concerned.

.2 Install hardware to standard hardware location dimensions in accordance with Canadian Metric Guide for Steel Doors and Frames (Modular Construction) prepared by Canadian Steel Door Manufacturers' Association.

.3 Installation is to be done by a qualified tradesman, if technical assistance is required contact the hardware supplier.

.4 Where door stop contacts door pulls, mount stop to strike bottom of pull.

.5 Install key control cabinet.

.6 Use only manufacturer's supplied fasteners. Failure to comply may void manufacturer's warranties and applicable licensed labels. Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.

.7 Remove construction cores and locks when directed by Contractor; install permanent cores and check operation of locks.

.8 Hardware should not be installed until all finishing is complete.

.9 All hardware to be installed level plumb and true.

.10 All operating parts to work freely and smoothly.

.11 Exterior thresholds to be set in exterior sealants.

.12 Install Power Operators as per manufacturer’s instructions and by a qualified installer.

.13 Access control to be installed by a certified installer.

.14 High voltage wiring by Division 28. Low voltage wiring by access control supplier.

2.9 ADJUSTING

.1 Adjust door hardware, operators, closures and controls for optimum, smooth operating condition, safety and for weather tight closure.

.2 Lubricate hardware, operating equipment and other moving parts.

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

.4 All defective or damaged hardware will have to be repaired or replaced at the contractors expense.

2.10 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

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

.3 Remove protective material from hardware items where present.

.4 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

2.11 DEMONSTRATION

.1 Keying System Setup and Cabinet:

.1 Set up key control system with file key tags, duplicate key tags, numerical index, alphabetical index and key change index, label shields, control book and key receipt cards.

.2 Place file keys and duplicate keys in key cabinet on their respective hooks.

.3 Lock key cabinet and turn over key to Owner's Representative.

.2 Maintenance Staff Briefing:

.1 Brief maintenance staff regarding:

.2 Proper care, cleaning, and general maintenance of projects complete hardware.

.3 Description, use, handling, and storage of keys.

.4 Use, application and storage of wrenches for door closers, locksets and fire exit hardware.

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

2.12 FIELD QUALITY CONTROL

.1 An inspection report will be required 6 months after substantial completion by a qualified Architectural Hardware Consultant to note any deficiencies. The inspection should include checking each lock against the key schedule to make sure the correct locks and cylinders are on the proper doors.

2.13 PROTECTION

.1 Protection must be given to all products and finishes until such time as the owner accepts the project.

2.14 CERTIFICATION

.1 After installation, Hardware Supplier is to have a regular member of the Architectural Hardware Consultants'' (AHC) Association inspect and certify in writing that all items and their installations are in accordance with specified requirements.

2.15 DOOR HARDWARE SETS

.1 The door hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

.2 The supplier is responsible for handing and sizing all products as listed in the door hardware sets. Quantities listed are for each pair of doors, or for each single door.

.3 Products listed in the Door Hardware Sets must meet the requirements described in the specification sections noted.

2.16 HARDWARE SCHEDULE

Set: 1.0

1	Continuous Hinge	BLFM x Door Height x SLF-HD1 PT		PE
1	Access Control Rim Exit	64 M1-8876-24V-IPS 03 ETL (Fail Secure)	US32D	SA
2	Core	DG1 6300	US15	SA
1	Conc Overhead Stop	1-X36	BSP	RF
1	Surface Closer	422 PCTB2 (Push Side)	BSP	SA
1	Cover Plate	1431J	BSP	SA
1	Threshold	253x3AFG x Door Width		PE
1	By Aluminum Door Supplier	Weatherstripping	Std	00
1	Sweep	3452DNB x Door Width		PE
1	Electric Power Transfer	EL-CEPT		SU
1	Position Switch	DPS-M-BK		SU
1	POE Controller	Hartmann POE-ODM-XB	Black	00
1	Raceway Harness Wires W/Pins-2'0	93993-QC-C200P-QC12-12	Std	MK
1	Wiring Harness Wires W/Pins-25'0	93970-QC-C2500P-QC12-12	Std	MK
1	Integration Cabinet with Wiring Diagram	Thomas TA-2909-PIK-ATLHW (Elevations & Point to Point)	Std	SA

Notes:
REQUIRES 120VAC POWER TO POWER SUPPLY LOCATION BY ELECTRICAL CONTRACTOR.
REQUIRES LOW VOLTAGE FROM POWER SUPPLY TO ELECTRIFIED LOCK LOCATION.
REQUIRES LOW VOLTAGE AND COMMUNICATION WIRE BY THE ELECTRICAL CONTRACTOR.
REQUIRES CONDUIT TO BE SUPPLIED AND INSTALLED BY THE ELECTRICAL CONTRACTOR.
REQUIRES WIRE AND WIRE PULL BY THE ELECTRICAL CONTRACTOR.
REQUIRES WIRE CHASE IN THE DOOR.
REQUIRES INSTALLATION OF THE INTERGRATED LOCK BY A CERTIFIED INSTALLER.

MODE OF OPERATION:
DOOR TO BE SECURED AT ALL TIMES. ENTRY BY AUTHORIZED CARD OR KEY.
ENTRY BY AUTHORIZED CARD WILL UNLOCK THE LEVER AND ALLOW THE LEVER TO BE DEPRESSED AND RETRACT THE LATCH. STANDARD FUNCTIONALITY FOR DOOR CONTACTS AND REQUEST TO EXIT. LOCK HAS MECHANICAL KEY OVERRIDE.
FREE EXIT AT ALL TIMES.

Set: 2.0

2	Continuous Hinge	BLFM x Door Height x SLF-HD1		PE
2	Concealed Vert Rod Exit	16 31 64 AD8410 113 x 862	US32D	SA

2	Core	DG1 6300	US15	SA
2	Conc Overhead Stop	1-X36	BSP	RF
2	Surface Closer	422 PCTB2 (Push Side)	BSP	SA
2	Cover Plate	1431J	BSP	SA
1	Threshold	253x3AFG x Door Width		PE
1	By Aluminum Door Supplier	Weatherstripping	Std	00
2	Sweep	3452DNB x Door Width		PE

Set: 3.0

2	Continuous Hinge	CFM x Door Height x SLF-HD1		PE
2	Dummy Rail x Pull	8893 x 862	32D	SA
2	Conc Overhead Stop	1-X36	BSP	RF
2	Surface Closer	422 PCTB2C (Push Side)	EN	SA
2	Cover Plate	1431J	EN	SA

Set: 4.0

3	Hinge	TA2714 114mm x 101mm	US26D	MK
1	Office Lock	DG1 28 7G05 LL	US26D	SA
1	Wall Stop	406 (Convex HD)	US32D	RO
1	Gasketing	S773BL x 3 Sides		PE

Set: 5.0

3	Hinge	TA2714 114mm x 101mm	US26D	MK
1	Office Lock	DG1 28 11G05 LL	US26D	SA
1	Surface Closer	422 CTB2 (Pull Side)	EN	SA
1	Wall Stop	406 (Convex HD)	US32D	RO
1	Gasketing	312CR x 3 Sides		PE
1	Gasketing	S44BL x 3 Sides		PE
1	Concealed Door Bottom (Wood Doors)	STC411APK x Door Width		PE

Set: 6.0

3	Hinge	TA2714 114mm x 101mm	US26D	MK
1	Storeroom Lock	DG1 28 11G04 LL	US26D	SA
1	Wall Stop	406 (Convex HD)	US32D	RO
1	Gasketing	312CR x 3 Sides		PE

Set: 7.0

3	Hinge	TA2714 114mm x 101mm	US26D	MK
1	Storeroom Lock	DG1 28 11G04 LL	US26D	SA
1	Door Closer	1431 O	EN	SA
1	Wall Stop	406 (Convex HD)	US32D	RO
1	Gasketing	312CR x 3 Sides		PE
1	Louver	LV-IY 24" x 18"	BSP	PE

Set: 8.0

3	Hinge	TA2714 114mm x 101mm	US26D	MK
1	Passage Set	28 11U15 LL	US26D	SA
1	Wall Stop	406 (Convex HD)	US32D	RO
1	Gasketing	312CR x 3 Sides		PE

Set: 9.0

3	Hinge	TA2714 114mm x 101mm	US26D	MK
1	Passage Set	28 11U15 LL	US26D	SA
1	Surface Closer	422 CTB2 (Pull Side)	EN	SA
1	Kick Plate	K1050 203mm x 50mm LDW 4BE CSK	US32D	RO
1	Wall Stop	406 (Convex HD)	US32D	RO

Set: 10.0

3	Hinge (heavy weight)	T4A3786 114mm x 114mm	US26D	MK
1	Access Control Mort Lock	64 IDP M1-82270-24V-IPS 03 LNL (Fail Safe)	US26D	SA
1	Cylinder	64 42	US32D	SA
1	Core	DG1 6300	US15	SA
1	Surface Closer	422 CTB2 (Pull Side)	EN	SA
1	Kick Plate	K1050 203mm x 50mm LDW 4BE CSK	US32D	RO
1	Wall Stop	406 (Convex HD)	US32D	RO
1	Electric Power Transfer	EL-CEPT		SU
1	CFAR x Reset	CFAR-24 x MK x MKS	Std	SU
1	Power Supply	BPS-24-1		SU
1	By Electrical Contractor	Controller		00
1	Raceway Harness Wires W/Pins-3'0	93995-QC-C300P-QC12-12	Std	MK
1	Wiring Harness Wires W/Pins-25'0	93970-QC-C2500P-QC12-12	Std	MK
1	Integration Cabinet with Wiring Diagram	Thomas TA-2909-PIK-ATLHW (Elevations & Point to Point)	Std	SA

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TO BE DEPRESSED AND RETRACT THE LATCH. DOOR TO UNLOCK ON FIRE ALARM.
MANUAL RESET ON FIRE ALARM. STANDARD FUNCTIONALITY FOR
DOOR CONTACTS AND REQUEST TO EXIT. LOCK HAS MECHANICAL KEY OVERRIDE.
FREE EXIT AT ALL TIMES.

Set: 11.0

3	Hinge (heavy weight)	T4A3786 114mm x 114mm NRP	US26D	MK
1	Access Control Rim Exit	12 64 M1-8876-24V-IPS 03 ETL (Fail Secure)	US32D	SA
1	Core	DG1 6300	US15	SA
1	Surface Closer	422 CTB2 (Pull Side)	EN	SA
1	Kick Plate	K1050 203mm x 50mm LDW 4BE CSK	US32D	RO
1	Wall Stop	406 (Convex HD)	US32D	RO
1	Gasketing	312CR x 3 Sides		PE
1	Electric Power Transfer	EL-CEPT		SU
1	Position Switch	DPS-M-BK		SU
1	POE Controller	Hartmann POE-ODM-XB	Black	00
1	Raceway Harness Wires W/Pins-2'0	93993-QC-C200P-QC12-12	Std	MK
1	Wiring Harness Wires W/Pins-25'0	93970-QC-C2500P-QC12-12	Std	MK
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DOOR CONTACTS AND REQUEST TO EXIT. LOCK HAS MECHANICAL KEY OVERRIDE.
FREE EXIT AT ALL TIMES.

Set: 12.0

5	Master Key	Master Keys		SA
3	Control Key	Construction Master Keys		SA
3	Master Key	Control Keys - Construction Cores		SA
3	Master Key	Control Keys - Permanent Cores		SA
2	Control Key	Extra Keys per Lock		SA
1	Master Key	Visual Keying (Cylinder and Keys)		SA
50	Keyblank	Key Blanks		SA
1	Test Unit	WT1		SA
1	Software	Hartmann ProNet1yr - Renewed every year		00
50	Prox Cards	Hartmann PSC1		00
1	Network Communication Controller	Hartmann NCC-1701	Std	00
1	UPS Bachup	Hartmann HC-UPS-BE750G	Std	00
1	POE Controller C/w 1 Reader	Hartmann POE-ODM-MB-1R	Black	00
2	POE Switch 4 Port	Hartmann 8POESwitch	Std	00
1	Molex Hand Crimp Tool	94036-QC-R003	Std	MK
1	Extraction Tool	94035-QC-R002	Std	MK
1	Molex Service Repair Kit	94034-QC-R001	Std	MK
1	Certified Installer	Installation		00
1	Certified Installer	Access Control Installation		00
1	Training	Training for Access Control		00
1	Key Cabinet	1201		LU

Notes:
EXISTING DOOR MO4-B TO HAVE CARD ACCESS REPLACED.
REQUIRES HARTMANN POE-ODM-XB-1R LISTED ABOVE.

Door Index

Opening Numbers	Heading Numbers
L01.0	1.0
L21.0	1.0
M01.0	2.0
M02.0	3.0
D201.1	5.0
D201.2	5.0
D202.0	6.0
D202.1	7.0
D203.0	5.0
D204.0	9.0

Opening Numbers	Heading Numbers
D205.0	10.0
D206.0	8.0
D208.0	8.0
D210.0	4.0
D211.0	4.0
D212.0	4.0
D213.0	4.0
D214.0	4.0
D216.0	4.0
D217.0	4.0

Opening Numbers	Heading Numbers
D218.0	4.0
D219.0	4.0
D220.0	4.0
ST2-S	11.0
Misc	12.0

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Glass and glazing for sections referencing this section for Products and installation.

.2 Mirrors.

1.2 RELATED SECTIONS

.1 Section 07 92 00 – Joint Sealants.

.2 Section 08 11 00 - Metal Frames.

.3 Section 08 14 16 – Flush Wood Doors.

.4 Section 08 41 00 – Framed Aluminum Entrances and Sotrefronts

.5 Section 08 50 00 - Windows

1.3 REFERENCES

.1 IGMAC (Insulated Glass Manufacturers Association of Canada) - Quality Standard Specification.

.2 GANA - Glazing Manual and Glazing Sealing Systems Manual.

.3 CAN/CGSB 12.1-M90 - Tempered or Laminated Safety Glass.

.4 CAN/CGSB 12.8-97 - Insulating Glass Units.

.5 CAN/CGSB 12.11-M90 - Wired Safety Glass.

.6 CAN/CGSB-12.12-M90 Plastic Safety Glazing.

1.4 SYSTEM DESCRIPTION

.1 Glass and glazing materials of this section shall provide continuity of building enclosure air barrier and vapour retarder.

.2 Size glass to withstand dead loads and positive and negative live loads acting normal to plane of glass.

.3 Limit glass deflection to flexure limit of glass with full recovery of glazing materials, whichever is less.

1.5 SUBMITTALS

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

.2 Product Data on Glass Types Specified: Provide structural, physical and environmental characteristics, size limitations, and special handling or installation requirements.

.3 Samples: Submit two samples 300 x 300 mm in size, illustrating unit coloration and design.

1.6 QUALITY ASSURANCE

.1 Perform Work in accordance with GANA Glazing Manual and IGMAC for glazing installation methods.

.2 Select glazing compounds and sealants in accordance with glass manufacturer's instructions.

Part 2 Products

2.1 GLASS MATERIALS AND SCHEDULE

.1 Sheet glass: to CAN/CGSB-12.2, thickness as indicated.

.2 Tempered Glass: CAN/CGSB 12.1 clear; 6 mm thick.

.3 Mirror Glass: ASTM C1503, clear tempered safety type with silver coating, square and lapped edges, 6 mm thick minimum, with stainless steel hidden fasteners; size as indicated in Drawings.

2.2 MATERIALS: SEALED INSULATING GLASS

.1 Insulating glass units: to CAN/CGSB-12.8, double unit, 25 mm overall thickness.

.1 U-Value: U 1.65 W/m^2·°C (±0.29 Btu/ft^2·h·°F) maximum.

.2 Visible Light Transmittance (VLT): 0.6 minimum.

.3 Solar Heat Gain Coefficient (SHGC): 0.4 maximum

.4 Outer Pane: 6 mm thick,

.1 Ground Floor: Tempered glass

.2 Upper Floor: Clear float glass

.5 Inner Pane: 6 mm thick, Tempered Glass

.6 Inter-cavity space thickness: 13 mm with low conductivity spacers.

.7 Glass coating: surface number 2, low "E".

.8 Inert gas fill: argon.

2.3 GLAZING COMPOUNDS

.1 Sealant: manufacturer's standard to attain specified performance criteria.

2.4 APPLIED FILM

.1 Clear Vinyl Film for glazing: Polyester film with decorative finish, 3 to 3.5 mil thickness, pressure-sensitive adhesive, CAN/ULC-S102 Class A:

.1 Translucent printed image on vinyl by Engineer-Architect.

2.5 GLAZING ACCESSORIES

.1 Setting Blocks: Neoprene, EPDM or Silicone, 80 to 90 Shore A durometer hardness.

.2 Spacer Shims: Neoprene, Silicone, 50 to 60 - Shore A durometer hardness.

.3 Glazing Tape: Preformed butyl compound with integral resilient tube spacing device.

.4 Glazing Splines: Resilient silicone extruded shape.

Part 3 Execution

3.1 EXAMINATION

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

3.2 PREPARATION

.1 Clean contact surfaces with solvent and wipe dry.

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

.3 Prime surfaces scheduled to receive sealant.

3.3 GLAZING METHODS

.1 Verify that selected sealants and glazing tapes are compatible.

.2 Perform glazing as required by frame manufacturer to achieve specified performance criteria.

.3 Completed exterior glazed assemblies to provide full perimeter air and vapour seal to the glazed frames and be pressure equalized.

3.4 FILM APPLICATION

.1 Clean surfaces thoroughly prior to installation.

.2 Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

.3 Install in accordance with manufacturer's written instructions.

.4 Apply film using slip solution for proper positioning. Squeegee to remove excess solution.

.5 After 30 days, film to be free of wrinkles and bubbles when viewed under normal viewing conditions.

3.5 TESTING

.1 Testing and reporting will be carried out by an independent testing agency selected by the Consultant.

.2 Coordinate and assist testing agency, and allow access to the Work.

3.6 CLEANING

.1 Remove glazing materials from finish surfaces.

.2 Remove labels after Work is complete.

.3 Clean glass.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Interior panels for walls and ceilings.

.2 Panel and joint treatment.

.3 Metal channel ceiling framing.

.4 Installation of access panels provided by others.

1.2 RELATED SECTIONS

.1 Section 07 21 00 - Building Insulation: Acoustic and Thermal insulation.

.2 Section 07 84 00 - Firestopping: Coordination of supplemental blocking for ULC/UL Design.

.3 Section 07 92 00 - Joint Sealants.

.4 Mechanical and Electrical Divisions: Supply of access panels.

1.3 REFERENCES

.1 ANSI A118.9-99, Cementitious Backer Units (CBU).

.2 ASTM C475/C475M-02 - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.

.3 ASTM C645-04 - Specifications for Non-Structural Steel Framing Members.

.4 ASTM C754-00 - Installation of Steel Framing Members to Receive Screw-Attached Gypsum Board.

.5 ASTM C840-04a - Standard Specification for Application and Finishing of Gypsum Board.

.6 ASTM C1002-01 - Steel Self-Piercing, Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.

.7 ASTM C1278 / C1278M - 07a Standard Specification for Fiber-Reinforced Gypsum Panel.

.8 ASTM C1280-04 - Standard Specification for Application of Gypsum Sheathing.

.9 ASTM C1396/C1396M-04 - Standard Specification for Gypsum Board.

.10 ASTM D3273-00(2005) - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.

.11 ASTM E90-04 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

.12 ASTM E119-00a - Method for Fire Tests of Building Construction and Materials.

.13 GA-201 (Gypsum Association) - Gypsum Board for Walls and Ceilings.

.14 GA-214 (Gypsum Association) - Recommended Specification: Levels of Gypsum Board Finish.

.15 GA-216 (Gypsum Association) - Application and Finishing of Gypsum Board.

.16 GA-801 (Gypsum Association) - Handling Gypsum Board.

.17 Scientific Certification Systems (SCS).

.1 Specification SCS-RRC-01, Certification Specifications for Recycled and Recovered Content.

1.4 SUBMITTALS FOR REVIEW

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

.2 Product Data: Provide data on metal framing, gypsum board, joint tape.

.3 Samples: Submit samples for exterior fasteners for all applications.

1.5 QUALITY ASSURANCE

.1 Perform Work in accordance with ASTM C840.

.2 Applicator Qualifications: Company specializing in performing the work of this section with minimum 5 years documented experience.

.3 Handling Gypsum Board: Comply with GA-801.

Part 2 Products

2.1 PANEL MATERIALS

.1 Standard Gypsum Board: ASTM C1396/C1396M, thickness as indicated, maximum available length in place; ends square cut, tapered edges.

2.2 ACCESSORIES

.1 Framing: in accordance with Section 06 10 00 – Rough Carpentry

.2 Access Panels: Supplied by others, installed by this Section.

.3 Sound Attenuation Insulation: to Section 07 21 00.

.4 Acoustic Sealant: Low VOC, to Section 07 92 00.

.5 Corner Beads: GA-216, Metal corner bead.

.6 Edge Trim: GA-216; Fast Cap Bead, Casing bead, L-bead, LK-bead, LC-bead and Control joints, as required.

.7 Joint Materials: ASTM C475; paper reinforcing tape, joint compound, adhesive, and water. Mesh tape only where required by ULC Design.

.8 Panel Fasteners: ASTM C1002, Type S12 screws. Exterior finish to be corrosion resistant.

.9 Compressible Foam Gasket: sill plate gasket; polyethylene foam, minimum thickness 6 mm x full width of sill plate.

Part 3 Execution

3.1 EXAMINATION

.1 Verify that site conditions are ready to receive work and opening dimensions are as instructed by the manufacturer.

3.2 WALL FURRING INSTALLATION

.1 Erect furring for direct attachment to concrete masonry and concrete walls.

.2 Erect furring channels; space maximum 400 mm on centre, not more than 100 mm from floor and ceiling lines and abutting walls.

.3 Secure in place on alternate channel flanges at maximum 600 mm on centre.

.4 Shim wall and rigidly secure to substrate to prevent deflection.

3.3 FURRING FOR FIRE RATINGS

.1 Install furring as required for fire resistance ratings indicated.

3.4 CEILING FRAMING INSTALLATION

.1 Install in accordance with ASTM C754 and manufacturer's instructions.

.2 Coordinate location of hangers with other work.

.3 Install ceiling framing independent of walls, columns, and above ceiling work.

.4 Reinforce openings in ceiling suspension system which interrupt main carrying channels or furring channels, with lateral channel bracing. Extend bracing minimum 600 mm past each end of openings.

.5 Laterally brace entire suspension system.

3.5 ACCESSORIES INSTALLATION

.1 Install access panels to locations required for access.

.2 Install resilient channels at maximum 600 mm on centre. Locate joints over framing members.

.3 Place acoustic insulation in partitions tight within spaces, around cut openings, behind and around electrical and mechanical items within or behind partitions, and tight to items passing through partitions.

.4 Install acoustic sealant at gypsum board perimeter at:

- .1 Metal Framing: Two beads.
- .2 Base Layer.
- .3 Face Layer.
- .4 Caulk all penetrations of partitions by conduit, pipe, duct work, rough-in boxes.

3.6 PANEL INSTALLATION

.1 Install panels in accordance with manufacturer's written instructions.

.2 Erect single layer board in most economical direction, with ends and edges occurring over firm bearing.

.3 Erect single layer fire rated gypsum board vertically, with edges and ends occurring over firm bearing.

.4 Use screws when fastening to metal furring or framing. Use wafer-head screws for attachment of backer board.

.5 Double Layer Applications: Secure second layer to first with fasteners. Offset joints of second layer from joints of first layer.

.6 Treat cut edges and holes in mineral fibre cement panels with exterior latex masonry sealer.

.7 Place control joints consistent with lines of building spaces or as directed.

.8 Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials.

3.7 JOINT TREATMENT

.1 Finish in accordance with GA-214 Level 4.

.2 Feather coats on to adjoining surfaces so that camber is maximum 0.8 mm.

.3 Taping, filling, and sanding is not required at surfaces behind adhesive applied ceramic tile.

3.8 TOLERANCES

.1 Maximum Variation of Finished Gypsum Board Surface from True Flatness: 3 mm in 3 m in any direction.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Suspended metal grid ceiling system and perimeter trim.

.2 Acoustic panels.

1.2 REFERENCES

.1 ASTM C635 - Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.

.2 ASTM C636 - Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.

.3 ASTM E1264 - Classification of Acoustical Ceiling Products.

.4 CISCA (Ceilings and Interior Systems Contractors Association) - Acoustical Ceilings: Use and Practice.

1.3 SUBMITTALS FOR REVIEW

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

.2 Product Data: Provide data on metal grid system components, and acoustic units.

.3 Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention.

1.4 QUALITY ASSURANCE

.1 Conform to CISCA requirements.

1.5 ENVIRONMENTAL REQUIREMENTS

.1 Maintain uniform temperature of minimum 16 degrees C and maximum humidity of 40 percent prior to, during, and after acoustic unit installation.

1.6 PROJECT CONDITIONS

.1 Sequence work to ensure acoustic ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.

.2 Install acoustic units after interior wet work is dry.

1.7 EXTRA MATERIALS

.1 Provide twelve (12) extra panels of each specified type; store where directed.

Part 2 Products

2.1 SYSTEM MATERIALS

.1 Acoustical Tiles: to ASTM E1264, for suspended ceiling system, 610 mm x 610 mm size, square edge, cut to suit reflected ceiling plan layout:

- .1 Minimum Noise Reduction Coefficient (NRC) of 0.70.
- .2 Minimum Ceiling Attenuation Class (CAC) rating 33.
- .3 Minimum Light reflectance range of 0.89.
- .4 Colour: white.
- .5 Acceptable Products: Armstrong Ultima 1910, CGC Mars ClimaPlus 86185, CertainTeed Symphony m 1222-IOF-1.

.2 Suspension system: Non-fire rated, intermediate duty system to ASTM C 635, commercial quality hot dipped galvanized rolled steel, standard white colour;

- .1 Same
- .2 Minimum 25% recycled content.
- .3 Acceptable Products: Armstrong Prelude XL, CGC Donn DX, CertainTeed 15/16” Classic.

.3 Accessories: Stabilizer bars, clips, splices, perimeter mouldings, hold down clips, required for suspended grid system.

.4 Support Channels, Furring and Hangers: Galvanized steel; size and type to suit application and ceiling system flatness requirement specified.

Part 3 Execution

3.1 EXAMINATION

.1 Verify that layout of hangers will not interfere with other work.

3.2 INSTALLATION - LAY-IN GRID SUSPENSION SYSTEM

.1 Install suspension system in accordance with ASTM C636 and manufacturer's written instructions and as supplemented in this section.

.2 Install system capable of supporting imposed loads to a deflection of 1/360 maximum.

.3 Locate system according to reflected plan.

.4 Install after major above ceiling work is complete. Coordinate the location of hangers with other work.

.5 Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

.6 Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.

.7 Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability. Support fixture loads by

supplementary hangers located within 150 mm of each corner; or support components independently.

.8 Do not eccentrically load system, or produce rotation of runners.

.9 Perimeter Moulding:

.1 Install edge moulding at intersection of ceiling and vertical surfaces into bed of acoustic sealant with continuous gasket.

.2 Use longest practical lengths.

.3 Overlap and rivet corners.

.4 Provide at junctions with other interruptions.

.10 Form expansion joints to accommodate plus or minus 25 mm movement. Maintain visual closure.

3.3 INSTALLATION - ACOUSTIC UNITS

.1 Install acoustic units in accordance with manufacturer's instructions.

.2 Fit acoustic units in place, free from damaged edges or other defects detrimental to appearance and function.

.3 Install units after above ceiling work is complete.

.4 Install acoustic units level, in uniform plane, and free from twist, warp, and dents.

.5 Cutting Acoustic Units:

.1 Cut to fit irregular grid and perimeter edge trim.

.2 Cut square reveal edges to field cut units.

.6 Install hold-down clips to retain panels tight to grid system within 6 m of an exterior door.

3.4 ERECTION TOLERANCES

.1 Maximum Variation from Flat and Level Surface: 3 mm in 3 m.

.2 Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

.3 Coordinate height with movable walls.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Resilient Sheet Flooring

.2 Rubber wall base

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM)

.1 ASTM C109/C109M-07, Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens).

.2 ASTM F710-98, Practice for Preparing Concrete Floors and Other Monolithic Floors to Receive Resilient Flooring.

.3 ASTM F1913-04, Standard Specification for Vinyl Sheet Floor Covering Without Backing.

.4 ASTM F1869-98, Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.

.5 ASTM F2170-02, Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.

1.3 SUBMITTALS

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

.2 Samples:

.1 Submit duplicate 300 x 300 mm sample pieces of sheet material.

.2 Submit 150 mm long base and edge strips.

.3 Submit 150 mm long transition moulding

.3 Product Data:

.1 Submit manufacturer's printed product literature, specifications and data sheet.

.4 Submit a cut diagram indicating seam locations and roll direction. Use mitred seam layouts for corners when changing directions 180 degrees. Cut diagram must be reviewed by Engineer-Architect prior to installation.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with manufacturers recommendations.

1.5 ENVIRONMENTAL REQUIREMENTS

.1 Maintain air temperature and structural base temperature at flooring installation area above 20 degrees for 48 hours before, during and 48 hours after installation.

.2 Provide a high ventilation rate, with maximum outside air, during installation, and for 48 to 72 hours after installation. If possible, vent directly to the outside. Do not

let contaminated air recirculate through a district or whole building air distribution system. Maintain extra ventilation for at least one month following building occupation.

1.6 PRE-INSTALLATION MEETING

.1 Conduct pre-installation meeting to verify project requirements, substrate conditions, transitions at dissimilar flooring, manufacturer's installation instructions, and manufacturer's warranty requirements.

1.7 EXTRA MATERIALS

.1 Provide 2.5 m^2 of each colour, pattern and type of resilient flooring. Provide in one continuous full width roll.

.2 Extra materials to be from same production run as installed materials.

.3 Store where directed.

Part 2 Products

2.1 RESILIENT SHEET FLOORING MATERIALS

.1 Resilient Sheet Flooring: Linoleum sheet flooring: composed of natural ingredients which are mixed and calendered onto a jute backing:

.1 Thickness: 2.5 mm.

.2 Colours/pattern: selected by the Consultant from manufacturer's running line.

.3 Acceptable products: Marmorette / Linorette by Armstrong, Marmoleum by Forbo

.2 Resilient base: continuous, top set:

.1 Type: rubber, 3.0 mm thick.

.2 Height: 101.6 mm.

.3 Colour: as selected by Engineer-Architect from manufacturer's full range of colours without restrictions.

.4 Acceptable Products: Armstrong, Johnsonite or approved alternate

2.2 ACCESSORIES

.1 Welding Rod: Welding rod as supplied by flooring manufacturer. Colour as selected by Engineer-Architect.

.2 Primers and adhesives: of types recommended by resilient flooring manufacturer for specific material on applicable substrate, above, on or below grade.

.1 Adhesive to be type used to 8 lb/1000 sq. ft./24 hours moisture emission rate when tested by calcium chloride moisture test in compliance with CRI 104, with subfloor temperatures not less than 12 degrees C.

.2 To minimize emissions from adhesives, use water-based, solvent-free styrene-butadiene-rubber adhesive for linoleum. Butadiene exposure may cause eye and nose irritation, headaches, dizziness, and vomiting.

.3 Cementitious Underlayment: self-levelling as per Section 03 54 00 – Self-Leveling Underlayment in sufficient quantity to meet the specified leveling tolerance.

.4 Metal edge strips: extruded aluminum, smooth, with lip to extend under floor finish, shoulder flush with top of adjacent floor finish.

.1 Finish: as selected by Engineer-Architect to match System Furniture (Metalic Champagne).

.5 Sealer and wax: type recommended by resilient flooring material manufacturer for material type and location.

Part 3 Execution

3.1 PREPARATION

.1 The recommendations of the manufacturer of the resilient floor covering will be considered as minimal.

.2 Comply with ASTM F710 for surface preparation.

.3 Subfloors to be permanently dry, clean, smooth, and structurally sound.

.4 Subfloors to be free of dust, solvent, paint, wax, oil, grease, residual adhesive, adhesive removers, curing, sealing, hardening, or parting compounds, alkaline salts, excessive carbonation or laitence, mould, mildew, and other foreign materials that might prevent adhesive bond.

.5 Surface cracks, grooves, depressions, control joints or other non-moving joints, and other irregularities to be filled or smoothed with latex patching or underlayment compound recommended by the resilient flooring manufacturer for filling or smoothing, or both.

.6 Smooth subfloor to prevent irregularities, roughness, or other defects from telegraphing through the new resilient flooring.

.7 Install self-levelling as per Section 03 54 00 – Self-Leveling Underlayment. Application tolerance: 3.9 mm in 3050 mm.

.8 Clean floor and apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler cured and dry.

.9 Remove or treat old adhesives to prevent residual, old flooring adhesives from bleeding through to new flooring and/or interfering with the bonding of new adhesives.

.10 Prepare flooring substrate to resilient flooring manufacturer's printed instructions.

3.2 APPLICATION: FLOORING

.1 Install resilient flooring in accordance with manufacturer's printed installation instructions.

.2 Apply adhesive uniformly using recommended trowel. Do not spread more adhesive than can be covered by flooring before initial set takes place.

.3 Lay flooring with seams parallel to building lines to produce a minimum number of seams. Border widths minimum 1/3 width of full material.

.4 Run sheets in direction of traffic. Double cut sheet joints and continuously seal heat weld according to manufacturer's printed instructions.

.5 Lay flooring to pattern indicated on reviewed cut diagrams. Minimize number of seams.

.6 As installation progresses, and after installation roll flooring with 45 kg minimum roller to ensure full adhesion.

.7 Heat weld seams of sheet flooring in accordance with manufacturer's printed instructions.

.8 Install resilient flooring without cracks or voids at seams. Lay seams together without stress.

.9 Make penetrations through flooring materials watertight, including floor drains and clean-outs, in accordance with manufacturer’s written installation instructions.

.10 Cut flooring neatly around fixed objects.

.11 Continue flooring over areas which will be under built-in furniture.

.12 Continue flooring through areas to receive movable type partitions without interrupting floor pattern.

.13 Terminate flooring at centreline of door in openings where adjacent floor finish or colour is dissimilar.

.14 Install transitional mouldings at exposed edges where resilient flooring terminates or interfaces with dissimilar and thinner flooring finishes.

3.3 APPLICATION: BASE

.1 Lay out base to keep number of joints at minimum.

.2 Clean substrate and prime with one coat of adhesive.

.3 Apply adhesive to back of base.

.4 Set base against wall and floor surfaces tightly by using 3 kg hand roller.

.5 Install straight and level to variation of 1:1000.

.6 Scribe and fit to door frames and other obstructions. Use premoulded end pieces at flush door frames.

.7 Outside/inside corners: to be smooth and taght by using a top-set of pull type gouge tool to make a schllow notch along the back of the base and apply heat to fit tight on the corner of wall. Apply adhesive and roll firmly into place.

3.4 CLEANING

.1 Remove excess adhesive from floor, base and wall surfaces without damage.

.2 Clean, seal and wax floor and base surface to flooring manufacturer's printed instructions.

.3 Do not perform manufacturer's recommended initial maintenance procedures until adhesive has fully cured, no sooner than 72 hours after installation.

.4 Remove excess adhesive from floor, base and wall surfaces without damage.

.5 Sweep and vacuum floor after installation.

.6 Do not wash floor until after time period recommended by flooring manufacturer.

3.5 PROTECTION

.1 Protect new floors in accordance with manufacturer's printed instructions.

.2 Protect new floors from time of final set of adhesive until initial maintenance.

.3 Prohibit traffic on floor for 48 hours after installation.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 09 21 16 - Gypsum Board Assemblies.

1.2 REFERENCES

.1 Master Painters Institute (MPI)

.1 MPI Architectural Painting Specifications Manual, 2004.

.2 Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 (for Surface Coatings) of the Environmental Protection Agency (EPA).

.3 American Society for Testing and Materials (ASTM)

.1 ASTM D2369-04, Standard Test Method for Volatile Content of Coatings.

1.3 QUALITY ASSURANCE

.1 Qualifications: Contractor with minimum of five years proven satisfactory experience. When requested, provide list of last three comparable jobs including, job name and location, specifying authority, and project manager.

1.4 SUBMITTALS

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

.2 Submit product data and instructions for each paint and coating product to be used.

.3 Samples: Submit full range colour sample chips to indicate where colour availability is restricted.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Packing, Shipping, Handling and Unloading: in accordance with manufacturer's written instructions.

.2 Remove damaged, opened and rejected materials from site.

.3 Storage and Protection:

.1 Provide and maintain dry, temperature controlled, secure storage.

.2 Store materials and supplies away from heat generating devices.

.3 Store materials and equipment in well ventilated area with temperature range 7°C to 30°C.

1.6 SITE CONDITIONS

.1 Heating, Ventilation and Lighting:

.1 Provide heating facilities to maintain ambient air and substrate temperatures above 10°C for 24 hours before, during and after paint application until paint has cured sufficiently.

.2 Provide continuous ventilation for seven days after completion of application of paint.

.3 Provide temporary ventilating and heating equipment where permanent facilities are not available or supplemental ventilating and heating equipment if ventilation and heating from existing system is inadequate to meet minimum requirements.

.2 Surface and Environmental Conditions:

.1 Apply paint finish in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.

.2 Apply paint to adequately prepared surfaces and to surfaces within moisture limits.

.3 Apply paint when previous coat of paint is dry or adequately cured.

Part 2 Products

2.1 MATERIALS

.1 Paint materials shall be listed on the current edition of the MPI Approved Products List. Where selection of finishes from MPI Approved Products List is limited, selection of alternate materials will be at the option of the Engineer-Architect.

.2 Under no circumstance shall paint materials be applied without prior review of VOC limits by the Consultant.

.3 Provide interior paint products with a VOC range 151 g/L.

.4 Provide exterior paint products with a VOC range 201 g/L.

.5 Provide paint materials for paint systems from single manufacturer.

.6 Conform to latest MPI requirements for interior and exterior painting work including preparation and priming.

2.2 COLOURS

.1 Architect will provide Colour Schedule after Contract award.

.2 Selection of colours from manufacturer’s full range of colours.

.3 Second coat in three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats.

2.3 MIXING AND TINTING

.1 Perform colour tinting operations prior to delivery of paint to site.

.2 Use and add thinner in accordance with paint manufacturer's recommendations. Do not use kerosene or similar organic solvents to thin water-based paints.

.3 Thin paint for spraying in accordance with paint manufacturer's instructions.

2.4 GLOSS/SHEEN RATINGS

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

.1 G1 - matte 0 to 5 max. 10
.2 Gloss Level Category Units @ 60° Units @ 85º
.3 G2 - velvet 0 to 10 10 to 35
.4 G3 - eggshell 10 to 25 10 to 35
.5 G4 - satin 20 to 35 min. 35
.6 G5 - semi-gloss 35 to 70
.7 G6 - gloss 70 to 85
.8 G7 - high gloss 85

.2 Gloss level ratings of painted surfaces shall be selected by Architect after Contract Award, unless noted otherwise.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheet.

3.2 GENERAL

.1 Perform preparation and operations for interior painting in accordance with MPI Architectural Painting Specifications Manual except where specified otherwise.

.2 Apply paint materials in accordance with paint manufacturer's written application instructions.

3.3 PREPARATION

.1 Protection:

.1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore surfaces as directed by Architect.
.2 Protect items that are permanently attached such as Fire Labels on doors and frames.
.3 Protect factory finished products and equipment.
.4 Protect passing pedestrians, building occupants and general public in and about the building.

.2 Clean and prepare surfaces in accordance with MPI Architectural Painting Specification Manual requirements.

.3 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.

3.4 APPLICATION

.1 Conform to manufacturer's application instructions unless specified otherwise.

.2 Apply coats of paint continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.

.3 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.

.4 Sand and dust between coats to remove visible defects.

.5 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as tops of interior cupboards and cabinets and projecting ledges.

.6 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

3.5 INTERIOR PAINT AND COATING SYSTEMS

.1 Provide interior paint products with a VOC range 151 g/L. Where selection of finishes from MPI Approved Products List is limited, selection of alternate materials will be at the option of the Engineer-Architect.

.2 Interior painting systems to be based on MPI Premium grade unless noted otherwise. The following is list of principal items only. Surfaces not included in this schedule shall be painted at the discretion of the Consultant.

.3 Metal Fabrications: including stairs, guards, channel frames, railings.

.1 INT 5.1E - Alkyd Finish:

.1 One coat alkyd metal primer (omit when shop primed),

.2 Two finish coats alkyd.

.4 Galvanized Metal: miscellaneous overhead steel pipes, decking, ducts, conduit, etc.

.1 INT 5.3H - Waterborne Dry Fall Finish:

.1 Two coats Waterborne Dry Fall MPI #133.

.2 Mask glulam to protect from overspray.

.5 Galvanized Metal: interior steel man doors and frames.

.1 Shop primed or one coat VOC compliant primer,

.2 Two finish coats Pitt-Glaze WB Water Borne Acrylic Epoxy White & Pastel Comp A (Pastel only).

.6 Dressed Lumber: Interior Finish Carpentry and Millwork for Clear Finish:

.1 Shop Finish - INT 6.3K - Polyurethane Varnish Finish: minimum three coats polyurethane finish, or alternatively;

.2 Site finish using clear finish; VOC range 351 g/L, minimum three coats.

.7 Plywood Mounting Boards: electrical room.

.1 INT 6.4P - Pigmented Fire Retardant finish:

.1 Apply to ULC approved procedures.

.2 Use MPI#64 Fire Retardant Coating, Latex, Interior, Flat (ULC Approved); VOC range 51 g/L.

.8 Gypsum Board - Dry Areas: Drywall surfaces, cement board, other wall and ceiling panels inc. wall-mounted equipment to be painted-out.

.1 INT 9.2B - HIPAC Latex:

.1 One coat Latex Primer Sealer,

.2 Two coats HIPAC Latex.

3.6 MECHANICAL AND ELECTRICAL EQUIPMENT

.1 Paint finished area exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment with colour and finish to match adjacent surfaces, except as indicated.

.2 Other unfinished areas: leave exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment in original finish and touch up scratches and marks.

.3 Touch up scratches and marks on factory painted finishes and equipment with paint as supplied by manufacturer of equipment.

.4 Do not paint over nameplates.

.5 Keep sprinkler heads free of paint.

3.1 SITE TOLERANCES

.6 Walls: no defects visible from a distance of 1000 mm at 90 degrees to surface.

.7 Ceilings: no defects visible from floor at 45 degrees to surface when viewed using final lighting source.

.8 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

3.2 RESTORATION

.9 Clean and re-install hardware items removed before undertaken painting operations.

.10 Remove protective coverings and warning signs as soon as practical after operations cease.

.11 Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.

.12 Protect freshly completed surfaces from paint droppings and dust. Avoid scuffing newly applied paint.

END OF SECTION

Part 1 General

.1 Furnish and install all window manual roller shades with valances including all accessories and fastenings required for a complete operable installation as specified herein.

1.2 REFERENCES

.1 Flame-resistant materials shall pass or exceed one or more of the following tests:

- .1 National Fire Protection Association (NFPA) 701 (small scale for horizontal applications)
- .2 Department of Transportation Motor Vehicle Safety Standard 302 Flammability of Interior Materials
- .3 California Administrative Code Title 19
- .4 Federal Standard 191 Method 5903 (used by Port Authority of New York and New Jersey for drapery, curtain, and upholstery material)
- .5 Boston Fire Department Teat BFD IX-1
- .6 New York State Uniform Fire Prevention and Building Code

1.3 DESIGN REQUIREMENTS

.1 Design Roller Blinds to following requirements:

- .1 Be designed in a manner that allows wear susceptible parts to be replaceable by either the user or the manufacturer.
- .2 A guarantee of at least five-years of available replacement parts following discontinue of the products manufacture.
- .3 Be accompanied by instructions for replacing or repairing worn parts, including inventory numbers for parts and procedures for ordering replacement parts.
- .4 Be designed in a manner that permits effective disassembly of components in order to permit recycling of materials for which recycling markets exist.

1.4 SHOP DRAWINGS

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

.2 Submit shop drawings to Indicate dimensions in relation to window jambs, operator details, head anchorage details, hardware and accessories details.

1.5 SAMPLES

.1 PRODUCT DATA: Manufacturer’s descriptive literature shall be submitted indicating materials, finishes, construction and installation instructions and verifying that product meets requirements specified. Manufacturers recommendations for maintenance and cleaning shall be included.

.2 DRAWINGS AND DIAGRAMS: Wiring diagrams of any motorized components or units, working and assembly drawings shall be supplied as requested.

.3 SAMPLE: supply one sample shade of each type specified in this contract for approval. Supplied units shall be furnished complete with all required components, mounting and associated hardware, instructions and warranty.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Remove and dispose from site all packaging materials at appropriate recycling facilities.

.2 Dispose of all packaging material in appropriate on-site bin for recycling in accordance with site waste management program.

Part 2 Products

2.1 MATERIALS AND FABRICATION

.1 Shade measurements shall be accurate to within + 1/8” or as recommended in writing by manufacturer

.1 Fabrics: Inherently anti-static, flame retardant, fade and stain resistant, light filtering, 1% openness factor. Fabric weights between 19-20 oz/sq.yd. containing polyester or vinyl.

.2 Colour and finish: as selected by Consultant. Provide full color range samples for selection.

.2 ROLLER: Circular-shaped painted extruded aluminum tubes with thicker wall & ribs provide additional strength while locking into place the clutch & end plug. 3” outside diameter extruded tube to have a .090 wall thickness. 2” outside diameter extruded tube to have a .072” wall thickness (1 ½” & 1 1/8” tubes have .055” wall thickness) providing strength & durability.

.3 CONTROL SYSTEM: Adjustment-free continuous qualified #10 stainless steel ball chain ((90-lb. test)) and pulley clutch operating system allows precise control and ensures a uniform look. Clutch will develop no more than ½ pound drag for ease of lifting. Counter balanced and designed for smooth, trouble-free operation.

.4 END PLUG: Heat stabilized fiber reinforced plastic outside sleeve and center shaft provide bearing surfaces on which the roller rides ensuring smooth, wear resistant operation.

.5 BOTTOM ROD: Extruded aluminum weight in a Sealed Pocket Hem Bar for tracking adjustments and provides uniform look.

.6 MOUNTING HARDWARE: Manufacturer’s standard .07” nickel-plated, C1008/1010 cold rolled steel universal brackets including end plug bracket with lock down retainer device.

.7 Aluminum Fascia Valance: 3” mm wide.

2.2 QUALITY ASSURANCE:

.1 SUPPLIER: Manufacturer, subsidiary or licensed agent shall be approved to supply the products specified, and to honor any claims against product presented in accordance with warranty.

.2 INSTALLER: Installer or agent shall be qualified to install specified products by prior experience, demonstrated performance and acceptance of requirements of

manufacturer, subsidiary, or licensed agent. Installer shall be responsible for an acceptable installation.

.3 UNIFORMITY: Provide Manual Roller Shades of only one manufacturer for entire project.

2.3 DELIVERY, STORAGE AND HANDLING:

.1 Product shall be delivered to site in manufacturer's original packaging.

.2 Product shall be handled and stored to prevent damage to materials, finishes and operating mechanisms.

2.4 WARRANTY:

.1 Lifetime Limited Warranty. Fabrics warranted for 5 years.

Part 3 Execution

3.1 INSTALLATION

.1 Inspect site, mounting surfaces, installation conditions and field measurement for this work.

.2 Installation shall comply with manufacturer's specifications, standards and procedures.

.3 Use non corrosive metal fasteners for installation, concealed in final assembly.

.4 Adequate Clearance shall be provided to permit unencumbered operation of shade and hardware.

.5 Clean finish installations of dirt and finger marks. Leave work area clean and free of debris.

.6 Demonstrate operation method and instruct owner's personnel in the proper operation and maintenance of the blinds.

3.2 SIZE AND LOCATION SCHEDULE

.1 Provide window shade for all Upper Floor Windows

.2 Size as indicated on drawings.

.3 Sizes are Approximate and must be site verified prior to ordering

END OF SECTION

SPRINGHILL SERVICE CENTRE RENOVATIONS

CUMBERLAND COUNTY
43 Main St., Upper Level
Springhill, NS

dp18022

DESIGN PLUS ARCHITECTURE
ARCHITECTURAL

MEW Maricor
MECHANICAL

MEW Maricor
ELECTRICAL

ISSUED FOR TENDER / LANCEMENT DE L'APPEL D'OFFRES

2020-03-03

LIST OF DRAWINGS

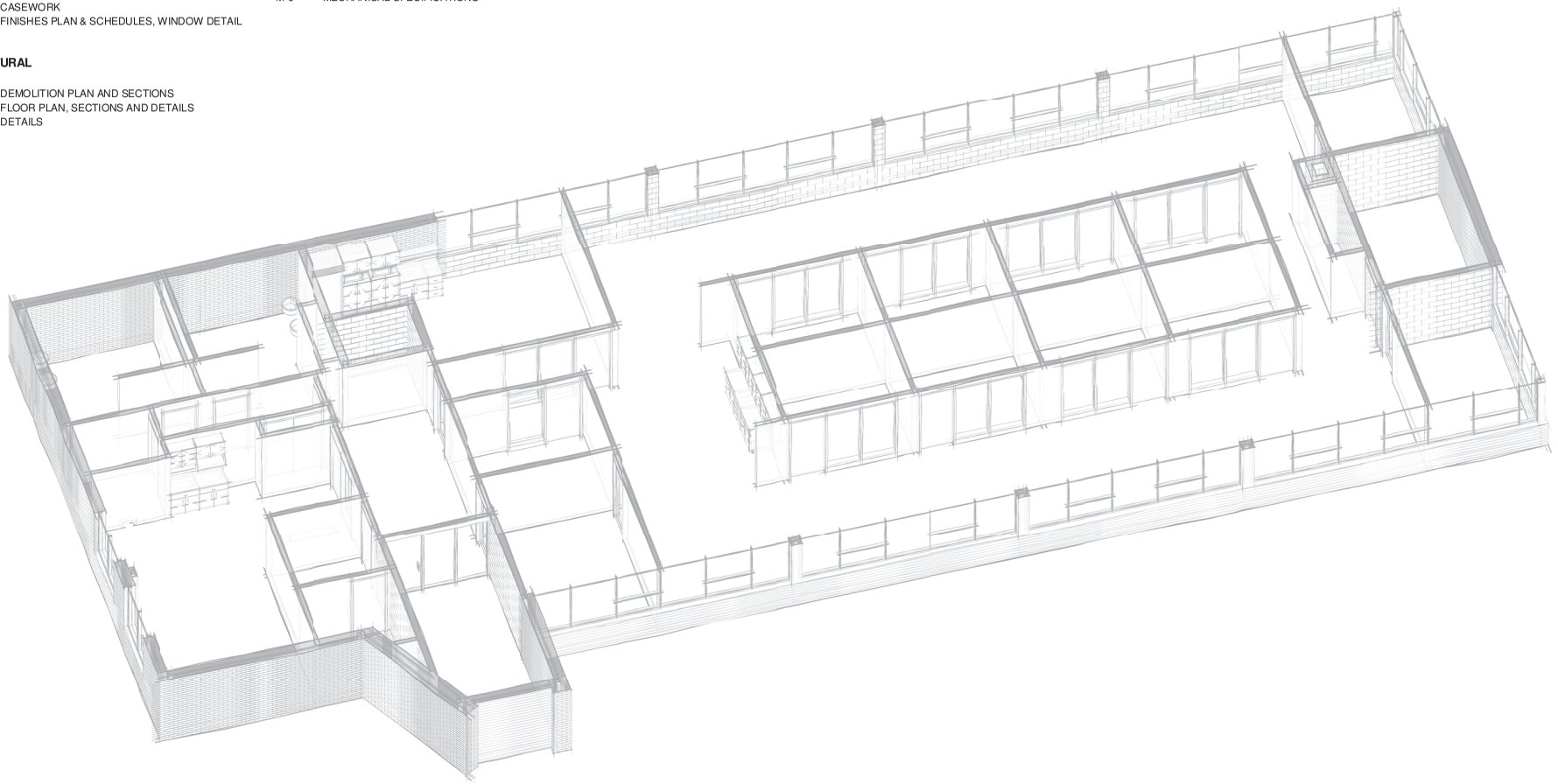
A-1	UPPER LEVEL - DEMOLITION PLAN, ROOF PLAN & DETAILS
A-2	UPPER LEVEL - CONSTRUCTION PLAN, SCHEDULES & DETAILS
A-3	UPPER LEVEL REFLECTED CEILING PLAN & DETAILS
A-4	WINDOW ELEVATIONS & DETAIL
A-5	CASEWORK
A-6	FINISHES PLAN & SCHEDULES, WINDOW DETAIL

M-1	UPPER FLOOR PLAN - NEW SPRINKLER HEAD LAYOUT
M-2	MAIN FLOOR PLAN - HVAC
M-3	UPPER FLOOR PLAN - HVAC
M-4	BASEMENT FLOOR PLAN - HVAC
M-5	DETAILS AND SCHEDULES - HVAC
M-6	MECHANICAL SPECIFICATIONS

E-1	ELECTRICAL UPPER FLOOR LIGHTING PLAN AND LUMINAIRE SCHEDULE
E-2	ELECTRICAL UPPER FLOOR POWER & COMMUNICATIONS PLAN
E-3	ELECTRICAL SPECIFICATIONS

STRUCTURAL

L1	DEMOLITION PLAN AND SECTIONS
L2	FLOOR PLAN, SECTIONS AND DETAILS
L3	DETAILS

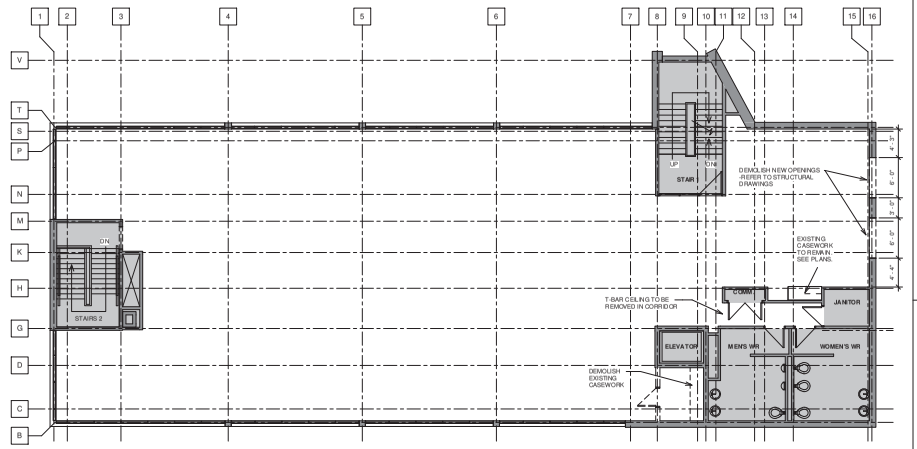


2015 NATIONAL BUILDING CODE DATA MATRIX

FORM 3 SE

ITEM	REVIEW INFORMATION								CODE REFERENCE	
1	PROJECT ADDRESS: SPRINGHILL PROJECT DESCRIPTION: OFFICE RT-UP PROJECT TYPE: ☐ NEW CONSTRUCTION ☐ ADDITION ■ RENOVATION ☐ CHANGE OF USE								■ PART 3	☐ PART 9
2	ALTERNATE SOLUTION PROPOSED: ☐ YES ■ NO								DIV. A 1.2.1 & DIV. C 2.3.1	
3	TOTAL BUILDING AREA: 7350 S.F. EXISTING: 7350 S.F. NEW:								DIVISION A 1.4.1.2	DIVISION A 1.4.1.2
4	MAJOR OCCUPANCIES: GROUP: D DESCRIPTION: BUSINESS AND PERSONAL SERVICES OCCUPANCIES								3.1.2.1.(1)	9.10.2
5	BUILDING CLASSIFICATION (MOST RESTRICTIVE GROUP UNDER ITEM 4): GROUP D, UP TO 3 STOREYS, SPRINKLERED								3.2.2.20.-61.	-
6	OCCUPANT LOAD: ■ BY sq.m. / PERSON ☐ BY DESIGN OF BUILDING LOWER FLOOR: EXISTING MAIN FLOOR: EXISTING UPPER FLOOR: 45 PERSONS								3.1.17.	9.9.1.3.
7	NUMBER OF STORIES ABOVE GRADE: 3 BELOW GRADE:								DIVISION A 1.4.1.2.	DIVISION A 1.4.1.2.
8	BUILDING HEIGHT: 55 ft.									
9	NUMBER OF FACADES FACING STREETS: 2								3.2.2.10.	-
10	FIRE WALLS:			☐ YES		■ NO			3.1.10.	9.10.11.
11	SPRINKLER SYSTEM:			■ YES, EXISTING		☐ NO			3.2.1.5.	9.10.1.3.
12	FIRE ALARM SYSTEM			■ YES		☐ NO			3.2.4.	9.10.18.2.
13	HIGH BUILDING:			☐ YES		■ NO			3.2.6.	-
14	VERTICAL SERVICE SPACES:			☐ YES		■ NO			3.6.3.	-
15	PERMITTED CONSTRUCTION TYPE:			☐ COMBUSTIBLE		☐ NON-COMBUSTIBLE		■ BOTH	3.2.2.20.-61.	-
	PROPOSED CONSTRUCTION TYPE:			☐ COMBUSTIBLE		☐ NON-COMBUSTIBLE		■ BOTH		
16	REQUIRED FIRE RESISTANCE RATING (HOURS)								3.2.2.20.-61.	9.10.8.1.
	ASSEMBLY LOCATION	HORIZONTAL ASSEMBLY		LISTED DESIGN ULC No.		SUPPORTED ASSEMBLY (WALLS, COLUMNS)		LISTED DESIGN ULC No.		
	FLOORS	45 min.		EXISTING		45 min.		EXISTING		
	ROOF	N/A				N/A				
17	SPATIAL SEPARATION								3.2.3.	9.10.14.
	WALL LOCATION	AREA OF EXP. BUILDING FACE	LIMITING DISTANCE	L/H OR H/L	MAX. % OF OPENINGS	MIN. FIRE RESIST. RATING	TYPE OF CONST.	TYPE OF CLADDING		
	NORTH		> 9m	N/A	100%	N/A				
	EAST		> 9m	N/A	100%	N/A				
	SOUTH		> 9m	N/A	100%	N/A				
	WEST		> 9m	N/A	100%	N/A				
18	MAXIMUM TRAVEL DISTANCE: ACTUAL = 25m REQUIRED = 45m								3.4.2.	9.9.7.-8.
19	BARRIER FREE DESIGN: ■ YES ☐ NO, EXPLAIN:								NB REGULATION 201 1-91	

NOTES:



1 / A-1 UPPER LEVEL DEMOLITION PLAN
1/8" = 1'-0"

LEGEND

	EQUIPMENT / FURNITURE (N.I.C.)
XXXX	ROOM NUMBER - NEW
XXXX	ROOM NUMBER - EXISTING
X	WALL TYPE
XXXX	NEW DOOR AND DOOR NUMBER
	EXISTING DOOR & FRAME TO REMAIN
	DOOR, FRAME AND WALL TO BE DEMOLISHED
	AREAS NOT IN CONTRACT
	NEW CASE WORK
N/C	NOT IN CONTRACT
A/F	ABOVE FLOOR FINISH

GENERAL NOTES:

1. IT IS THE GENERAL CONTRACTOR'S RESPONSIBILITY TO COORDINATE ALL WORK WITH RELATED SUBTRADES FOR DOOR, WINDOW, AND EQUIPMENT OPENINGS, INSERTS AND ITEMS TO BE BUILT INTO FOUNDATION, FOOTINGS, SLABS, AND WALLS AND WHEN INTEGRATING NEW EQUIPMENT/SYSTEMS INSTALLATIONS INTO EXISTING BUILDING SYSTEMS.

2. EXISTING SITE CONDITIONS MAY REQUIRE RE-CONFIGURATION OF EXISTING SYSTEMS, BOTH HIDDEN AND VISIBLE, TO ACCOMMODATE INSTALLATION OF NEW CONSTRUCTION. THESE EXISTING SYSTEMS
INCLUDE, BUT ARE NOT LIMITED TO, EXISTING ELECTRICAL FEEDS, EXISTING ELECTRICAL PANELS AND DATA RACKS, EXISTING MECHANICAL DUCTWORK, EXISTING STATIONARY EQUIPMENT PLACEMENT, EXISTING PLUMBING, ETC.

3. THE CONTRACTOR SHALL BE AWARE THAT EXISTING SITE CONDITIONS MAY REQUIRE SOME DEVIATION FROM THE DETAILS OF CONSTRUCTION AS SHOWN IN THESE DOCUMENTS.

4. ALL DIMENSIONS ARE TO BE CONFIRMED ON SITE BEFORE STARTING WORK. REPORT ANY DISCREPANCIES TO THE ARCHITECT.

5. THE GENERAL CONTRACTOR IS RESPONSIBLE TO PATCH AND REPAIR ALL AREAS DAMAGED DURING WORK, TO MATCH ADJACENT CONSTRUCTION. SUCH AREAS INCLUDE, BUT ARE NOT LIMITED TO FLOORS, WALLS AND CEILINGS. THE SAME APPLIES TO AREAS WHERE NEW ELECTRICAL AND MECHANICAL DEVICES ARE INSTALLED, OR EXISTING ELECTRICAL AND MECHANICAL DEVICES ARE REMOVED. THE
CONTRACTORS SHALL FAMILIARIZE THEMSELVES WITH ELECTRICAL/MECHANICAL DRAWINGS TO DETERMINE THE EXTENT OF SUCH WORK.

6. ALL SURFACES ARE TO BE MADE GOOD TO RECEIVE NEW FINISHES.

7. ALL CUTTING, DRILLING OF HOLES, PATCHING, ETC. REQUIRED BY MECHANICAL AND ELECTRICAL TRADES BY GENERAL CONTRACTOR.

8. REPAIR EXTERIOR WALLS AND ROOFS WHERE NEW MECHANICAL/ ELECTRICAL EQUIPMENT ARE INSTALLED/REMOVED - SEE MECHANICAL/ ELECTRICAL DRAWINGS FOR EXTENT OF SUCH WORK.

9. ALL PENETRATIONS AND JUNCTIONS AT FIRE RATED WALLS, FLOORS, CEILINGS OR ROOFS ARE TO BE SEALED WITH FIRESTOP MATERIAL.

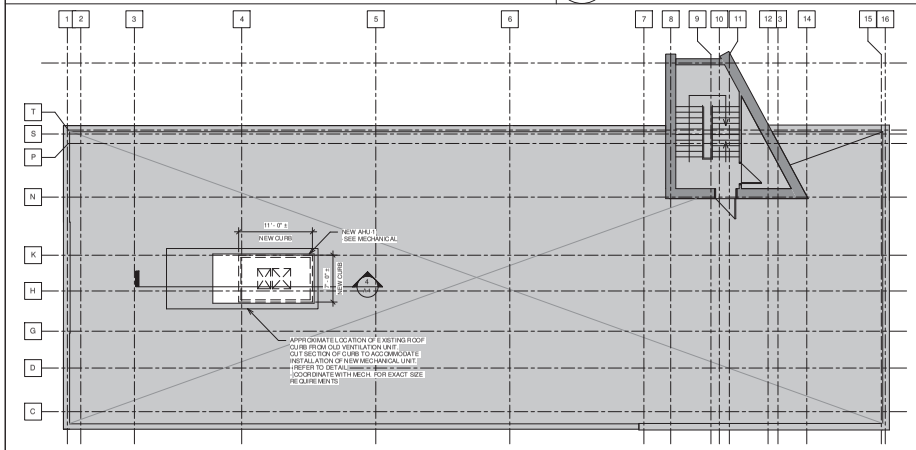
CONSTRUCTION NOTES:

1. PROVIDE SOLID BACKING FOR ALL MILLWORK AND WALL/CEILING MOUNTED EQUIPMENT AND FIXTURES.

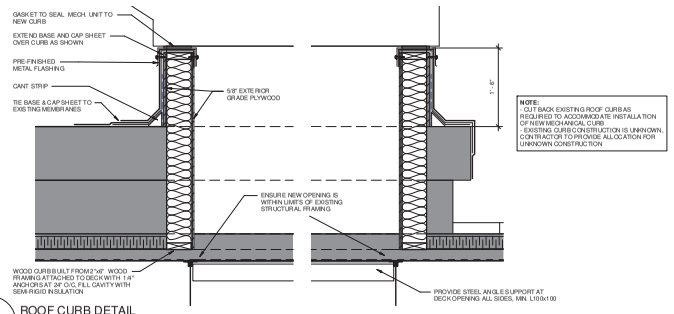
DEMOLITION NOTES:

1. ALL GLAZING (THROUGHOUT BUILDING) TO BE REMOVED AND REPLACED WITH NEW. REFER TO WINDOW ELEVATIONS AND DETAIL, SHEET A4.

2. ALL WINDOW SILLS TO BE DEMOLISHED AND REPLACED WITH NEW. REFER TO TYPICAL DETAIL.

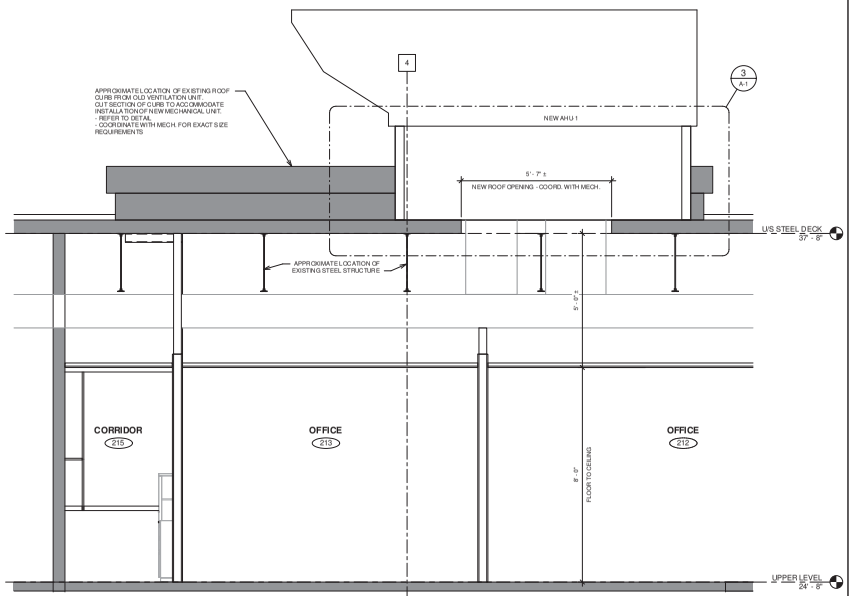


2 / A-1 ROOF PLAN
1/8" = 1'-0"



NOTE:
- CUT BACK EXISTING ROOF CURB AS REQUIRED TO ACCOMMODATE INSTALLATION OF NEW MECHANICAL CURB.
- EXISTING CURB CONSTRUCTION IS UNKNOWN, CONTRACTOR TO PROVIDE ALL OCATION FOR UNKNOWN CONSTRUCTION

3 / A-1 ROOF CURB DETAIL
1" = 1'-0"



4 / A-1 SECTION DETAIL @ ROOF CURB
1/2" = 1'-0"

DESIGN PLUS ARCHITECTURE
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EXCEPT FOR REFERENCE PURPOSES, THE DRAWINGS AND SPECIFICATIONS SHALL NOT BE USED FOR ADDITIONS OR ALTERATIONS TO THE PROJECT OR ON ANY OTHER PROJECT.

CONSULTANTS EXPERT-CONSEIL

MCW Maricor
MECHANICAL / ELECTRICAL

STAMP SCEAU

LICENCED ARCHITECT

1	ISSUED FOR TENDER	2019-08-15
REVISIONS		DATE

A/B DETAIL LOCATION OF DETAIL

CLIENT CLIENT

PROJECT PROJET

SPRINGHILL SERVICE CENTRE RENOVATIONS
43 Main St., Upper Level
Springhill, NS

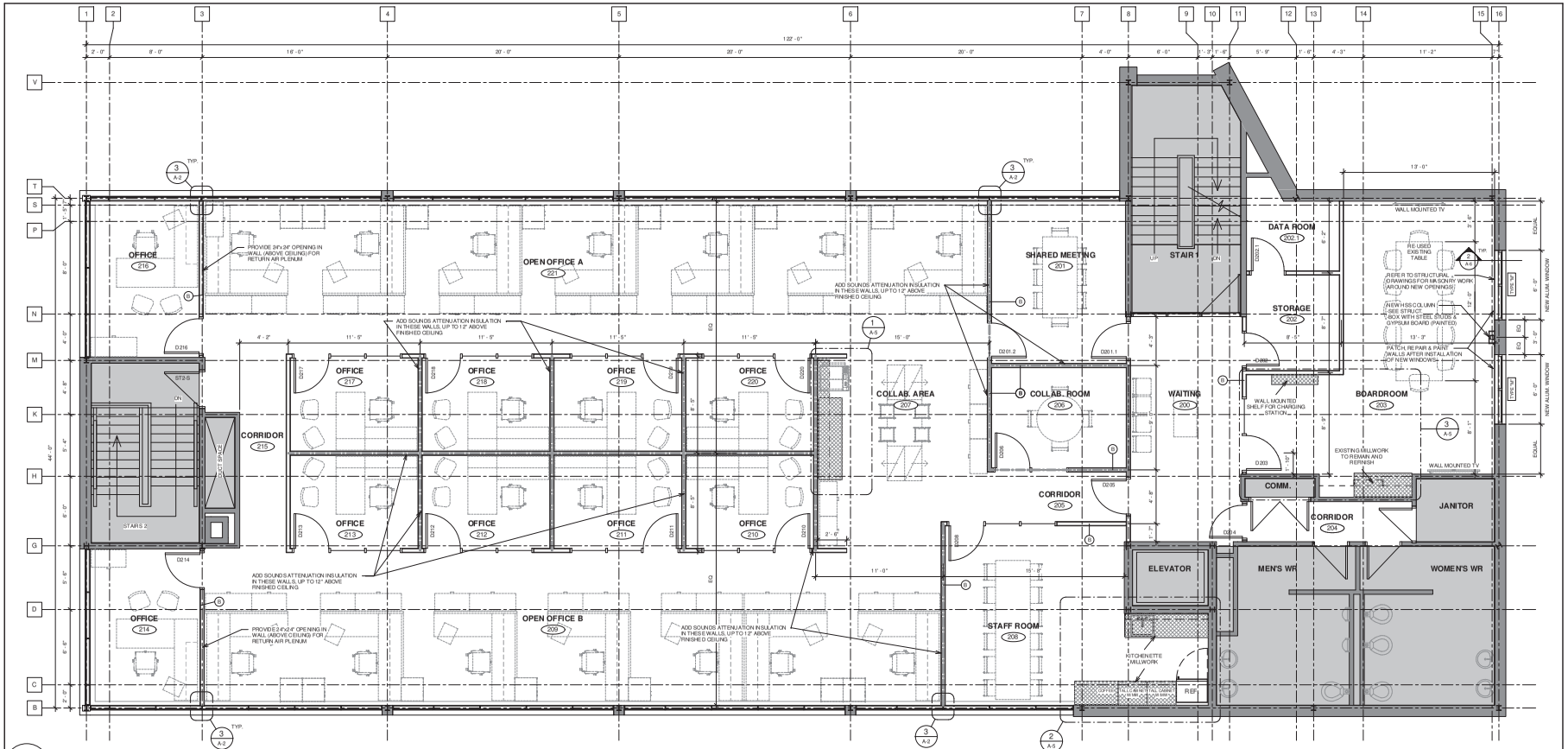
DRAWING DESSIN

UPPER LEVEL - DEMOLITION PLAN, ROOF PLAN & DETAILS

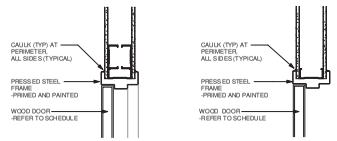
DRAWN BY DESSINÉ PAR: RA, BG, JL
APPROVED BY APPROUVÉ PAR: LG
DATE: 2020-01-03
SCALE ÉCHELLE: As indicated

A-1

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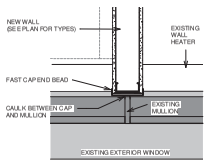


1 A-2 UPPER LEVEL - CONSTRUCTION PLAN
1/4" = 1'-0"



HEAD DETAIL (DOOR) **JAMB DETAIL (DOOR)**

2 A-2 THROATS
1 1/2" = 1'-0"

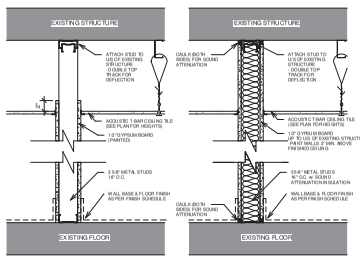


3 A-2 TYPICAL WALL TO WINDOW MULLION JOINT DETAIL
1 1/2" = 1'-0"

WALL TYPES - INTERIOR

NOTES:

- ALL INTERIOR WALLS TO BE TYPE "A" UNLESS NOTED OTHERWISE
- ALL WALLS TO BE PAINTED TO 2" ABOVE FINISH CEILING OR TO u/s OF DECK IF NO CEILING IS SPECIFIED

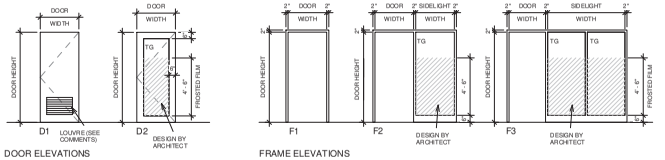


TYPE A **TYPE B**

DOOR SCHEDULE

DOOR No.	FROM ROOM	TO ROOM	DOOR PANEL WIDTH	DOOR PANEL HEIGHT	DOOR PANEL THICK.	DOOR PANEL ELEV.	DOOR PANEL MAT.	DOOR PANEL FINISH	DOOR PANEL GLAZING	DOOR FRAME ELEV.	DOOR FRAME SIDELITE WIDTH	DOOR FRAME MAT.	DOOR FRAME FINISH	FIRE RATING	HWSET	COMMENTS
L01		L01	3'-0"	7'-0"	2"	AL-1	AL	A	IG	AL-1		AL	A		1.0	
L01	ST2-L		3'-0"	7'-0"	2"	AL-1	AL	A	IG	AL-1		AL	A		1.0	
M01	M01		6'-0"	7'-0"	2"	AL-3	AL	A	IG	AL-3		AL	A		2.0	
M02	M01	M02	6'-0"	7'-0"	2"	AL-3	AL	A	TG	AL-3		AL	A		3.0	
201.1	201	200	3'-0"	7'-0"	2"	02	W	V	Y	F1		M	PT	NO	5.0	
201.2	201	201	3'-0"	7'-0"	2"	02	W	V	Y	F1		M	PT	NO	5.0	
202	201	202	2'-10"	7'-0"	2"	D1	W	V	N	F1		M	PT	NO	6.0	
202.1	202	202.1	2'-10"	7'-0"	2"	D1	W	V	N	F1		M	PT	NO	7.0	24"x16" LOUVRE
203	203	200	3'-0"	7'-0"	2"	02	W	V	N	F3	3'-0"	M	PT	NO	5.0	
204	204	200	2'-10"	7'-0"	2"	D1	W	V	N	F1		M	PT	NO	9.0	
205	205	200	3'-0"	7'-0"	2"	02	W	V	Y	F1		M	PT	NO	10.0	
206	206	205	3'-0"	7'-0"	2"	D1	W	V	N	F3	3'-0"	M	PT	NO	8.0	
208	208	207	3'-0"	7'-0"	2"	D1	W	V	N	F3	6'-0"	M	PT	NO	8.0	
210	210	209	3'-0"	7'-0"	2"	D1	W	V	N	F3	6'-0"	M	PT	NO	4.0	
211	211	209	3'-0"	7'-0"	2"	D1	W	V	N	F3	6'-0"	M	PT	NO	4.0	
212	209	212	3'-0"	7'-0"	2"	D1	W	V	N	F3	6'-0"	M	PT	NO	4.0	
213	209	213	3'-0"	7'-0"	2"	D1	W	V	N	F3	6'-0"	M	PT	NO	4.0	
214	209	214	3'-0"	7'-0"	2"	02	W	V	Y	F1		M	PT	NO	4.0	
216	221	216	3'-0"	7'-0"	2"	02	W	V	Y	F1		M	PT	NO	4.0	
217	217	M1A	3'-0"	7'-0"	2"	D1	W	V	N	F3	6'-0"	M	PT	NO	4.0	
218	218	221	3'-0"	7'-0"	2"	D1	W	V	N	F3	6'-0"	M	PT	NO	4.0	
219	221	219	3'-0"	7'-0"	2"	D1	W	V	N	F3	6'-0"	M	PT	NO	4.0	
220	221	220	3'-0"	7'-0"	2"	D1	W	V	N	F3	6'-0"	M	PT	NO	4.0	
ST2-S	215	ST2-S	3'-0"	6'-8"	2"	D1	W	V		F1			PT	NO	11.0	NEW CARD READER - REFER TO HARDWARE

AL ALUMINUM
A ANODIZED
V VENEER
W WOOD
M METAL
PT PAINT
TG TEMPERED GLASS
IG INSULATED GLASS



DOOR ELEVATIONS

FRAME ELEVATIONS

LEGEND

- EQUIPMENT / FURNITURE (NIC)
- XXXX ROOM NUMBER - NEW
- XXXX ROOM NUMBER - EXISTING
- WALL TYPE
- NEW DOOR AND DOOR NUMBER
- EXISTING DOOR & FRAME TO REMAIN
- DOOR, FRAME AND WALL TO BE DEMOLISHED
- AREAS NOT IN CONTRACT
- NEW CASEWORK

NIC NOT IN CONTRACT
AFF ABOVE FLOOR FINISH

DESIGN PLUS ARCHITECTURE

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STAMP SCEAU

LICENCED ARCHITECT

REVISIONS	DATE
1 ISSUED FOR TENDER	2019-08-15

A/B DETAIL LOCATION OF DETAIL

CLIENT CLIENT

PROJECT PROJET

SPRINGHILL SERVICE CENTRE RENOVATIONS
43 Main St., Upper Level
Springhill, NS

DRAWING DESSIN

UPPER LEVEL - CONSTRUCTION PLAN, SCHEDULES & DETAILS

DRAWN BY DESSINÉ PAR
RA, BG, JL

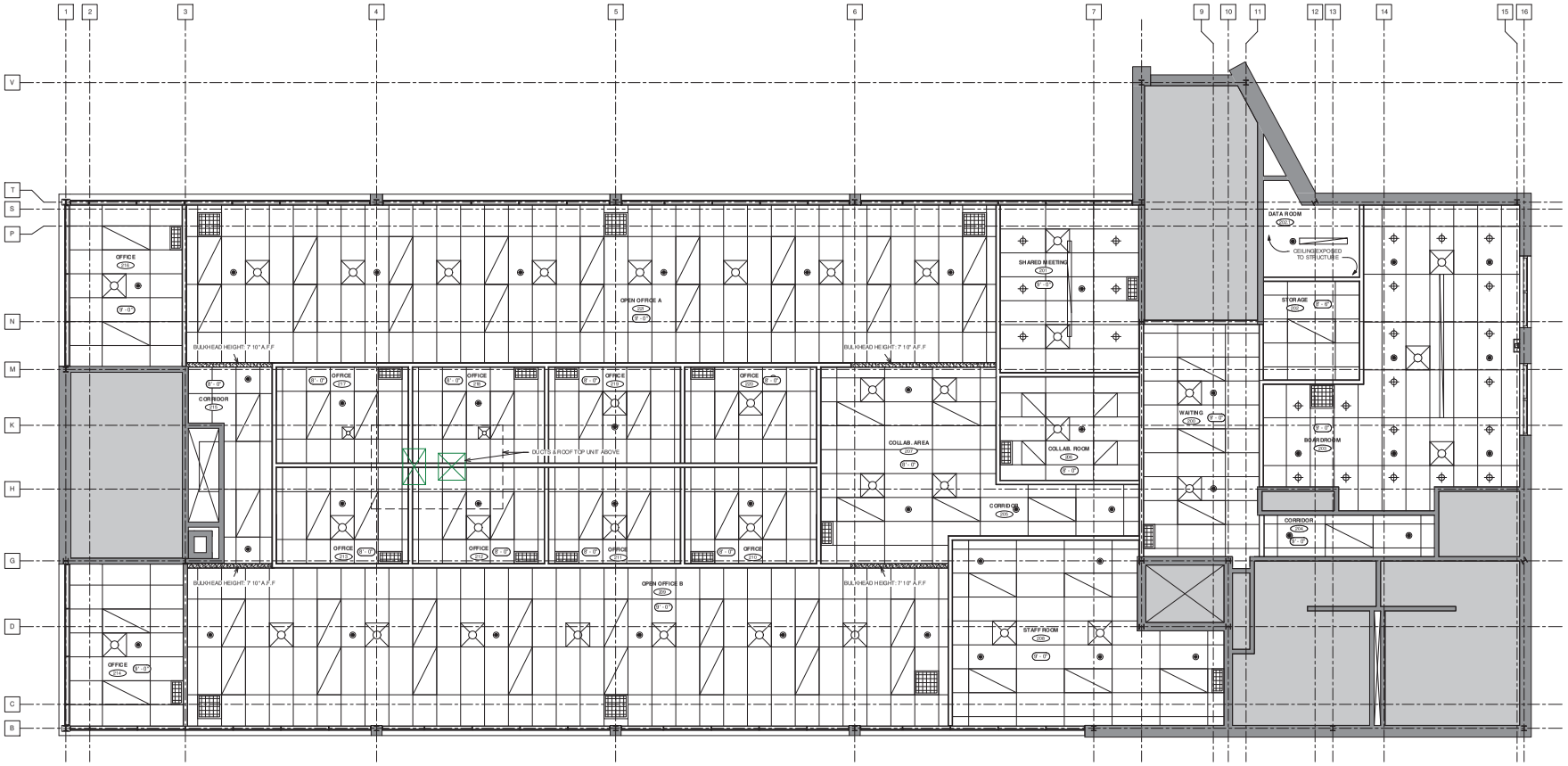
APPROVED BY APPROUVÉ PAR
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DATE
2020-01-03

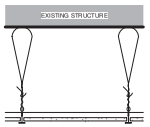
SCALE ÉCHELLE
As indicated

A-2

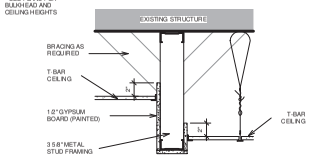
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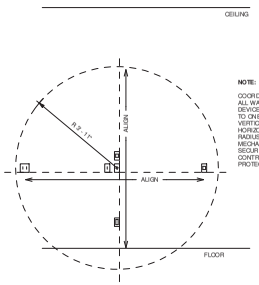
1 UPPER LEVEL - REFLECTED CEILING PLAN
A-3 1/4" = 1'-0"



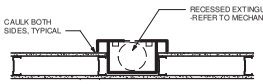
2 TYP. T-BAR CEILING ASSEMBLY
A-3 1 1/2" = 1'-0"



3 TYP. GYPSUM BOARD BULKHEAD
A-3 1 1/2" = 1'-0"



4 WALL DEVICES COORDINATION
A-3 1 : 25



5 FIRE EXTINGUISHER DETAIL
A-3 1 : 10

LEGEND

- XXXX — ROOM NUMBER - NEW
- XXXX — ROOM NUMBER - EXISTING
- XXXX — CEILING HEIGHT ABOVE FLOOR FINISH
- X — CONSTRUCTION NOTES
- T-BAR CEILING
- LIGHT FIXTURE - SEE ELECTRICAL
- LIGHT FIXTURE - SEE ELECTRICAL
- LIGHT FIXTURE - SEE ELECTRICAL
- RETURN GRILLE - SEE MECHANICAL
- SUPPLY GRILLE - SEE MECHANICAL
- SPRINKLER HEAD - SEE MECHANICAL

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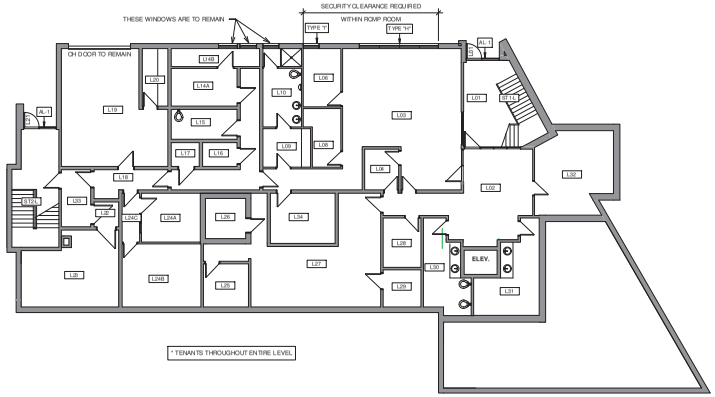
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DATE
2020-01-03

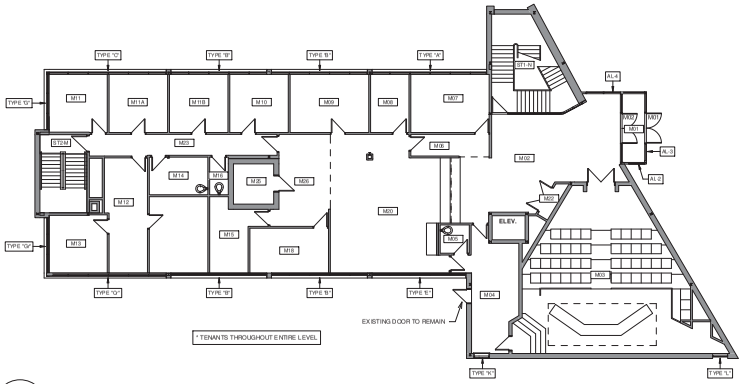
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A-3

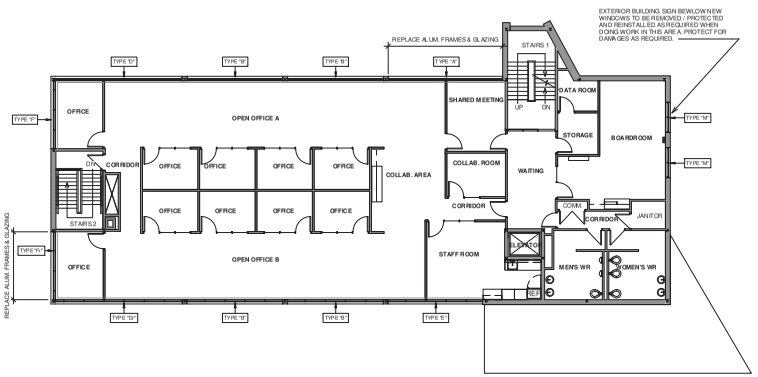
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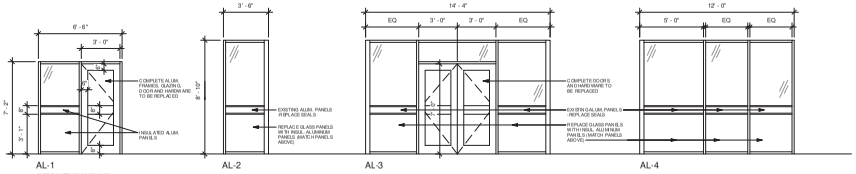
1 LOWER FLOOR - WINDOW LOCATION
A-4 3/32" = 1'-0"

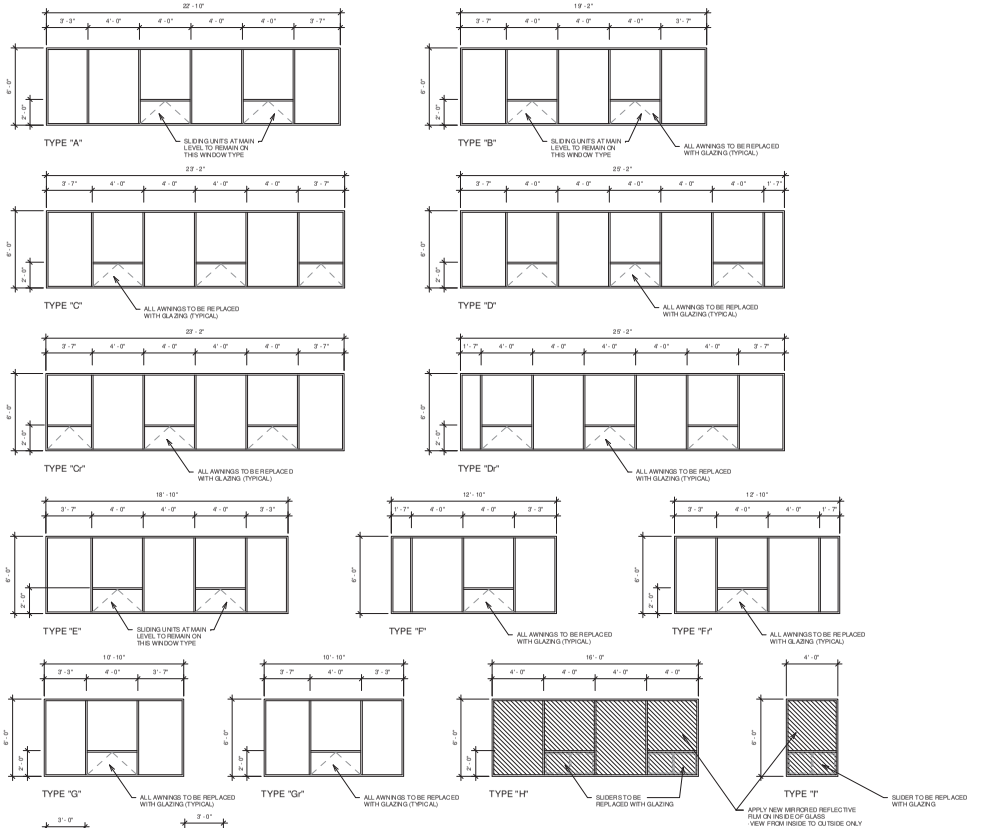


2 MAIN FLOOR - WINDOW LOCATION
A-4 3/32" = 1'-0"

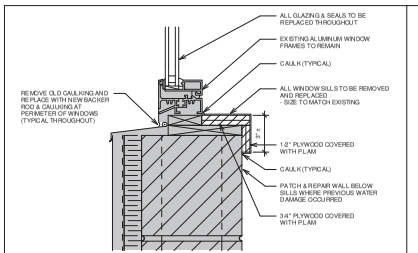


3 UPPER LEVEL - WINDOW LOCATION
A-4 3/32" = 1'-0"





WINDOW ELEVATIONS
1 : 50



4 TYPICAL WINDOW SILL DETAIL
A-4 3" = 1'-0"

NOTES:

1. - UNLESS NOTED OTHERWISE:
   A. - ALL EXISTING ALUMINUM FRAMING IS TO REMAIN UNLESS NOTED OTHERWISE
   B. - ALL EXTERIOR GLAZING & SEALS IN WINDOWS & DOORS TO BE REPLACED THROUGHOUT, UNLESS NOTED OTHERWISE
   C. - ALL AWNINGS ARE TO BE REMOVED AND REPLACED WITH FIXED GLAZING UNITS
   D. - ALL WINDOW SILLS (INTERIOR SIDE) ARE TO BE REPLACED - REFER TO DETAIL
2. - ALL DIMENSIONS ARE APPROXIMATE AND SHALL BE CONFIRMED ON SITE
3. - PROVIDE TEMPORARY HOARDING AS REQUIRED IN AREAS THAT ARE OCCUPIED
4. - SECURITY CLEARANCE REQUIRED FOR ROMP ROOMS. PROVIDE SECURE / LOCKABLE HOARDING AT EXTERIOR OF BUILDING WHEN WORK IS ONGOING.
5. WINDOWS WITH AC UNITS TO BE REPLACED WITH GLAZING AFTER CENTRAL AIR CONDITIONING SYSTEM IS INSTALLED AND OPERATIONAL

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Springhill, NS

DRAWING DESSIN

WINDOW ELEVATIONS & DETAIL

DRAWN BY DESSINÉ PAR
RA, BG, JL

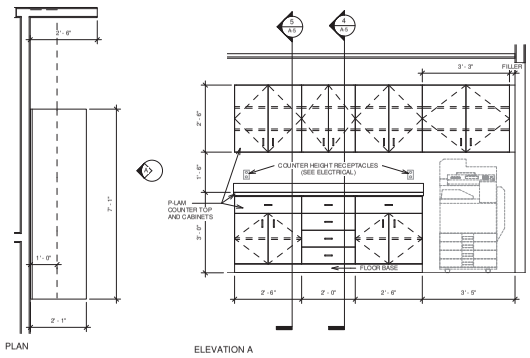
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DATE
2020-01-03

SCALE ÉCHELLE
As indicated

A-4

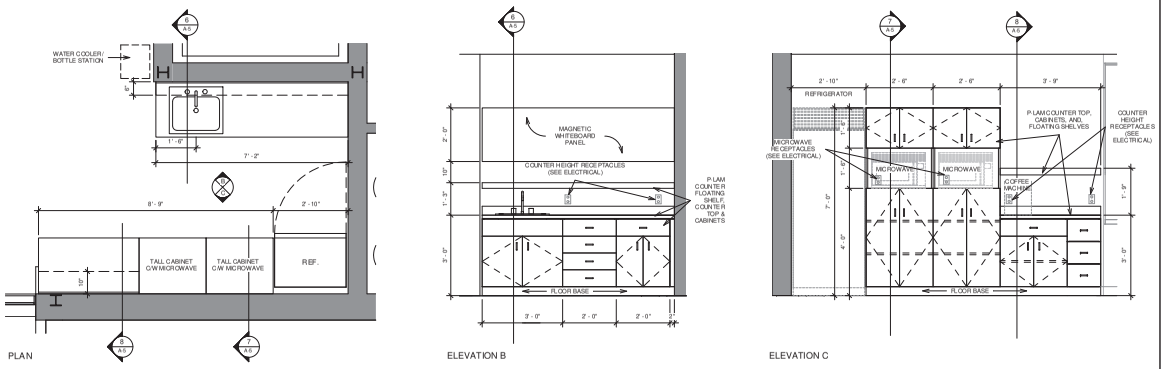
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PLAN ELEVATION A

1 PRINTING STATION - CASEWORK

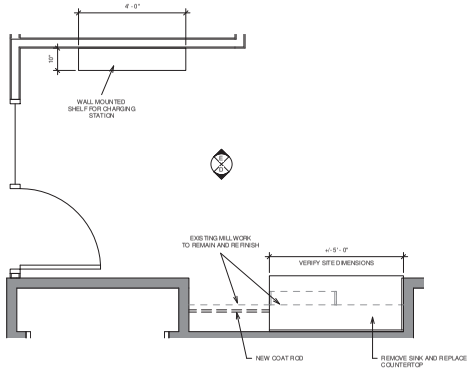
A-5 1/2" = 1'-0"

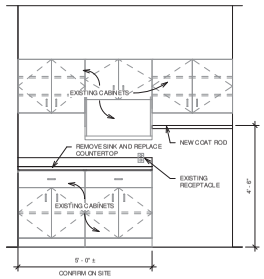


PLAN ELEVATION B ELEVATION C

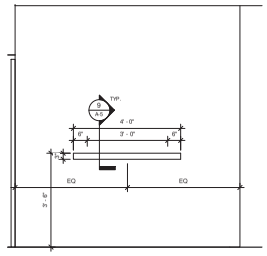
2 STAFF ROOM - CASEWORK

A-5 1/2" = 1'-0"





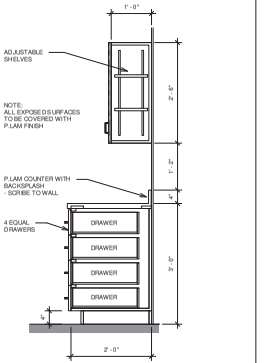
ELEVATION D



ELEVATION E

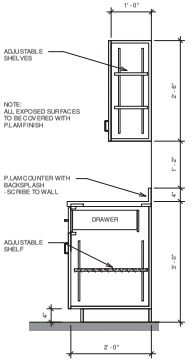
3 BOARDROOM - CASEWORK

A-5 1/2" = 1'-0"



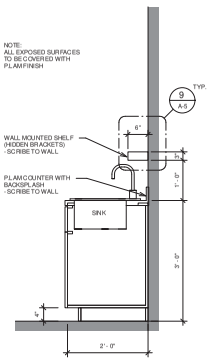
4 PRINTING STATION SECTION

A-5 3/4" = 1'-0"



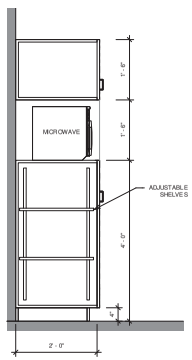
5 PRINTING STATION SECTION

A-5 3/4" = 1'-0"



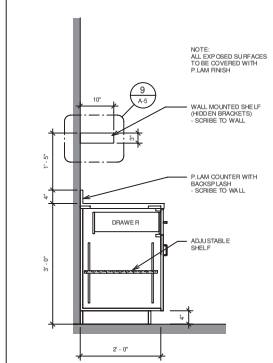
6 SINK SECTION

A-5 3/4" = 1'-0"



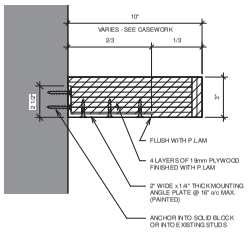
7 UPRIGHT CABINET SECTION

A-5 3/4" = 1'-0"



8 KITCHENETTE SECTION

A-5 3/4" = 1'-0"



9 TYPICAL WALL MOUNTED SHELF DETAIL

A-5 3" = 1'-0"

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SPRINGHILL SERVICE CENTRE RENOVATIONS

43 Main St., Upper Level
Springhill, NS

DRAWING DESSIN

CASEWORK

DRAWN BY DESSINÉ PAR
RA, BG, JL

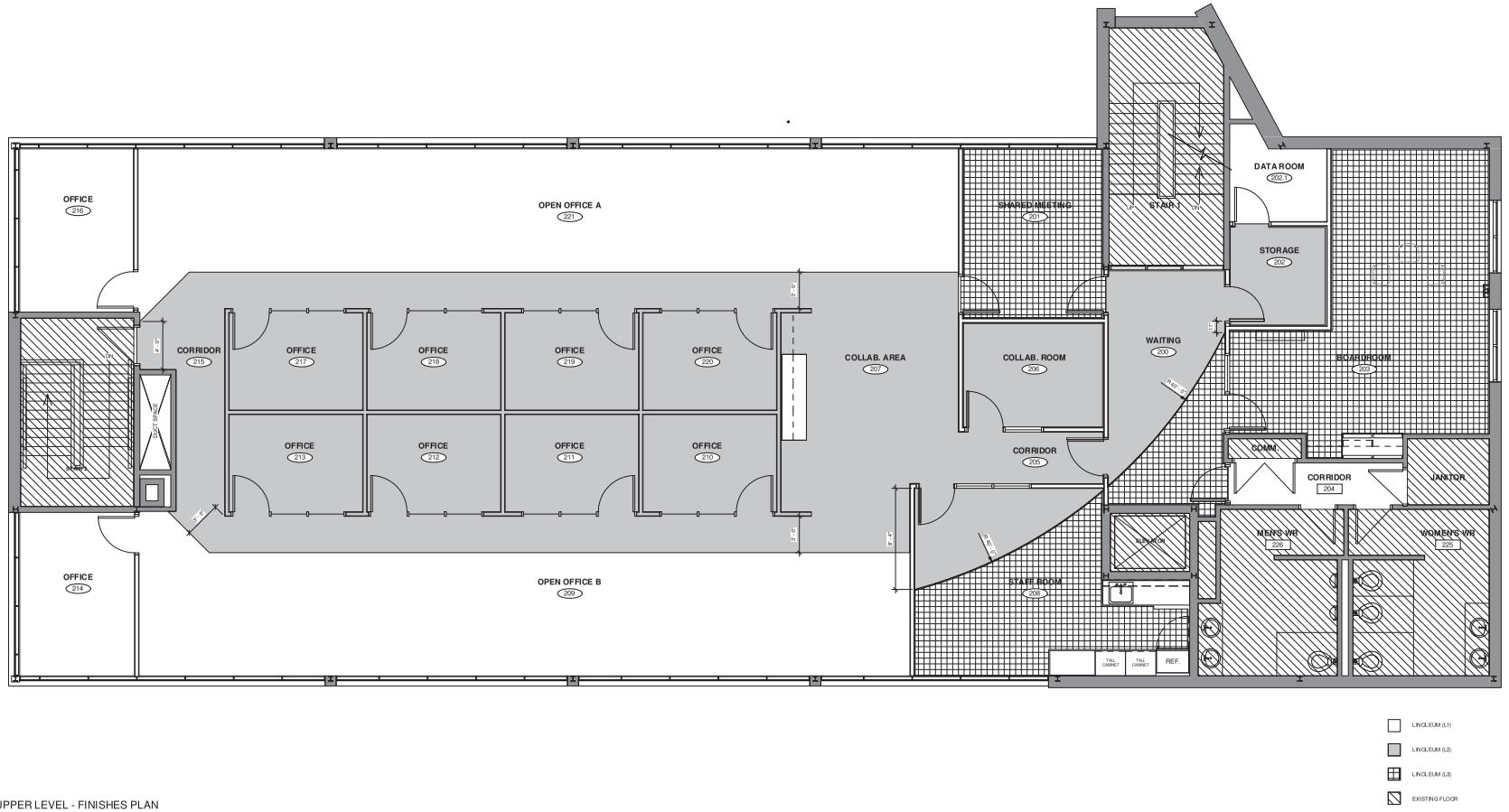
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DATE
2020-01-03

SCALE ÉCHELLE
As indicated

A-5

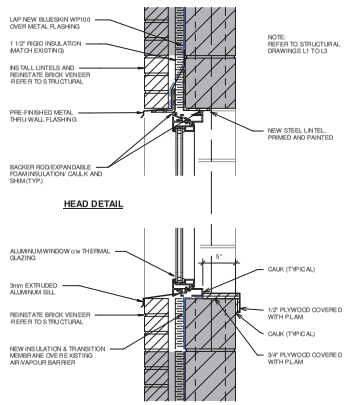
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1 UPPER LEVEL - FINISHES PLAN
A-6 1/4" = 1'-0"

FINISH SCHEDULE

ROOM #	ROOM NAME	FLOOR: SHEET FLOORING	FLOOR: PAINT (SEALANT)	BASE: RUBBER	WALL: PAINT - GYPSUM BOARD	CEILING: PAINT - GYPSUM BOARD	CEILING: T-BAR	COMMENTS
200	WAITING	•		•	•		•	
201	SHARED MEETING	•		•	•		•	
202	STORAGE		•	•	•			
202.1	DATA ROOM		•	•	•			
203	BOARDROOM	•		•	•		•	
204	CORRIDOR						•	PATCH & REPAIR EXISTING AS REQUIRED
205	CORRIDOR	•		•	•		•	
206	COLLAB. ROOM	•		•	•		•	
207	COLLAB. AREA	•		•	•	•	•	
208	STAFF ROOM	•		•	•		•	
209	OPEN OFFICE B	•		•	•		•	
210	OFFICE	•		•	•		•	
211	OFFICE	•		•	•		•	
212	OFFICE	•		•	•		•	
213	OFFICE	•		•	•		•	
214	OFFICE	•		•	•		•	
215	CORRIDOR	•		•	•	•	•	
216	OFFICE	•		•	•		•	
217	OFFICE	•		•	•		•	
218	OFFICE	•		•	•		•	
219	OFFICE	•		•	•		•	
220	OFFICE	•		•	•		•	
221	OPEN OFFICE A	•		•	•		•	
225	WOMENS WR				•	•		EXISTING FLOOR AND BASE TO REMAIN
226	MENS WR				•	•		EXISTING FLOOR AND BASE TO REMAIN



2 WINDOW DETAILS
A-6 1 1/2" = 1'-0"

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DRAWING DESSIN

FINISHES PLAN & SCHEDULES, WINDOW DETAIL

DRAWN BY DESSINÉ PAR
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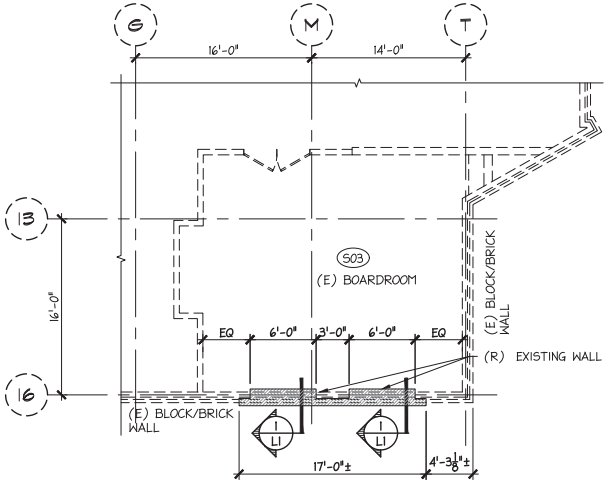
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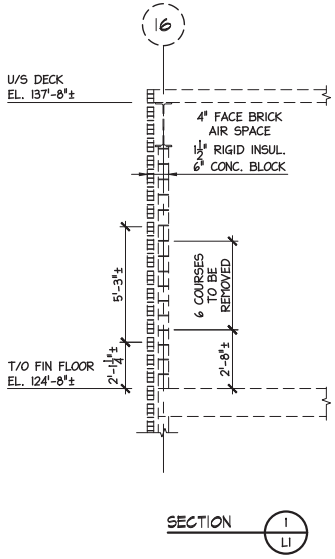
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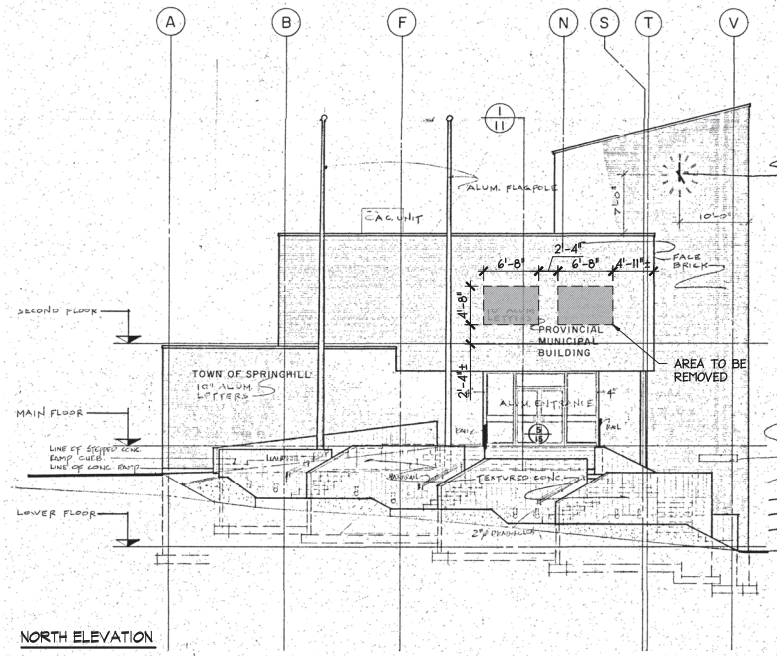


PARTIAL SECOND FLOOR DEMOLITION PLAN

1. ELEVATION TOP OF FINISH FLOOR = 124'-8"±
2. (E) DENOTES EXISTING
3. (R) DENOTES EXISTING TO BE REMOVED



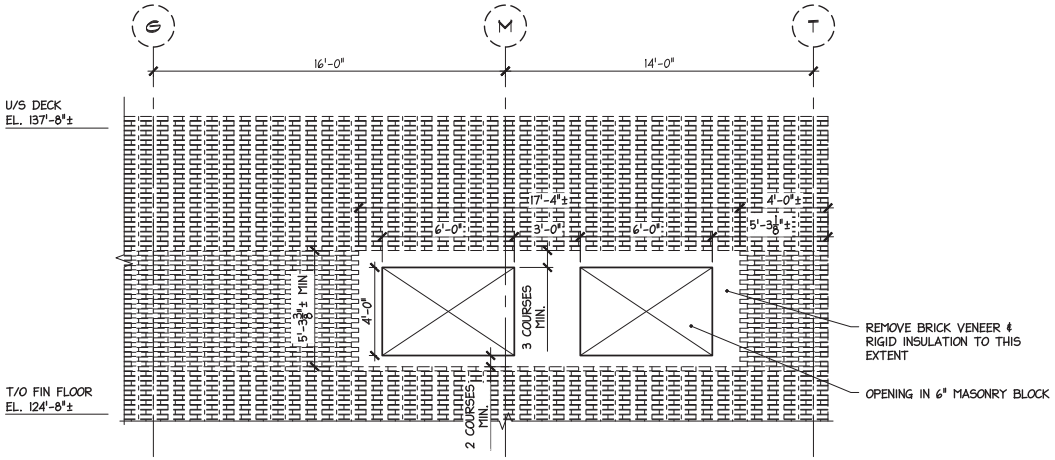
SECTION 1/LI



NORTH ELEVATION

FIELD REVIEW GENERAL NOTES BY J.M. GIFFIN ENGINEERING INC. (GIFFIN ENGINEERING)

1. J.M.GIFFIN ENGINEERING INC. PROVIDES FIELD REVIEW ONLY FOR THE WORK SHOWN ON THESE STRUCTURAL DRAWINGS. THIS REVIEW IS NOT A 'FULL TIME' REVIEW, BUT IS A PERIODIC REVIEW AT THE SOLE DISCRETION OF GIFFIN ENGINEERING'S ENGINEERS IN ORDER TO ASCERTAIN THAT THE WORK IS IN GENERAL CONFORMANCE WITH THE PLANS AND SUPPORT DOCUMENTS PREPARED BY GIFFIN ENGINEERING. FIELD REVIEWS BY GIFFIN ENINEERING ARE NOT CARRIED OUT FOR THE CONTRACTOR'S BENEFIT NOR DOES IT MAKE GIFFIN ENGINEERING GUARANTORS OF THE CONTRACTOR'S WORK. IT REMAINS THE CONTRACTOR'S RESPONSIBILITY TO BUILD THE WORK IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. GIFFIN ENGINEERING SHALL NOT BE RESPONSIBLE FOR THE ACTS OR OMISSIONS OF THE CONTRACTOR, SUB-CONTRACTOR, OR ANY OTHER PERSONS PERFORMING ANY OF THE WORK OR FOR THE FAILURE OF ANY OF THEM TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. GIFFIN ENGINEERING WILL REVIEW SHOP DRAWINGS PERTAINING TO WORK SHOWN ON GIFFIN ENGINEERING DRAWINGS. THE EXTENT OF THIS REVIEW IS AT THE SOLE DISCRETION OF GIFFIN ENGINEERING AND IS FOR THE SOLE PURPOSE OF ASCERTAINING GENERAL CONFORMANCE WITH THE STURCTURAL DESIGN, DETAILS AND DIMENSIONS INHERENT IN THE SHOP DRAWINGS, RESPONSIBILITY FOR WHICH SHALL REMAIN WITH THE CONTRACTOR SUBMITTING THEM AND THEIR APPOINTED DESIGN ENGINEER. SUCH REVIEW SHALL NOT RELIEVE THE CONTRACTOR OF HIS OR HER SOLE RESPONSIBILITY FOR ERRORS AND OMISSIONS IN THE SHOP DRAWINGS OR FOR MEETING ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS.
2. PROVIDE 2 DAYS ADVANCE NOTICE OF EACH REQUIRED FIELD REVIEW. FIELD REVIEWS SHALL BE SCHEDULED TO BE CARRIED OUT DURING NORMAL BUSINESS HOURS UNLESS SPECIAL ARRANGEMENTS ARE MADE WITH GIFFIN ENGINEERING.
3. THE WORK TO BE REVIEWED SHALL BE GENERALLY COMPLETE.



PARTIAL ELEVATION

1. CLEAN & REINSTATE EXISTING CLAY BRICK
2. 6" MASONRY BLOCK NOT SHOWN FOR CLARITY
3. REMOVE BRICK IN SAW TOOTH PATTERN SUFFICIENT TO INSTALL LINTELS AND FLASHING

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j.m. giffin engineering inc.
structural consultants
21042 Lower LaPlanche Street (Highway #2)
P.O. Box 189
Amherst, Nova Scotia
B4H 3Z2.
Bus. (902) 667-3300
E-Mail office@giffinengineering.com
www.giffinengineering.com

NO.	REVISIONS	NAME	DATE
1	ISSUED FOR TENDER	EA	19/08/15
0	ISSUED FOR REVIEW	MKJ	18-08-16

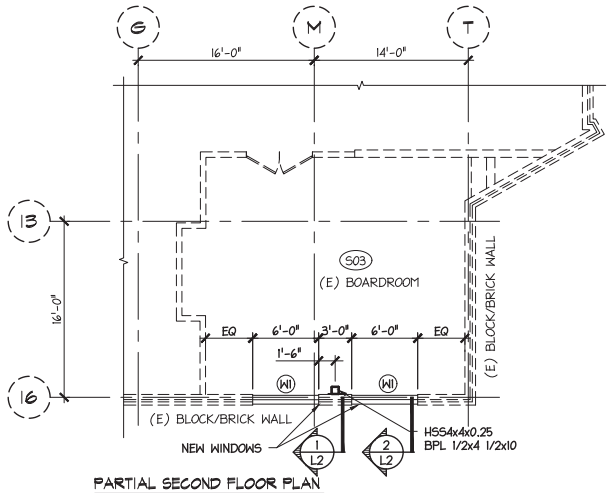
Stamp: REGISTERED PROFESSIONAL ENGINEER — PROVINCE OF NOVA SCOTIA — DATE: AUG. 15 2019 — B.J. GREEN — 6414

Drawn by:	MKJ
Checked by:	BJG
Date:	19-08-15
Scale:	AS NOTED

Project: SPRINGHILL TOWN HALL, NS RENOVATIONS

Sheet Title: DEMOLITION PLAN AND SECTIONS

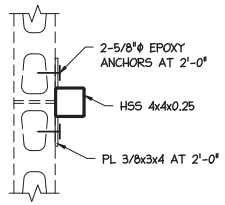
Job No.	Revision	Drawing no.:
J48-16618	0	L1



PARTIAL SECOND FLOOR PLAN

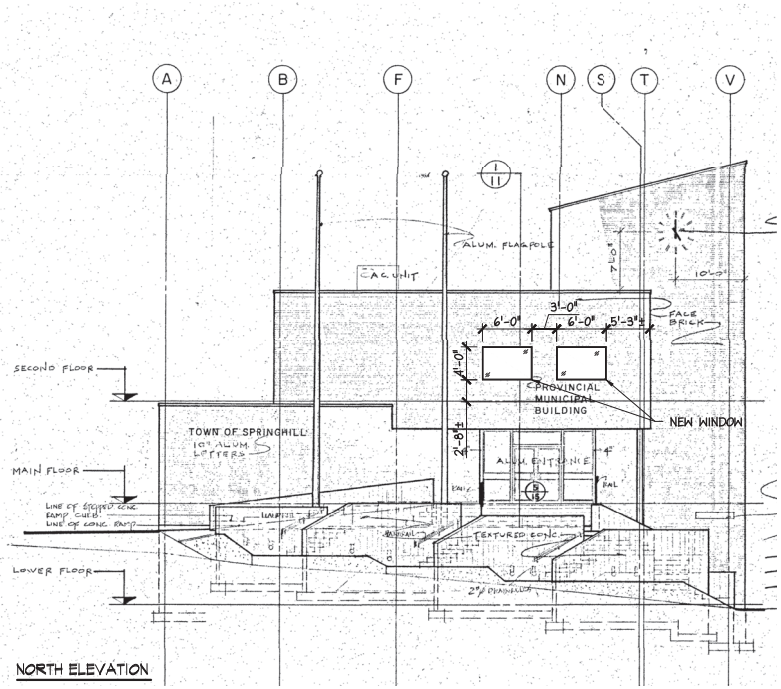
1. ELEVATION TOP OF FINISH FLOOR = 124'-8"±
2. NEW WINDOWS TO BE ALUMINUM FRAME DOUBLE GLAZED LOW-E ARGON
3. CLEAN & REINSTATE EXISTING CLAY BRICK
4. INTERIOR FINISH TO MATCH EXISTING

WINDOW SCHEDULE				
TYPE	SIZE	ROUGH OPEN	NOTES	QUANITY
W1	6'-0" x 4'-0"	SEE MANUFACTURER	DOUBLE GLAZED, LOW-E ARGON	2



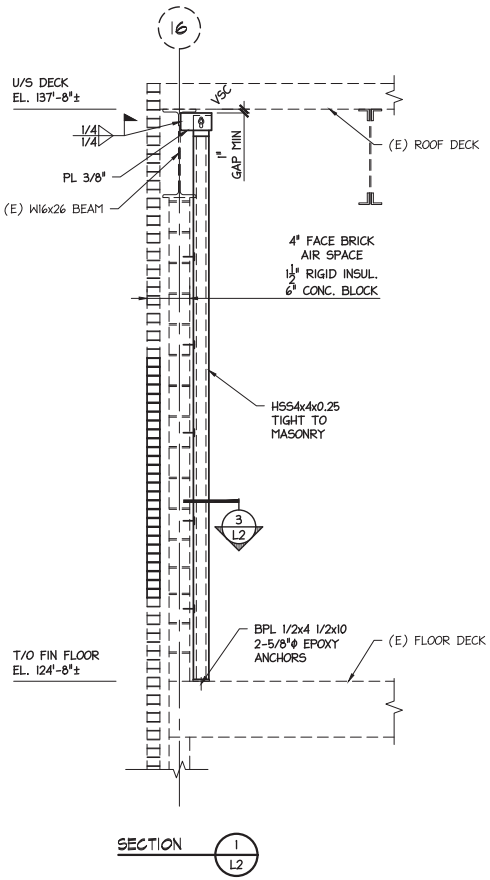
CONCRETE MASONRY GENERAL NOTES

1. COMPLETE MASONRY WORK ACCORDING TO SPECIFICATIONS CSA A371-04(R2009)
2. ALL MASONRY CONNECTIONS SHALL CONFORM TO CSA A370-04(R2009)
3. STANDARD CONCRETE MASONRY UNITS SHALL BE AS SHOWN ON ARCHITECTURAL DRAWINGS
4. TYPES OF MORTAR AND GROUTING SHALL BE ACCORDING TO CSA-A179-04(R2009)
5. REINFORCING OF MASONRY WALLS SHALL BE IN ACCORDANCE WITH SPECIFICATIONS AND AS SHOWN ON DRAWINGS
6. TRUSS TYPE HORIZONTAL REINFORCING SHALL BE 9 GUAGE RODS CONTINUOUS EVERY SECOND COURSE
7. VERTICAL REINFORCING SHALL BE AS SPECIFIED ON DRAWINGS. ALL VERTICAL REINFORCING SHALL BE CONTINUOUS FLOOR TO ROOF LEVEL AND DOWELED TO FOUNDATION WALL. GROUT BLOCK CELLS SOLID WITH 3,000 PSI CONCRETE.
8. INSTALL CONTINUOUS REINFORCED MASONRY BOND BEAMS AT ROOF AND FLOOR LEVELS AND OVER ALL OPENINGS (MINIMUM REINFORCING WILL BE 2-15M BARS)
9. VERTICAL REINFORCING REQUIRED, SHALL BE ONE 15M BAR AT ALL JAMBS OF DOOR AND WINDOW OPENINGS
10. LAP ALL REINFORCING AT CORNERS AND INTERSECTIONS OF CONCRETE BOND BEAMS
11. MINIMUM LAP FOR VERTICAL REINFORCING SHALL BE 25 BARS DIAMETERS

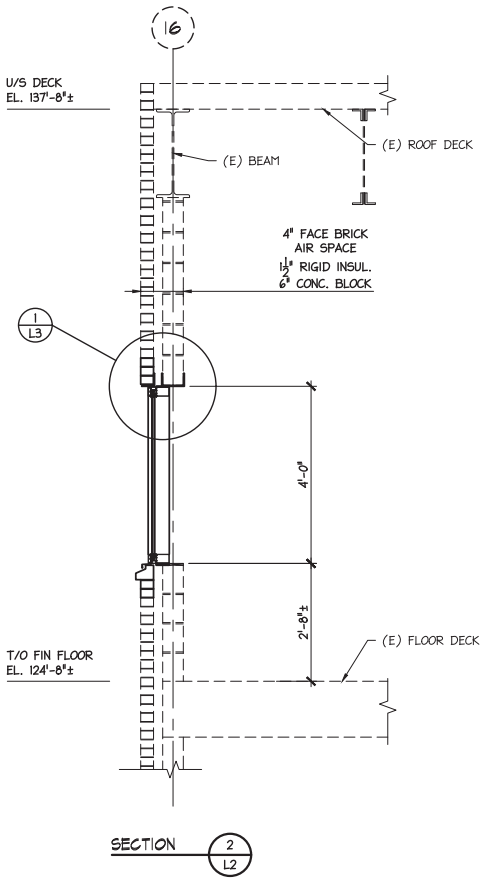


NORTH ELEVATION

DETAIL 3/L2



SECTION 1/L2



SECTION 2/L2

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0	ISSUED FOR REVIEW	MKJ	18-08-16

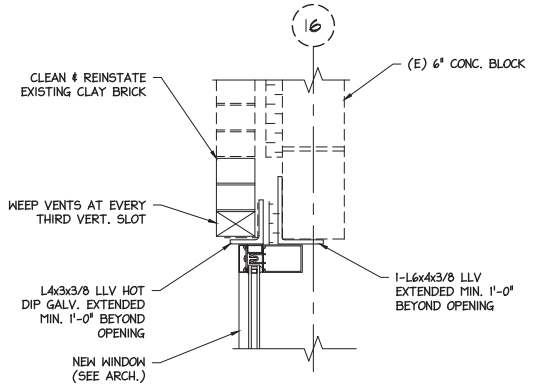
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Drawn by: MKJ
Checked by: BJG
Date: 19-08-15
Scale: AS NOTED

Project: SPRINGHILL TOWN HALL, NS RENOVATIONS

Sheet Title: FLOOR PLAN, SECTIONS AND DETAILS

Job No. J48-16618
Revision 0
Drawing no.: L2



HEADER DETAIL 1/L3

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Stamp

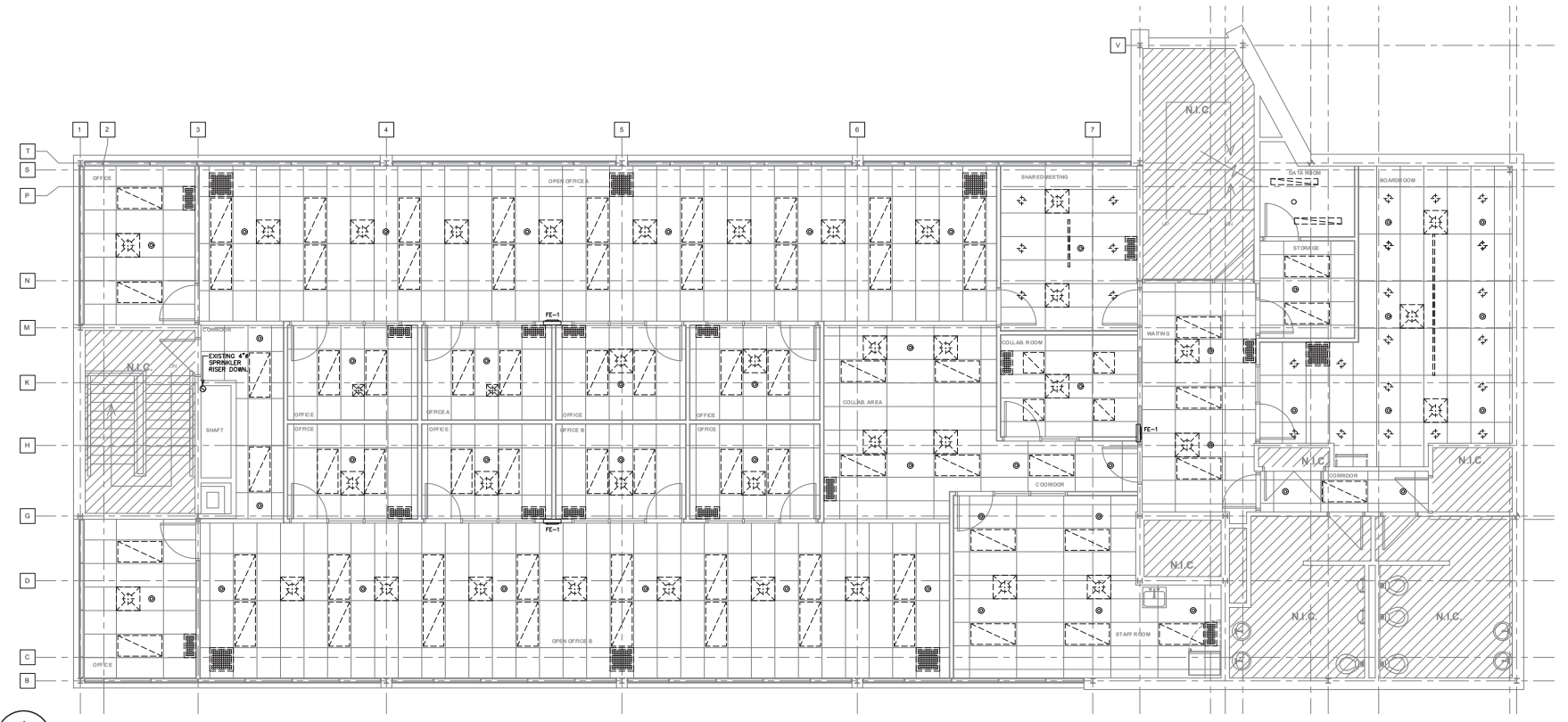
REGISTERED PROFESSIONAL ENGINEER
DATE: AUG. 15 2019
B.J. GREEN
6414
PROVINCE OF NOVA SCOTIA

Drawn by: MKJ
Checked by: BJG
Date: 19-08-15
Scale: AS NOTED

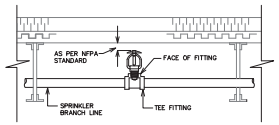
Project:
SPRINGHILL TOWN HALL, NS
RENOVATIONS

Sheet Title:
DETAILS

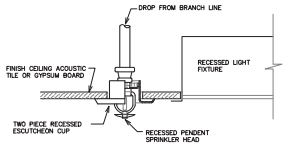
Job No. J48-16618
Revision 0
Drawing no.: L3



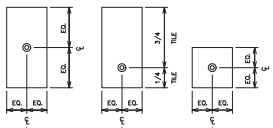
1 M-1 UPPER FLOOR PLAN - SPRINKLER HEAD LAYOUT 1/4"=1'-0"



2 M-1 TYPICAL UPRIGHT SPRINKLER DETAIL N.T.S.

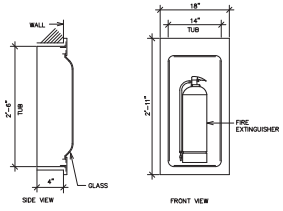


3 M-1 TYPICAL SEMI-RECESSED SPRINKLER DETAIL N.T.S.



NOTE:
TILES SHOWN ARE 610x1220mm (2'-0"x4'-0") AND 610x610mm (2'-0"x2'-0") SPRINKLER HEADS TO BE IN CENTRE OF OTHER IRREGULAR SIZE TILES

4 M-1 TYPICAL HEAD LOCATION DETAIL N.T.S.



NOTE:
SUPPLY AND INSTALL OF THE CABINET BY SPRINKLER CONTRACTOR.

5 M-1 RECESSED EXTINGUISHER CABINET DETAIL N.T.S.

DESIGN NOTES:

1. FIRE PROTECTION DESIGN SHALL BE AS PER NFPA 10–13 EDITION, NFPA 13–13 EDITION, NFPA 25–10 EDITION, NBC 2015 EDITION.
2. PLANS AND HYDRAULIC CALCULATIONS SHALL BE PREPARED AS PER NFPA 13–10 REQUIREMENTS AND SHALL BEAR THE SEAL AND SIGNATURE OF A PROFESSIONAL ENGINEER LICENSED OR REGISTERED TO PRACTICE IN THE PROVINCE OF NOVA SCOTIA.
3. FINAL LOCATION OF SPRINKLER HEADS AND PIPING SHALL BE COORDINATED ON SITE WITH ALL OTHER TRADES PRIOR TO INSTALLATION.
4. PROVIDE HANGERS AS PER NFPA 13 AND INCLUDE DETAILS AS PER THE REQUIREMENTS OF AUTHORITY HAVING JURISDICTION.
5. INSPECTION TO BE CARRIED BY THE CONSULTANT.
6. A NEW HYDROSTATIC TEST MUST BE DONE AFTER INSTALLATION IS COMPLETE AS PER NFPA 13.
7. PROVIDE A TEST CERTIFICATE FOR ABOVEGROUND PIPING AFTER INSTALLATION IS COMPLETE.
8. SPRINKLER TEST TO BE WITNESSED BY THE CONSULTANT.
9. SPRINKLER CONTRACTOR TO PROVIDE O&M INCLUDING AS–BUILT DRAWINGS HARD COPY FOLDED AND ELECTRONIC VERSION ON USB/THUMB DRIVE CONTAINING AS–BUILT DRAWINGS IN AUTOCAD FORMAT.

6 M-1 DESIGN NOTES

SYMBOL LEGEND

- TYPE "A" NEW UPRIGHT SPRINKLER HEAD.
- TYPE "B" NEW SEMI–RECESSED SPRINKLER HEAD.
- FE-1 SEMI–RECESSED FIRE EXTINGUISHER CABINET, C/W 10lbs ABC FIRE EXTINGUISHER.
- MECHANICAL SUPPLY DIFFUSERS
- MECHANICAL RETURN GRILLES
- LIGHTING FIXTURES REFER TO ELECTRICAL

7 M-1 SYMBOL LEGEND N.T.S.

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A / B DETAIL LOCATION OF DETAIL

CLIENT / CLIENT

PROJECT / PROJET

SPRINGHILL OFFICE FIT-UP
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Springhill, NS

DRAWING / DESSIN

UPPER FLOOR PLAN NEW SPRINKLER HEAD LAYOUT

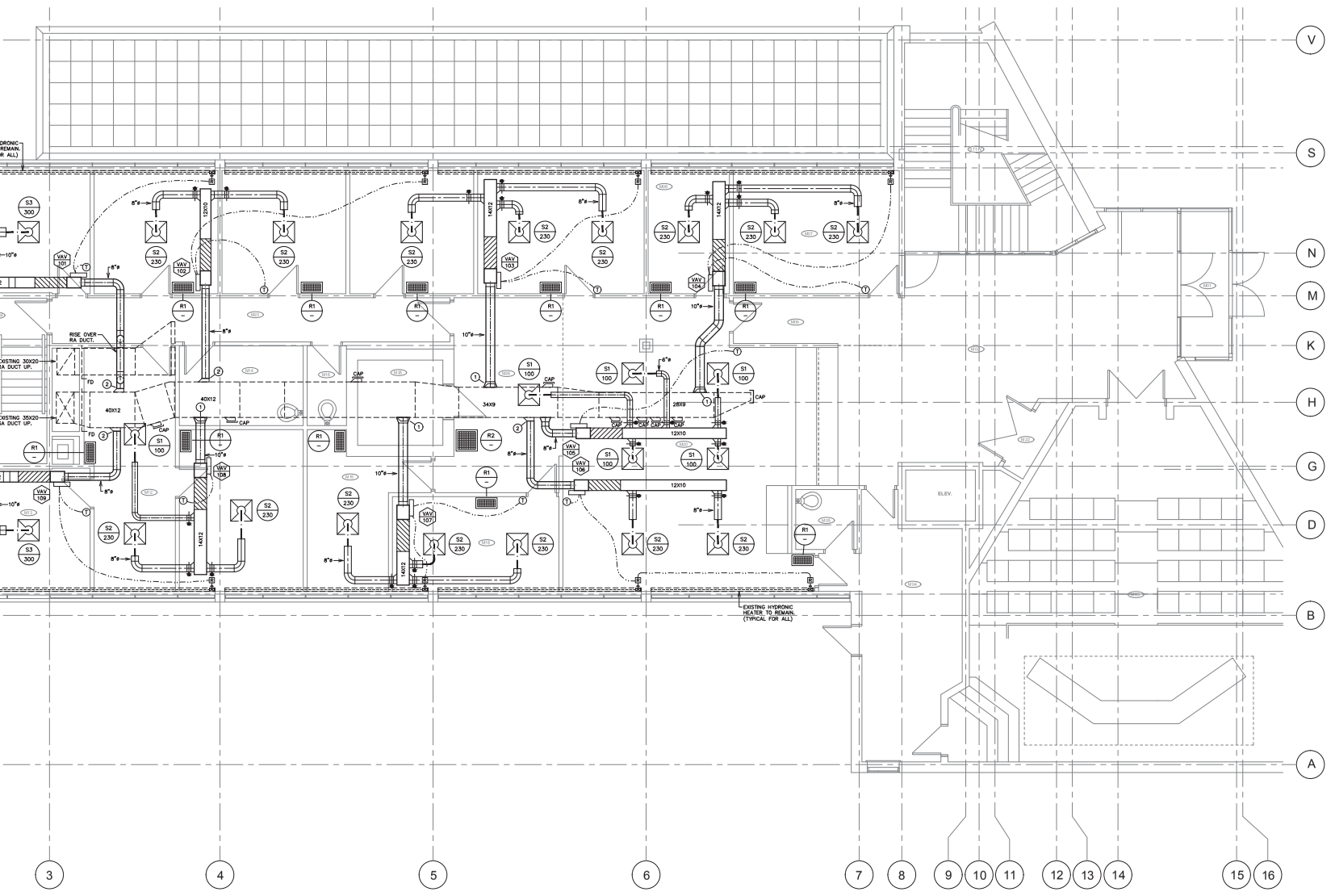
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APPROVED BY / APPROUVÉ PAR M.A.M.

DATE 2019-06-28

SCALE / ÉCHELLE AS NOTED

M-1



2 M-2 SYMBOL LEGEND N.T.S.

ROUND DUCTWORK
RECTANGULAR DUCTWORK
RECTANGULAR TO ROUND DUCTWORK
FLEXIBLE DUCT CONNECTION
VARIABLE AIR VOLUME BOX c/w ATTENUATOR (HATCHED AREA)
TEMPERATURE SENSOR c/w CONTROL WIRING
EXISTING HYDRONIC HEATER C/W CONTROL VALVE
EXISTING FIRE DAMPER
SUPPLY AIR DUCT RISER
RETURN AIR DUCT RISER
EXHAUST AIR DUCT RISER
RELAY c/w CONTROL WIRING
ANALOG INPUT CONTROL SIGNAL
ANALOG OUTPUT CONTROL SIGNAL
SPEED CONTROL
TRANSFER FAN
SUPPLY DIFFUSERS
RETURN GRILLES
LIGHTING FIXTURES REFER TO ELECTRICAL

3 M-2 DRAWING REFERENCE NOTES

DRAWING REFERENCE NOTES

1. EXISTING 8"ø/9"ø SUPPLY AIR TAKEOFF TO BE REMOVED AND REPLACED WITH A NEW 10"ø TAKEOFF.
2. CONNECT TO EXISTING SUPPLY AIR DUCT TAKEOFF.

1 M-2 MAIN FLOOR PLAN - HVAC 1/4"=1'-0"

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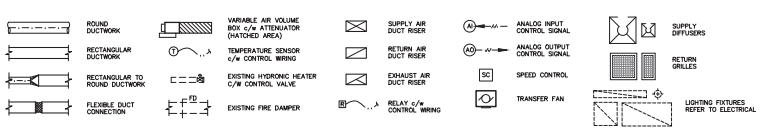
SPRINGHILL OFFICE FIT-UP
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Springhill, NS

DRAWING DESSIN

MAIN FLOOR PLAN HVAC

DRAWN BY DESSINÉ PAR
K.C.S.
APPROVED BY APPROUVÉ PAR
M.A.M.
DATE
2019-06-28
SCALE ÉCHELLE
AS NOTED

M-2

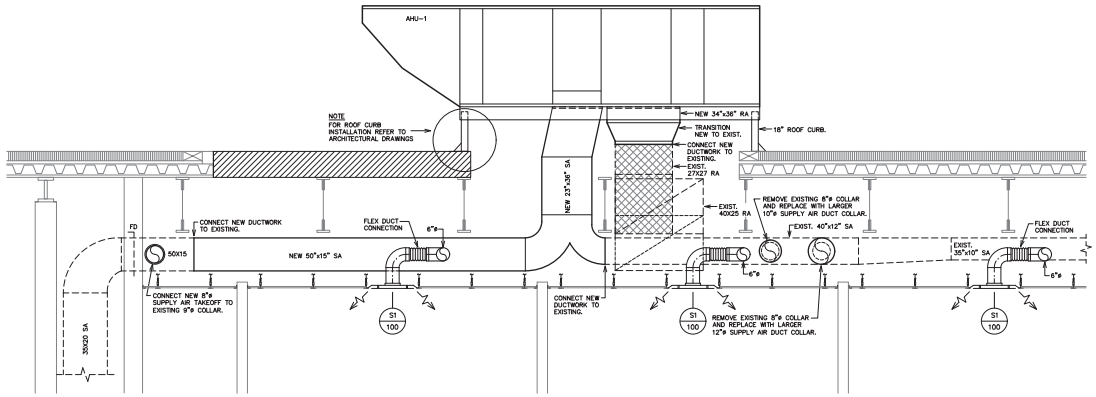


5 M-3 SYMBOL LEGEND

N.T.S.

1 M-3 UPPER FLOOR PLAN - HVAC

1/4"=1'-0"



2 M-3 NEW AHU-1 DUCTWORK CONNECTION SECTION

1/2"=1'-0"

ROOM #	ROOM DESCRIPTION
200	WAITING ROOM
201	SHARED MEETING ROOM
202	STORAGE
202.1	DATA ROOM
203	BOARDROOM
204	CORRIDOR
205	CORRIDOR
206	COLLAB. ROOM
207	COLLAB. AREA
208	STAFF ROOM
209	OPEN OFFICE B
210	OFFICE
211	OFFICE
212	OFFICE
213	OFFICE
214	OFFICE
215	CORRIDOR
216	OFFICE
217	OFFICE
218	OFFICE
219	OFFICE
220	OFFICE
221	OPEN OFFICE A

3 M-3 ROOM LIST

DRAWING REFERENCE NOTES

1. EXISTING 8"ø/9"ø SUPPLY AIR TAKEOFF TO BE REMOVED AND REPLACED WITH A NEW 10"ø TAKEOFF.
2. EXISTING 8"ø/9"ø SUPPLY AIR TAKEOFF TO BE REMOVED AND REPLACED WITH A NEW 12"ø TAKEOFF.
3. CONNECT TO EXISTING SUPPLY AIR DUCT TAKEOFF.
4. NEW 36"X23" SUPPLY AIR DUCT UP TO NEW AIR HANDLING UNIT (AHU-1) ON ROOF ABOVE.
5. NEW 36"x34" RETURN AIR DUCT UP TO NEW AIR HANDLING UNIT (AHU-1) ON ROOF ABOVE. CONNECT EXISTING 27"x27" R.A. DUCT WITH NEW TRANSITION PIECE.
6. OUTLINE OF NEW AIR HANDLING UNIT LOCATED ON ROOF ABOVE. (AHU-1)
7. 10"X10" OPENING IN WALL ABOVE CEILING TO ALLOW FOR TRANSFER OF RETURN AIR BACK TO AHU-1.

4 M-3 DRAWING NOTES

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Springhill, NS

DRAWING / DESSIN

UPPER FLOOR PLAN HVAC

DRAWN BY / DESSINÉ PAR K.C.S.

APPROVED BY / APPROUVÉ PAR M.A.M.

DATE 2019-06-28

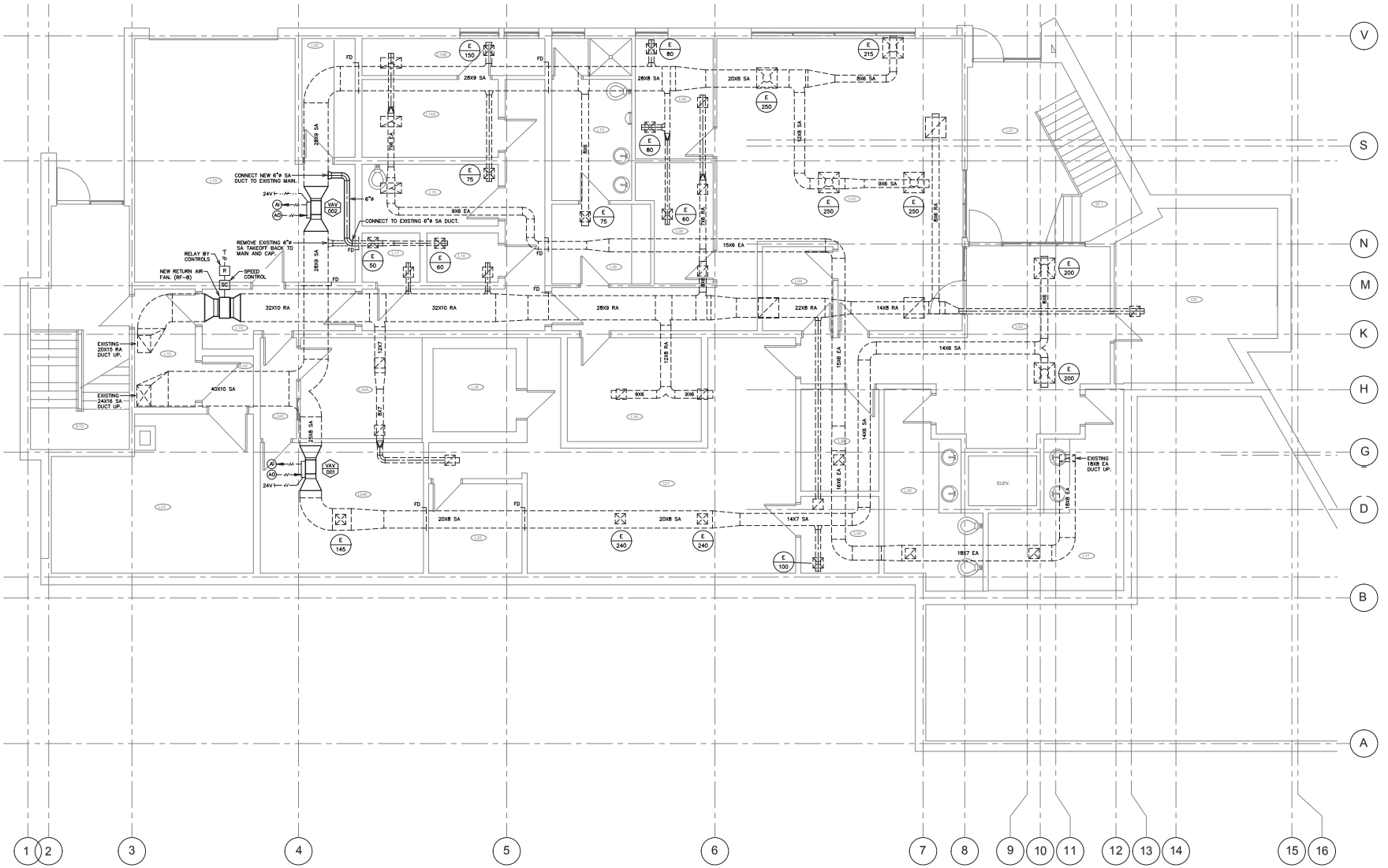
SCALE / ÉCHELLE AS NOTED

M-3



2
M-4
SYMBOL LEGEND

N.T.S.



1
M-4
BASEMENT FLOOR PLAN - HVAC

1/4"=1'-0"

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Springhill, NS

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BASEMENT FLOOR PLAN - HVAC

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APPROVED BY / APPROUVÉ PAR
M.A.M.
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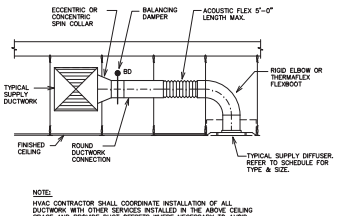
M-4

AIR HANDLER SCHEDULE

TAG	MANUFACTURER & MODEL	UNIT SIZE (TON)	SUPPLY FAN SECTION				ELECTRICS			HEATING		COOLING PERFORMANCE					REFRIG. (TYPE)	WEIGHT	ACCESSORIES	REMARKS
			AIR FLOW (CFM)	EXT STATIC PRESSURE	HP	FLA	V	PH	MCA	INPUT (KW)	TEMP RISE (°F)	TOTAL CAP (MBH)	SENSIBLE CAP (MBH)	ENTERING TEMP (°F)		LEAVING TEMP (°F)				
														DRY BULB	WET BULB	DRY BULB	WET BULB			
AHU-1	YORK MODEL: ZJ240C00U2B5BCA1G1	20	8000 CFM	1.5 IWG	7.5	–	208	3	132.5	36	14.2	258.5	188.5	80.0	67.0	58.2	56.8	R-410A	2897 lbs	18" CURB	1, 2, 3, 4, 5, 6, 7, 8

1. TWO STAGE COOLING
2. VFD WITH BYPASS AND INTELLISPEED
3. SCROLL COMPRESSORS
4. ECONOMIZER
5. DISCONNECT SWITCH INCLUDED
6. GFCI OUTLET – NON POWERED
7. PROVIDE SINGLE ZONE VAV FAN OPERATION
8. SMART EQUIPMENT CONTROLLER INCLUDING DISCHARGE AIR, RETURN AIR, AND OUTDOOR AIR TEMPERATURE SENSOR.

7 M-5 AHU SCHEDULE



NOTE:
HVAC CONTRACTOR SHALL COORDINATE INSTALLATION OF ALL DUCTWORK WITH OTHER SERVICES INSTALLED IN THE ABOVE CEILING SPACE AND PROVIDE DUCT OFFSETS WHERE NECESSARY TO AVOID CONFLICTS WITH OTHER SYSTEMS.

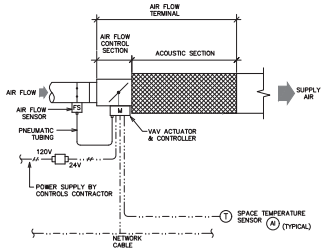
8 M-5 TYPICAL DIFFUSER INSTALLATION DETAIL N.T.S.

VARIABLE AIR VOLUME BOX SCHEDULE

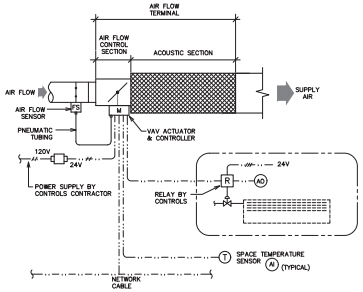
TAG	MODEL	BOX SIZE	INLET SIZE	DISCHARGE DUCT SIZE	AIR QUANTITY (cfm) min.	AIR QUANTITY (cfm) max.	CONTROLS	REMARKS
VAV 1/01	E.H.PRICE MODEL SDV-5000	8	8"ø	12"x10"	–	360	DDC (BY CONTROLS)	
VAV 1/02	E.H.PRICE MODEL SDV-5000	8	8"ø	12"x10"	–	540	DDC (BY CONTROLS)	
VAV 1/03	E.H.PRICE MODEL SDV-5000	8	8"ø	12"x10"	120	300	DDC (BY CONTROLS)	c/w 3'-0" ATTENUATOR
VAV 1/04	E.H.PRICE MODEL SDV-5000	8	8"ø	12"x10"	184	460	DDC (BY CONTROLS)	c/w 3'-0" ATTENUATOR
VAV 1/05	E.H.PRICE MODEL SDV-5000	10	10"ø	14"x12"	276	690	DDC (BY CONTROLS)	c/w 3'-0" ATTENUATOR
VAV 1/06	E.H.PRICE MODEL SDV-5000	10	10"ø	14"x12"	276	690	DDC (BY CONTROLS)	c/w 3'-0" ATTENUATOR
VAV 1/07	E.H.PRICE MODEL SDV-5000	8	8"ø	12"x10"	200	500	DDC (BY CONTROLS)	c/w 3'-0" ATTENUATOR
VAV 1/08	E.H.PRICE MODEL SDV-5000	8	8"ø	12"x10"	184	460	DDC (BY CONTROLS)	c/w 3'-0" ATTENUATOR
VAV 1/09	E.H.PRICE MODEL SDV-5000	10	10"ø	14"x12"	276	690	DDC (BY CONTROLS)	c/w 3'-0" ATTENUATOR
VAV 1/10	E.H.PRICE MODEL SDV-5000	10	10"ø	14"x12"	224	560	DDC (BY CONTROLS)	c/w 3'-0" ATTENUATOR
VAV 1/11	E.H.PRICE MODEL SDV-5000	8	8"ø	12"x10"	120	300	DDC (BY CONTROLS)	c/w 3'-0" ATTENUATOR
VAV 1/12	E.H.PRICE MODEL SDV-5000	8	8"ø	12"x10"	120	300	DDC (BY CONTROLS)	c/w 3'-0" ATTENUATOR
VAV 1/13	E.H.PRICE MODEL SDV-5000	12	12"ø	16"x15"	368	920	DDC (BY CONTROLS)	c/w 3'-0" ATTENUATOR
VAV 1/14	E.H.PRICE MODEL SDV-5000	8	8"ø	12"x10"	160	400	DDC (BY CONTROLS)	c/w 3'-0" ATTENUATOR
VAV 1/15	E.H.PRICE MODEL SDV-5000	12	12"ø	16"x15"	368	920	DDC (BY CONTROLS)	c/w 3'-0" ATTENUATOR
VAV 1/16	E.H.PRICE MODEL SDV-5000	8	8"ø	12"x10"	160	400	DDC (BY CONTROLS)	c/w 3'-0" ATTENUATOR
VAV 1/17	E.H.PRICE MODEL SDV-5000	8	8"ø	12"x10"	144	360	DDC (BY CONTROLS)	c/w 3'-0" ATTENUATOR
VAV 1/18	E.H.PRICE MODEL SDV-5000	8	8"ø	12"x10"	144	360	DDC (BY CONTROLS)	c/w 3'-0" ATTENUATOR
VAV 1/19	E.H.PRICE MODEL SDV-5000	8	8"ø	12"x10"	184	460	DDC (BY CONTROLS)	c/w 3'-0" ATTENUATOR
VAV 1/20	E.H.PRICE MODEL SDV-5000	8	8"ø	12"x10"	160	400	DDC (BY CONTROLS)	c/w 3'-0" ATTENUATOR
VAV 1/21	E.H.PRICE MODEL SDV-5000	12	12"ø	16"x15"	368	920	DDC (BY CONTROLS)	c/w 3'-0" ATTENUATOR
VAV 1/22	E.H.PRICE MODEL SDV-5000	10	10"ø	14"x12"	276	690	DDC (BY CONTROLS)	c/w 3'-0" ATTENUATOR
VAV 1/23	E.H.PRICE MODEL SDV-5000	8	8"ø	12"x10"	120	300	DDC (BY CONTROLS)	c/w 3'-0" ATTENUATOR

TAG DESCRIPTION
(VAV 1/01) – DENOTES ITEM
– DENOTES ITEM NO.

4 M-5 VAV BOX SCHEDULE



5 M-5 INTERIOR ZONE VAV CONTROL SCHEMATIC N.T.S.



6 M-5 PERIMETER ZONE VAV CONTROL SCHEMATIC N.T.S.

GRILLE & DIFFUSER SCHEDULE

TAG	MODEL AND TYPE	FACE SIZE	NECK SIZE	AIR FLOW (CFM)	FINISH	NOTES
S1 / –	CEILING SUPPLY DIFFUSER E.H. PRICE SPD/31/B12	24"x24"	6"ø	0 – 120	B12 (OFF WHITE)	PROVIDE FRAME FOR CEILING TYPES
S2 / –	CEILING SUPPLY DIFFUSER E.H. PRICE SPD/31/B12	24"x24"	8"ø	121 – 220	B12 (OFF WHITE)	PROVIDE FRAME FOR CEILING TYPES
S3 / –	CEILING SUPPLY DIFFUSER E.H. PRICE SPD/31/B12	24"x24"	10"ø	221 – 300	B12 (OFF WHITE)	PROVIDE FRAME FOR CEILING TYPES
S4 / –	CEILING SUPPLY DIFFUSER E.H. PRICE SPD/31/B12	12"x12"	6"ø	0 – 120	B12 (OFF WHITE)	PROVIDE FRAME FOR CEILING TYPES
R1 / –	CEILING RETURN DIFFUSER E.H. PRICE PDDR/3/B12	24"x12"	22"x10"	–	B12 (OFF WHITE)	PROVIDE FRAME FOR CEILING TYPES
R2 / –	CEILING RETURN DIFFUSER E.H. PRICE PDDR/3/B12	24"x24"	22"x22"	–	B12 (OFF WHITE)	PROVIDE FRAME FOR CEILING TYPES
E / –	EXISTING GRILLE/DIFFUSER	VARIES	VARIES	VARIES		

(–) INDICATES GRILLE NUMBER
(–) INDICATES AIR FLOW QUANTITY (CFM)

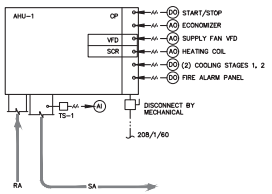
NOTE: ACCEPTABLE ALTERNATIVE EQUIPMENT: NAILOR, TITUS, OR TUTTLE & BAILEY

2 M-5 GRILLE SCHEDULE

FAN SCHEDULE

TAG	MANUFACT.	MODEL	MOTOR		ELECTRICAL				AIRFLOW	NOTES
			SIZE	RPM	VOLTS	PHASE	HERTZ	AMPS		
RF-B	GREENHECK	CSP-A700	350w	1100	115V	1ø	60	3.2	752 cfm @ 1/8" t.s.p.	
TF-1	GREENHECK	CSP-A510	217w	1070	115V	1ø	60	3.11	506 cfm @ 1/8" t.s.p.	

1 M-5 EXHAUST FAN SCHEDULE



3 M-5 AHU-1 CONTROL SCHEMATIC N.T.S.

AHU–1 CONTROLS

OAT °F	OCCUPIED LAT °F TS–1	UNOCCUPIED LAT °F
–20	70	OFF
–10	67.5	OFF
0	65	OFF
10	62.5	OFF
20	62.5	OFF
30	60	OFF
40	60	OFF
50	58	OFF
60	58	OFF
70	55	OFF
80	55	OFF
90	55	OFF

* MODIFIED BY ZONE SENSOR

dp18022

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EXCEPT FOR REFERENCE PURPOSES, THE DRAWINGS AND SPECIFICATIONS SHALL NOT BE USED FOR ADDITIONS OR ALTERATIONS TO THE PROJECT OR ON ANY OTHER PROJECT.

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STAMP / SCEAU

PROFESSIONAL ENGINEER 8413 PROVINCE OF NEW BRUNSWICK

ISSUED FOR TENDER MAR. 03, 2020
REVISIONS DATE

A / B DETAIL LOCATION OF DETAIL

CLIENT / CLIENT

PROJECT / PROJET

SPRINGHILL OFFICE FIT-UP
43 Main St., Upper Level
Springhill, NS

DRAWING / DESSIN

DETAILS AND SCHEDULES HVAC

DRAWN BY / DESSINÉ PAR: K.C.S.
APPROVED BY / APPROUVÉ PAR: M.A.M.
DATE: 2019-06-28
SCALE / ÉCHELLE: AS NOTED

M-5

1. GENERAL CONDITIONS

1.1 GENERAL
THE FOLLOWING GENERAL CONDITIONS SHALL BE READ IN CONJUNCTION WITH THE GENERAL CONDITIONS AND SPECIAL CONDITIONS ISSUED BY THE PROJECT MANAGER.

1.2 SCOPE OF WORK
THE CONTRACTORS SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT AND ASSOCIATED SERVICES NECESSARY FOR, AND REQUIRED BY THE INSTALLATION OF COMPLETELY FINISHED, TESTED, BALANCED AND PROPERLY OPERATING MECHANICAL SYSTEMS AS SPECIFIED HEREAFTER AND SHOWN ON THE DRAWINGS. THE INTENTION IS TO PROVIDE FOR FINISHED WORK COMPLETE IN ALL ESSENTIALS AS CALLED FOR BY THE DOCUMENTS AND ACCEPTED GOOD PRACTICE.
THE WORK SHALL INCLUDE THE FOLLOWING:

FIRE PROTECTION:
– SUPPLY AND INSTALL NEW SPRINKLER HEADS ON UPPER FLOOR WHERE INDICATED.

VENTILATION:
– SUPPLY AND INSTALL COMPLETE SYSTEMS OF VENTILATION; INCLUDING ROOFTOP AHU-1 UNIT; EXHAUST FANS; SUPPLY, RETURN AND EXHAUST DUCTS; GRILLES, DIFFUSERS AND ACCESSORIES; ACOUSTIC INSULATION; AIR BALANCING.

CONTROLS:
– SUPPLY AND INSTALL NEW BUILDING MANAGEMENT CONTROL SYSTEM, INCLUDE ALL CONTROL POINTS AS INDICATED, SYSTEM TO BE AS PER SPECIFICATIONS.

1.3 PERMITS AND BY-LAWS
THE CONTRACTOR SHALL ABIDE BY ALL CODES AND BY-LAWS RELATING TO THIS INSTALLATION. PROVIDE NECESSARY NOTICES, OBTAIN PERMITS AND PAY ALL FEES, IN ORDER THAT WORK SPECIFIED MAY BE CARRIED OUT. CHANGES AND ALTERATIONS REQUIRED BY AUTHORIZED INSPECTOR OF ANY AUTHORITY HAVING JURISDICTION, TO BE CARRIED OUT WITHOUT CHARGE OR EXPENSE TO OWNER.

1.4 SITE VISIT
BEFORE TENDERING THE CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIMSELF WITH THE EXISTING CONDITIONS AT THE SITE WHERE THE WORK HAS TO BE DONE. NO EXTRA WILL BE ALLOWED DUE TO FAILURE TO TAKE SITE CONDITIONS INTO CONSIDERATION.

1.5 COORDINATION OF WORK
THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THE GENERAL CONTRACTOR AND WITH ALL OTHER SUB-CONTRACTORS. COOPERATE WITH THE OWNER AND OTHER CONTRACTORS. WORK SHALL BE EXECUTED IN A MANNER SO AS TO CAUSE MINIMUM DISRUPTION. ALL SERVICES INTERRUPTIONS SHALL BE SCHEDULED OUTSIDE NORMAL WORKING HOURS. THE CONTRACTOR SHALL INCLUDE IN HIS TENDER, COSTS FOR ALL OVERTIME WORK INVOLVED WITH THE CONSTRUCTION.

1.6 GUARANTEE
THE CONTRACTOR SHALL GUARANTEE ALL WORK AND NEW EQUIPMENT PROVIDED AND INSTALLED UNDER THIS SPECIFICATION AGAINST ANY DEFECTS OF WORKMANSHIP AND MATERIAL FOR A PERIOD OF ONE YEAR AFTER ACCEPTANCE OF SAME BY OWNER. REPAIR AND MAKE GOOD ALL DAMAGE TO BUILDING INCURRED AS A RESULT OF FAILURE OF MECHANICAL WORK.

1.7 DRAWINGS
THE DRAWINGS FOR THE WORK ACCOMPANYING THESE SPECIFICATIONS ARE MADE AS ACCURATELY AS POSSIBLE, BUT ABSOLUTE ACCURACY OF DIMENSIONS CANNOT BE GUARANTEED. THEY ARE INTENDED TO SUPPLEMENT AND SIMPLIFY THE GENERAL CONTRACT DRAWINGS. NO CLAIM FOR EXTRA PAYMENT ON ACCOUNT OF DIFFERENCE OF ACTUAL AND ESTIMATED DIMENSIONS SHALL BE ALLOWED. IN THE CASE OF DISCREPANCY OF FIGURE DIMENSIONS ON THE DRAWINGS, THE MATTER SHALL BE IMMEDIATELY SUBMITTED TO THE ENGINEER FOR HIS DECISION. WITHOUT THE DECISION, THE DISCREPANCY SHALL NOT BE ADJUSTED BY THE CONTRACTOR SAVE AT HIS OWN RISK, AND IN THE SETTLEMENT OF ANY COMPLICATIONS ARISING FROM SUCH ADJUSTING, THE CONTRACTOR SHALL BEAR ALL EXTRA EXPENSE INVOLVED. INTERPRETATION OF ALL DOCUMENTS SHALL BE BY THE ENGINEER.

1.8 EXTRA WORK
NO ADDITIONAL MONEY OVER CONTRACT PRICE SHALL BE PAID UNLESS CONTRACTOR RECEIVES A SIGNED APPROVAL IN ACCORDANCE WITH THE GENERAL CONDITIONS. NO ADDITIONAL MONEY SHALL BE PAID FOR USE OF EQUAL PRODUCTS.

1.9 CUTTING AND PATCHING
THE CONTRACTOR IS TO LOCATE THE EXACT DIMENSIONS AND POSITIONS OF OPENINGS AND HOLES WHERE CUTTING MAY BE REQUIRED IN FLOORS, ROOFS, CEILINGS AND/OR WALLS FOR THE PASSAGE OF PIPES, DUCTS, ETC. WHERE CUTTING, PATCHING, EXCAVATION AND BACKFILLING IS NECESSARY, IT SHALL BE DONE BY THE GENERAL CONTRACTOR.

1.10 SLEEVES
THE CONTRACTOR IS TO SUPPLY AND SET IN PLACE PIPE AND/OR DUCT SLEEVES IN FLOOR, ROOF, OR FIRE WALLS BEFORE CONCRETE IS POURED.

1.11 SHOP DRAWINGS
THE CONTRACTOR SHALL SUBMIT, WITHIN TWO WEEKS AFTER BEING AWARDED THE CONTRACT, ONE COPY BY EMAIL OF CERTIFIED SHOP DRAWINGS FOR REVIEW BY THE ENGINEER OF ALL EQUIPMENT AND MATERIAL SPECIFIED AND SHALL NOT PROCEED WITH ANY OF THIS WORK UNTIL THE DRAWINGS HAVE BEEN RETURNED STAMPED AND SIGNED. THIS REVIEW DOES NOT RELIEVE THE CONTRACTOR OF THE OBLIGATION OF CHECKING THE DRAWINGS HIMSELF OR FURNISHING THE MATERIALS SPECIFIED.

1.12 CLEANING UP
THE CONTRACTOR SHALL, AT ALL TIMES, KEEP THE SITE NEAT, CLEAN AND FREE FROM ACCUMULATION OF WASTE, MATERIALS AND RUBBISH WHICH ARISE OUT OF THEIR WORK.

1.13 EQUIVALENTS
EQUIPMENT OF THE FOLLOWING MANUFACTURERS, PROVIDING THE EQUIPMENT HAS EQUAL CHARACTERISTICS TO THAT SPECIFICALLY MENTIONED IN THIS SPECIFICATION, IS CONSIDERED AS EQUAL AND WILL BE ACCEPTED. THE ENGINEER HAS THE SOLE RIGHT TO DETERMINE AND INTERPRET THE 'EQUAL' QUALITIES. ANY MODIFICATIONS REQUIRED FOR INSTALLATION OF EQUAL PRODUCTS SHALL BE THE CONTRACTOR'S RESPONSIBILITY
EQUIPMENT OF MANUFACTURERS NOT MENTIONED IN THE 'REVIEWED EQUALS LIST', WHO WISH TO HAVE THEIR EQUIPMENT LISTED AS EQUAL, MAY QUALIFY FOR THE 'REVIEWED EQUALS LIST'. SUBMIT ALL REQUIRED TECHNICAL DATA THROUGH THE OFFICE OF THE ENGINEER A MINIMUM OF TEN (10) DAYS PRIOR TO TENDER CLOSING.

1.14 OPERATION AND MAINTENANCE INSTRUCTIONS
CONTRACTOR SHALL INSTRUCT THE OWNER IN OPERATION OF MAINTENANCE OF ALL EQUIPMENT AND SYSTEMS INSTALLED. ALL SAFETY AND CONTROL FEATURES SHALL BE THOROUGHLY EXPLAINED. THREE COPIES OF OPERATION AND MAINTENANCE INSTRUCTIONS, TOGETHER WITH ALL APPROVED SHOP DRAWINGS AND SPARE PARTS LIST FASTENED IN A BINDER, SHALL BE SUBMITTED TO THE OWNER.

1.15 AS BUILT DRAWINGS
CONTRACTOR SHALL MAINTAIN, AT THE JOB SITE, ONE SET OF PLANS ON WHICH HE SHALL CLEARLY NOTE ALL CHANGES OR DEVIATIONS FROM THE CONTRACT DOCUMENTS, AS THE JOB PROGRESSES. CONTRACTOR SHALL AT THE TIME OF FINAL INSPECTION SUBMIT TO THE OWNERS REPRESENTATIVE, ONE SET OF FINAL 'AS-BUILT' WHITE PRINT DRAWINGS.

1.16 FIRE STOPPING
ALL CONTRACTORS SHALL PROVIDE AND INSTALL A ULC LISTED FIRE STOPPING MATERIAL AT PENETRATION OF MECHANICAL SYSTEMS WHERE SUCH SYSTEMS PENETRATE FIRE AND SMOKE SEPARATIONS AND RATED ASSEMBLIES IN THE STRUCTURE AS INDICATED ON ARCHITECTURAL DRAWINGS OR REQUIRED BY AUTHORITIES HAVING JURISDICTION. FIRE STOPPING SHALL BE INSTALLED AS PER MANUFACTURER'S APPROVED INSTALLATION REQUIREMENTS AND SHALL BE INSPECTED PRIOR TO ENCLOSING WALLS OR CEILING WHERE FIRE STOPPING HAS BEEN INSTALLED.

2. FIRE PROTECTION SYSTEMS

2.1 SCOPE
2.1.1 THIS PERFORMANCE SPECIFICATION OUTLINES THE DESIGN INSTALLATION, TESTING AND CERTIFICATION OF THE FOLLOWING:
.A WET SYSTEM UPPER FLOOR (2ND FLOOR).
– AS SHOWN ON THE DRAWINGS
2.1.2 SUBMIT TO THE PROJECT MANAGER ALL SHOP DRAWINGS AND HYDRAULIC CALCULATIONS FOR REVIEW. SHOP DRAWINGS AND HYDRAULIC CALCULATIONS SHALL BEAR THE SEAL AND SIGNATURE OF A PROFESSIONAL ENGINEER LICENSED OR REGISTERED IN PRACTICE IN THE PROVINCE OF NOVA SCOTIA.
2.1.3 COORDINATE LOCATIONS OF ALL PIPING, VALVES, FITTINGS, HANGERS, AND SPRINKLER HEADS WITH OTHER DISCIPLINES AND SERVICES TO AVOID CONFLICT. ALL LOCATIONS SHALL BE APPROVED BY THE PROJECT MANAGER.
2.1.4 SUBMIT SHOP DRAWINGS TO AUTHORITIES HAVING JURISDICTION FOR APPROVALS PRIOR TO INSTALLATION.
2.1.5 OPERATING AND MAINTENANCE INSTRUCTIONS CONTRACTOR SHALL INSTRUCT THE OWNER IN OPERATION OF MAINTENANCE OF ALL EQUIPMENT AND SYSTEMS INSTALLED. ALL SAFETY AND CONTROL FEATURES SHALL BE THOROUGHLY EXPLAINED. THREE COPIES OF OPERATING AND MAINTENANCE INSTRUCTIONS, TOGETHER WITH ALL APPROVED SHOP DRAWINGS AND SPARE PARTS LIST FASTENED IN A BINDER, SHALL BE SUBMITTED TO THE OWNER. COPY OF AS-BUILT DRAWINGS (FOLDED PRINTS) AND ELECTRONIC CAD FILE ON CD.
2.1.6 AS-BUILT DRAWINGS
CONTRACTOR SHALL MAINTAIN, AT THE JOB SITE, ONE SET OF PLANS ON WHICH HE SHALL CLEARLY NOTE ALL CHANGES OR DEVIATIONS FROM THE CONTRACT DOCUMENTS, AS THE JOB PROGRESSES. CONTRACTOR SHALL AT THE TIME OF FINAL INSPECTION SUBMIT TO THE OWNERS REPRESENTATIVE, ONE SET OF FINAL 'AS-BUILT' WHITE PRINT DRAWINGS.
2.1.7 FIRE STOPPING
SPRINKLER CONTRACTORS SHALL PROVIDE AND INSTALL A ULC LISTED FIRE STOPPING MATERIAL AT PENETRATION OF MECHANICAL SYSTEMS WHERE SUCH SYSTEMS PENETRATE E AND SMOKE SEPARATIONS AND RATED ASSEMBLIES IN THE STRUCTURE AS INDICATED ON ARCHITECTURAL DRAWINGS OR REQUIRED BY AUTHORITIES HAVING JURISDICTION. FIRE STOPPING SHALL BE INSTALLED AS PER MANUFACTURERS APPROVED INSTALLATION REQUIREMENTS AND SHALL BE INSPECTED PRIOR TO ENCLOSING WALLS OR CEILING WHERE FIRE STOPPING HAS BEEN INSTALLED.

2.2 RELATED WORK
2.2.1 DIVISION 16.

2.3 REGULATIONS
2.3.1 THE INSTALLATION OF THE FIRE SUPPRESSION SYSTEM SHALL BE IN ACCORDANCE WITH THE DRAWINGS ISSUED UNDER THIS CONTRACT, THESE SPECIFICATIONS AND:
- THE NATIONAL BUILDING CODE OF CANADA 2015
- THE NATIONAL FIRE CODE OF CANADA 2015.
- THE NATIONAL PLUMBING CODE OF CANADA, 2015.
- NFPA 10-2013 STANDARD FOR POTABLE FIRE EXTINGUISHER.
- NFPA 13-2013, "STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS".
- NFPA 25-2013 "STANDARD FOR THE INSPECTION TESTING, AND MAINTENANCE OF WATER BASED FIRE PROTECTION SYSTEM".

2.4 COMPONENTS
ALL SYSTEM COMPONENTS REQUIRED TO BE "LISTED" AS PER NFPA SHALL HAVE THEIR LISTING THROUGH UNDERWRITERS LABORATORIES OF CANADA (ULC)/FACTORY MUTUAL ENGINEERING (FM).

2.5 AUTHORITY HAVING JURISDICTION
THE SYSTEM IS TO BE REVIEWED BY THE OFFICE OF THE FIRE MARSHAL.

2.6 REVIEW AUTHORITY
THE WORKING (SHOP) DRAWINGS ARE TO BE REVIEWED BY THE CONSULTANT. ANY COMMENTS SHALL BE DIRECTED TO THE CONSULTANT FOR REVIEW AND ACTION.

2.7 DESIGN APPROACH
2.7.1 THE SPRINKLER CONTRACTOR IS RESPONSIBLE TO CONDUCT A NEW WATER SUPPLY TEST IN ORDER TO DETERMINE AVAILABLE WATER SUPPLY.

2.8 SYSTEM REQUIREMENTS
2.8.1 WORK BEGINS AT EXISTING 4" RISER LOCATED IN VERTICAL SHAFT.
2.8.2 HEAVY DUTY WIRE HEAD GUARDS FOR SPRINKLER HEADS INDOOR STORAGE AREA, MECHANICAL ROOMS, ANY AREAS WHERE SUBJECT TO PHYSICAL DAMAGE.
2.8.3 SYSTEM TO BE COORDINATED WITH OTHER TRADES PRIOR TO INSTALLATION.
2.8.4 PROVIDE COPIES OF CONTRACTOR'S MATERIAL AND TEST CERTIFICATE FOR ABOVEGROUND PIPING.
2.8.5 ALL SYSTEM SHALL BE CONNECTED TO THE BUILDING FIRE ALARM PANEL THAT INITIATE A FIRE ALARM. COORDINATE ALL ZONES WITH FIRE ALARM CONTRACTOR.
2.8.6 ALL MATERIAL TO BE AS SPECIFIED IN NFPA 13-10 EDITION ULC LISTED, AND MUST MEET THE REQUIREMENTS OF ALL LOCAL AUTHORITIES HAVING JURISDICTION.
2.8.7 ELECTRICAL BY DIVISION 16.

2.9 OPERATION AND MAINTENANCE DATA
2.9.1 THE CONTRACTOR SHALL PROVIDE THREE (3) COPIES OF OPERATION AND MAINTENANCE INFORMATION AND DRAWING IN A 3 RING BINDER. INFORMATION IN EACH BINDER IS TO INCLUDE:
- COPY OF REVIEWED (STAMPED) PRODUCT DATA.
- DETAILED PERIODIC INSPECTION AND TESTS SCHEDULE PER THE REQUIREMENTS IN THE NATIONAL FIRE CODE AND NFPA 25.
- PRESSURE SETTINGS FOR ALL SWITCHES, ETC.
- COPY OF AS-BUILT DRAWINGS (FOLDED PRINTS) AND CAD FILES ON USB.
- COPY OF HYDRAULIC CALCULATIONS AND CORRESPONDING NODE DRAWINGS.
- COPY OF HYDRAULIC NAMEPLATES INDICATING SYSTEM DEMAND.
- COPY OF THIS SPECIFICATION SECTION.
- COPY OF MATERIAL AND TEST CERTIFICATES FOR SPRINKLER SYSTEMS.

2.9.2 BINDERS SHALL INCLUDE AN INDEX, DIVIDING TABS AND POUCHES FOR DRAWINGS.

2.10 EQUIPMENT
2.10.1 SPRINKLER HEADS
2.10.1.1 TYPE A UPRIGHT HEAD
QUICK RESPONSE, GLASS BULB, 1/2" ORIFICE SIZE 5.6K FACTOR, 155°F TEMPERATURE RATING, BRASS FINISH. TYCO, VICTAULIC OR APPROVED EQUAL
2.10.1.2 TYPE B SEMI-RECESSED PENDENT
QUICK RESPONSE, GLASS BULB 1/2" ORIFICE SIZE 5.6K FACTOR, 155°F TEMPERATURE RATING, CHROME FINISH. TYCO, VICTAULIC OR APPROVED EQUAL
2.10.2 IDENTIFICATION TAGS
2.10.2.1 REFER TO NFPA 13-10 EDITION
2.10.2.2 REQUIRED FOR ALL CONTROL VALVES, DRAIN VALVES, INSPECTOR'S TEST CONNECTIONS, TRIM VALVES AND SWITCHES.
2.10.2.3 RED LAMACOID WITH WHITE LETTERS
2.10.3 PIPE HANGERS
2.10.3.1 PIPING SHALL BE SUPPORTED BY HANGERS OR FLOOR SUPPORT AS PER NFPA 13-10 EDITIO
2.10.3.2 GALVANIZED HANGER FOR ALL AREAS
2.10.3.3 ACCEPTABLE PRODUCTS: TAYLOR, CADDY
2.10.4 PIPING AND FITTINGS
ALL SYSTEM PIPING TO BE SCHEDULE 10 & 40 ONLY ASTM A53 GRADE ONLY. ALL THREADED AND GROOVED PRODUCTS SHALL BE OF ONE MANUFACTURER.

FERROUS PIPE:
2.10.4.1 ROLL-GROOVED STEEL PIPE UP TO AND INCLUDING NPS 6 TO BE SCHEDULE 10 MINIMUM.
2.10.4.2 THREADED STEEL PIPING NPS 6 AND SMALLER TO BE MINIMUM OF SCHEDULE 40.
2.10.4.3 PLAIN AND STEEL PIPE NPS 1 UP TO AND INCLUDING NPS 2 JOINED BY MEANS OF A MECHANICAL LOCKING DEVICE TO BE MINIMUM SCHEDULE 10.
2.10.4.4 ALL MATERIALS USED IN FIRE PROTECTION SYSTEM SHALL BE ULC LISTED. ALL PIPING SHALL BE INSPECTED BY DSS, ENGINEER OR HIS APPOINTED REPRESENTATIVE PRIOR TO INSTALLATION FOR CONFIRMATION OF SIZE AND TYPE.
2.10.4.5 ALL BASEMENT PIPING TO BE SCHEDULE 10 GALVANIZED ONLY. ASTM A53 GRADE ONLY FOR MAINS AND SCHEDULE 40 GALVANIZED FOR BRANCH LINES.
2.10.4.6 ALL BLACK STEEL AND GALVANIZED PIPE SHALL BE MANUFACTURED IN UNITED STATES OR CANADA. ALL PIPE SHALL BE MARKED AS TO BRAND, SCHEDULE, DATE, AND ASTM NUMBER FROM THE FACTORY.
2.10.4.7 STANDARD OF ACCEPTANCE: NOVA TUBE, BULL MOOSE.
2.10.5 FIRE EXTINGUISHERS
2.10.5.1 FE-1 SEMI-RECESSED CABINET C/W 10LBS ABC MULTI-PURPOSE DRY CHEMICAL FIRE EXTINGUISHER.

3. VENTILATION SYSTEMS

3.1 DUCTWORK
ALL DUCTWORK SHALL BE CONSTRUCTED FROM LOCK FORMING QUALITY STEEL WITH G90 DESIGNATION ZINC COATING TO ASTM A525 M-80 IN ACCORDANCE WITH THE LATEST EDITION OF ASHRAE GUIDE AND SMSCNA STANDARDS. DUCT LEAKAGE SHALL NOT EXCEED 2% MAXIMUM. SEAL ALL DUCTS WITH APPROVED, INDOOR/OUTDOOR, ZERO VOC, 25/50 FHC, WATER BASED, POLYMER TYPE WATERPROOF SEALANT AND FIBERGLASS MESH TAPE DUCT SEALANT: DURODYNE EDS, ITW GLENKOTE, OR EQUAL.

DUCT GAUGE AND JOINT CONSTRUCTION SHALL BE AS THE FOLLOWING SCHEDULE, UNLESS NOTED OTHERWISE:

LONGEST SIDE	GAUGE US
< 12" (< 300mm)	26
12" TO 29" OR < 9"ø (300mm TO 735mm OR < 230mmø)	24
30" TO 39" OR 9" TO 14"ø (625mm TO 990mm OR 230mm to 355mmø)	22
40" TO 49" OR 15"–20"ø (1015mm TO 1250mm OR 380mm to 510mmø)	20
> 49" OR 21"–30"ø (> 1250mm OR 535mm TO 765mmø)	18
> 30"ø (> 765mmø)	16

REINFORCING MUST BE APPLIED ON ALL FOUR SIDES AND FASTENED TOGETHER AT EACH CORNER BY WELDING, BOLTING OR RIVETING. SIDES OF DUCTS OVER 18" (450 MM) WIDE SHALL BE STIFFENED BY CROSS BRACING. DUCT SIZES SHOWN ON DRAWINGS ARE INTERIOR DIMENSIONS; WHEN ACOUSTIC INSULATION IS ADDED INSIDE OF DUCT, SIZES SHALL BE INCREASED ACCORDINGLY. ROUND DUCT SHALL BE UNITED SPIRAL "UNISEAL" OR APPROVED EQUAL.

3.2 HANGERS
SUPPORT EACH SECTION OF THE DUCTWORK WITH STEEL RODS, ANGLE IRON, "C" CLAMPS AND OR CONCRETE INSERTS ALL AS PER SCHEDULE BELOW:

DUCT SIZE	ANGLE DIM.	RODS DIA.	SPACING
UP TO 30" (750mm)	1"x1"x1/8" (25x25x3mm)	1/4" (6mm)	108" (2700mm)
31" (775mm) TO 42" (1050mm)	1-1/2"x1-1/2"x1/8" (40x40x3mm)	1/4" (6mm)	108" (2700mm)
43" (1075mm) TO 60" (1500mm)	1-1/2"x1-1/2"x1/8" (40x40x3mm)	3/8" (10mm)	108" (2700mm)
61" (1525mm) TO 84" (2100mm)	2"x2"x1/8" (50x50x3mm)	3/8" (10mm)	108" (2700mm)
85" (2125mm) TO 96" (2400mm)	2"x2"x3/16" (50x50x5mm)	3/8" (10mm)	108" (2700mm)
97" (2425mm) AND OVER	2"x2"x1/4" (50x50x6mm)	3/8" (10mm)	108" (2700mm)

DUCTS UP TO 18" (450 MM) MAY BE SUPPORTED WITH GALVANIZED STEEL STRAP HANGERS MANUFACTURED TO SMACNA STANDARDS, SCREWED AT THE TOP AND ON THE BOTTOM OF DUCT. DO NOT BREAK CONTINUITY OF INSULATION VAPOR BARRIER BY HANGERS OR RODS

3.3 FLEXIBLE CONNECTIONS
PROVIDE AT FANS AND AT ALL FAN POWERED UNITS, NEOPRENE COATED GLASS FABRIC, DURO-DYNE OR EQUAL, WITH 25/50 FHC, NOT MORE THAN 4" (100 MM) WIDE BETWEEN METAL PARTS AND INSTALLED WITH SEALED SEAM AND WITH SUFFICIENT SLACK TO PREVENT VIBRATION TRANSMISSION.

3.4 DUCT INSULATION – THERMAL
ALL DUCT INSULATION MATERIALS, SECUREMENT, AND JACKETING SHALL BE PROVIDED AND APPLIED IN ACCORDANCE WITH MANUFACTURER GUIDELINES AND SHALL MEET OR EXCEED CONFORMANCE WITH TIAC, SMACNA, CAN/ULC S102. FLAME/SMOKE RATINGS OF INSULATION AND COMPONENTS SHALL NOT EXCEED 25/50 FHC. STANDARD OF ACCEPTANCE: 3M, KNAUF, JOHNS MANVILLE, OWENS-CORNING.
INSTALL ALL DUCT INSULATION WITH 3/4" BANDING AT 16"O.C. STRAPPING. APPLY WELD PINS AND CLIPS AT BOTTOM OF DUCT AND WHEREVER DUCT DIMENSION EXCEEDS 12". ALL JOINTS AND SEAMS SHALL BE LAPPED PER MANUFACTURER RECOMMENDATIONS AND PENETRATIONS WITH FIBER REINFORCED FOIL TAPE. INSULATE AFTER ALL DUCTWORK HAS BEEN SEALED AND INSPECTED. ALL DUCT HANGERS AND ANGLE IRON SUPPORTS SHALL BE LOCATED OUTSIDE OF DUCT INSULATION.
ALL DUCTWORK WITHIN 15FT(4.6m) OF EXTERIOR WALL AND ROOF PENETRATIONS SHALL BE INSULATED.INSULATE ALL CONDITIONED SUPPLY AIR DUCT UP TO THE VAV BOX INLET DISCHARGE GRILLE/DIFFUSER.
EXPOSED SPIRAL DUCTWORK (NON-CONCEALED) DOES NOT REQUIRE INSULATION AND JACKET, EXCEPT WHERE OTHERWISE INDICATED.

INDOOR DUCT INSULATION IN ACCORDANCE WITH TIAC C-1 DUCT INSULATION SHALL BE 2"(50mm) THICK FIBERGLASS BLANKET INSULATION TO ASTM C553 C/W FACTORY APPLIED FIBERGLASS REINFORCED FOIL JACKET TO CGSB 51-GP-52MA. UL GREENGUARD GOLD CERTIFIED. 0.75 PCF MIN. DENSITY, MIN. R-VVALUE 2.8 PER INCH THICKNESS AT 25% MAX. COMPRESSION.

3.5 DUCT LINER INSULATION – ACOUSTIC/THERMAL
LINE INSIDE OF DUCTS AND TRANSFER DUCTS, WHERE INDICATED, TO BE 1"(25mm) THICK RIGID FIBROUS GLASS DUCT LINER, DENSITY 21.95 KG/SQUARE METERS, WITH NEOPRENE OR ACRYLIC REINFORCED MAT COATING, OR 1"(25mm) THICK CLOSED CELL HOMOGENOUS ELASTOMERIC LINER, WITH MIN. NRC 0.55. FLAME/SMOKE MAX. 25/50 FHC. LINER TO BE FASTENED TO INTERIOR SHEET METAL SURFACES WITH 100% COVERAGE OF AN APPROVED FIRE RESISTANT BONDING ADHESIVE. SEAL EDGES, PIN PENETRATIONS AND JOINTS WITH AN APPROVED FIRE RESISTANT MASTIC. PRODUCT SHALL NOT PERMIT MICROBIAL GROWTH IN CONFORMANCE WITH ASTM C1338, G21, G22. PRODUCT SHALL BE UL GREENGUARD GOLD CERTIFIED.
MATERIALS: CGSB 51-GP-11M FIBROUS GLASS RIGID BOARD COATED ON ONE SIDE. STANDARD OF ACCEPTANCE: K-FLEX, ARMACELL, JOHNS MANVILLE LINACOUSTIC RC, KNAUF, FIBERGLASS INC.

3.6 FLEXIBLE DUCTS
FLEXIBLE DUCT STANDARD: THERMAFLEX MKE, OR APPROVED EQUAL. FLEXIBLE DUCT LENGTH SHALL NOT EXCEED 5' (1500MM) LENGTH AND SHALL BE SECURELY SUPPORTED FROM STRUCTURE TO MAINTAIN FULL CROSS-SECTIONAL AREA WITH PERMISSIBLE SAG NOT EXCEEDING ½" PER FOOT. FLEXIBLE DUCT SHALL NOT BE PERMITTED AT GRILLE/DIFFUSER COLLAR; DIFFUSERS SHALL HAVE FULL RADIUS HARD DUCTED ELBOWS.

3.7 FIRE DAMPERS
PROVIDE "DYNAMIC" TYPE FIRE DAMPERS WHERE SHOWN AND WHERE REQUIRED BY AUTHORITIES HAVING JURISDICTION TO MAINTAIN FIRE WALL OR CEILING INTEGRITY.
ACCEPTABLE MANUFACTURER: CONTROLLED AIR MFG LTD MODEL 'B', OR EQUAL.
FIRE DAMPERS SHALL BE LISTED AND BEAR THE LABEL OF ULC AND SHALL MEET REQUIREMENTS AND BE INSTALLED TO NFPA 90A AND SMACNA STANDARD 'FIRE DAMPER GUIDE FOR AIR HANDLING SYSTEMS'. SEAL WALL OPENINGS ALL AROUND THE DUCTS PASSING THROUGH THE FIRE WALLS AS RECOMMENDED BY THE NFPA-13. PROVIDE ACCESS DOORS AT FIRE DAMPER (ACCESS TO BE INSULATED TYPE WHERE DUCT IS INSULATED.)

3.8 ACCESS DOORS
PROVIDE AS INDICATED AND WHERE REQUIRED FOR ACCESS TO FIRE OR OTHER DAMPERS AND FOR SERVICE OR INSPECTION OF EQUIPMENT CAM-LEVER TYPE ACCESS PANEL 12" X 18" (300 X 450 MM) UNLESS OTHERWISE STATED, COMPLETE WITH TWO SASH LOCKS.
PANELS ON INSULATED DUCT WORK SHALL BE OF DOUBLE PANEL CONSTRUCTION WITH INSULATION FILLER AND SHALL HAVE AN EXTENDED METAL COLLAR TO BE FLUSH WITH FACE OF FINISHED INSULATION.

3. VENTILATION SYSTEMS (CONTINUED)

3.9 BALANCING DAMPERS
PROVIDE BALANCING DAMPERS IN DUCTWORK WHERE SHOWN AND WHERE REQUIRED FOR PROPER ADJUSTMENT OF AIR QUANTITIES. ALL DAMPERS SHALL BE EQUIPPED WITH A LOCKING QUADRANT SOLIDLY MOUNTED ON THE EXTERIOR OF THE DUCT. CLOSED POSITIONS MUST BE CLEARLY MARKED. PROVIDE SHAFT AND BEARING ON EACH SIDE OF DAMPER.
.1 SPLITTER DAMPERS SHALL BE AIRFOIL SHAPE DOUBLE THICKNESS, ONE GAUGE HEAVIER THAN DUCT (MINIMUM 22 GAUGE) MOUNTED ON A ROUNDED EDGE PIANO HINGE. THE LENGTH OF THE DAMPER SHALL BE 1.5 TIMES THE WIDTH OF THE SMALLEST DUCT.
.2 BUTTERFLY DAMPER WITH A SINGLE 22 GAUGE BLADE MAY BE USED IN ROUND DUCTS OF 12" (300 MM) AND LESS.
.3 MULTI-LEAF OPPOSED BLADE DAMPERS DESIGNED TO SMACNA STANDARDS SHALL BE USED IN SQUARE DUCTS.

3.10 AIR BALANCING
AIR BALANCING SHALL BE DONE BY A PROFESSIONAL TEST AND BALANCING FIRM. AIR QUANTITIES AT EACH OUTLET SHALL BE AS INDICATED ON THE DRAWINGS. A REPORT SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. THIS REPORT SHALL SHOW THE CFM (L/S), VELOCITIES AND AREA OF EACH OUTLET, TYPE AND MODEL NUMBER OF FANS AND MOTORS INSTALLED, ACTUAL AIR DELIVERED BY THE FAN WITH TOTAL STATIC PRESSURE, VOLTAGE AND AMPERAGE DRAWN BY THE MOTORS. AFTER FINAL APPROVED BALANCE, PROVIDE INDEPENDENT REPORT TO THE OWNER FOR HIS USE.
EXTENT OF AIR BALANCE SHALL INCLUDE SUPPLY, RETURN, EXHAUST, ALL. TEST PRESSURE (2.0 IN WG, 500PA). DUCT SEAL CLASS C. ALLOWABLE LEAKAGE 2.0%. ESTING TO AABC AND SMACNA STANDARDS, LATEST EDITION.

3.11 CLEANING AND STARTING
SYSTEMS SHALL BE CLEANED OF ALL DIRT, ETC., AND SHALL THEN BE STARTED UP. ALL EQUIPMENT SHALL BE FULLY SERVICED BEFORE STARTUP, AS PER MANUFACTURER'S RECOMMENDATIONS. FILTERS SHALL BE REPLACED AFTER TEST RUN.

3.12 SPARE BELTS AND KEYS
PROVIDE A SPARE SET OF BELTS FOR ALL EQUIPMENT BEING SUPPLIED UNDER THIS CONTRACT. EACH SPARE BELT SHALL BE MARKED WITH SIZE, MODEL, ETC… AND WHICH PIECE OF EQUIPMENT IT SERVES. PROVIDE A SET IN DUPLICATE, OF KEYS FOR THERMOSTATS, KEY OPERATED SWITCHES, ETC… EACH KEY SHALL BE MARKED CONCERNING ITS USE.

3.13 GRILLE SCHEDULE
REFER TO DIFFUSER/GRILLE SCHEDULE ON DRAWINGS.

3.14 EQUIPMENT
REFER TO DRAWING SCHEDULES.

3.15 START-UP, COMMISSIONING AND TRAINING
3.15.1 AIR HANDLER START-UP SHALL INCLUDE MANUFACTURERS REPRESENTATIVE START-UP AND COMMISSIONING REPORT.
3.15.2 THIS CONTRACTOR SHALL PROVIDE TRAINING (UP TO 6 HOURS) TO USER REPRESENTATIVE OR DESIGNATED MAINTENANCE PERSONNEL FOR EQUIPMENT OPERATION AND MAINTENANCE. OWNER'S REPRESENTATIVE SHALL SIGN-OFF UPON COMPLETION OF TRAINING.

3.16 OPERATION AND MAINTENANCE DATA
3.16.1 THE CONTRACTOR SHALL PROVIDE THREE (3) COPIES OF OPERATION AND MAINTENANCE INFORMATION AND DRAWINGS IN A THREE (3) RING BINDER ALONG WITH AN ELECTRONIC COPY ON A USB STICK. INFORMATION IN EACH BINDER SHALL INCLUDE:
- COPY OF APPROVED (STAMPED) SHOP DRAWINGS OF PRODUCTS USED.
- COPY OF REVIEWED AS-BUILT DRAWINGS (FOLDED PRINTS) AND CAD FILE ON USB STICK.
- COPY OF CONTRACTOR AND SUBCONTRACTOR CONTACT INFORMATION.
- COPY OF SPECIFICATION SECTIONS.
- COPY OF CONTRACTOR'S WARRANTY LETTER SIGNED BY AN OFFICER OF THE COMPANY.
- COPY OF ALL EQUIPMENT MAINTENANCE INFORMATION.

3.16.2 THE BINDERS SHALL INCLUDE AN INDEX, DIVIDING TABS AND SLEEVES FOR DRAWINGS.

4. CONTROLS

4.1 PROVIDE A SYSTEM OF DDC BACNET CONTROLS TO SCHEDULE AND TEMPERATURE CONTROL ALL HVAC DEVICES, INCLUDING AHU-1, VAV BOXES, HYDRONIC HEATERS, AND EXHAUST FANS.

PROVIDE CAPABILITY TO NETWORK CONTROLS SYSTEMS WITH OWNER'S EQUIPMENT IN A REMOTE LOCATION.

4.1.1 AHU-1 CONTROL
REFER TO POINTS SCHEMATIC FOR CONTROL POINTS.

SCHEDULE: OCCUPIED: 0730-1700 MON-SAT (USER ADJUSTABLE VIA BAS). NOTE THIS SCHEDULE INCLUDES 1 HOUR MORNING WARM-UP AND 1/2 HOUR END OF DAY EXTENSION BASED ON NORMAL OCCUPIED HOURS. CONFIRM WITH USER THAT NORMAL OPERATING HOURS ARE 08:30 – 16:30.

UNOCCUPIED: ALL OTHER

SEQUENCE: REFER TO TEMPERATURE CONTROL PROFILE; AC UNIT PROVIDES NOMINAL HEAT.

UNOCCUPIED: AHU-1 IS OFF.

PROVIDE USER INTERFACE VIA BAS TO PERMIT OCCUPANCY OVERRIDE FOR 2HOUR INTERVALS.

4.1.2 VAV CONTROL
SCHEDULE: OCCUPIED: 0730-1700 MON-SAT (USER ADJUSTABLE VIA BAS)

UNOCCUPIED: ALL OTHER

SEQUENCE:
- DURING OCCUPIED MODE, ACTIVATE ALL VAV BOXES AND MODULATE TO ACHIEVE SET POINT TEMPERATURE, NOMINAL 22.5°C.
- ON CALL FOR COOLING, MODULATE VAV BOX OPEN AND STOP AT SET POINT.
- ON CALL FOR LESS COOLING, MODULATE VAV BOX CLOSING AND STOP AT MINIMUM POSITION.
- ON CALL FOR LESS COOLING BEYOND MINIMUM POSITION, ACTIVATE HEATING RELAY AND OPEN HEATING RADIATION CONTROL VALVE.

UNOCCUPIED: VAV'S ARE CLOSED.

4.2 CONTRACTOR SHALL PROVIDE TRAINING TO USERS (UP TO 4 HOURS) FOR CONTROLS INTERFACE. OWNER'S REPRESENTATIVE SHALL SIGN-OFF UPON COMPLETION OF TRAINING.

4.3 THE CONTRACTOR SHALL PROVIDE THREE(3) COPIES OF OPERATION AND MAINTENANCE (PRODUCT DATA, CONTROL SCHEMATICS, SHOP DRAWINGS AND WARRANTY INFORMATION) IN 3-RING BINDER ALONG WITH AN ELECTRONIC COPY ON USB/THUMB DRIVE.

1
M-6 MECHANICAL SPECIFICATIONS

N.T.S.

DESIGN PLUS ARCHITECTURE

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DRAWING DESSIN
MECHANICAL SPECIFICATIONS

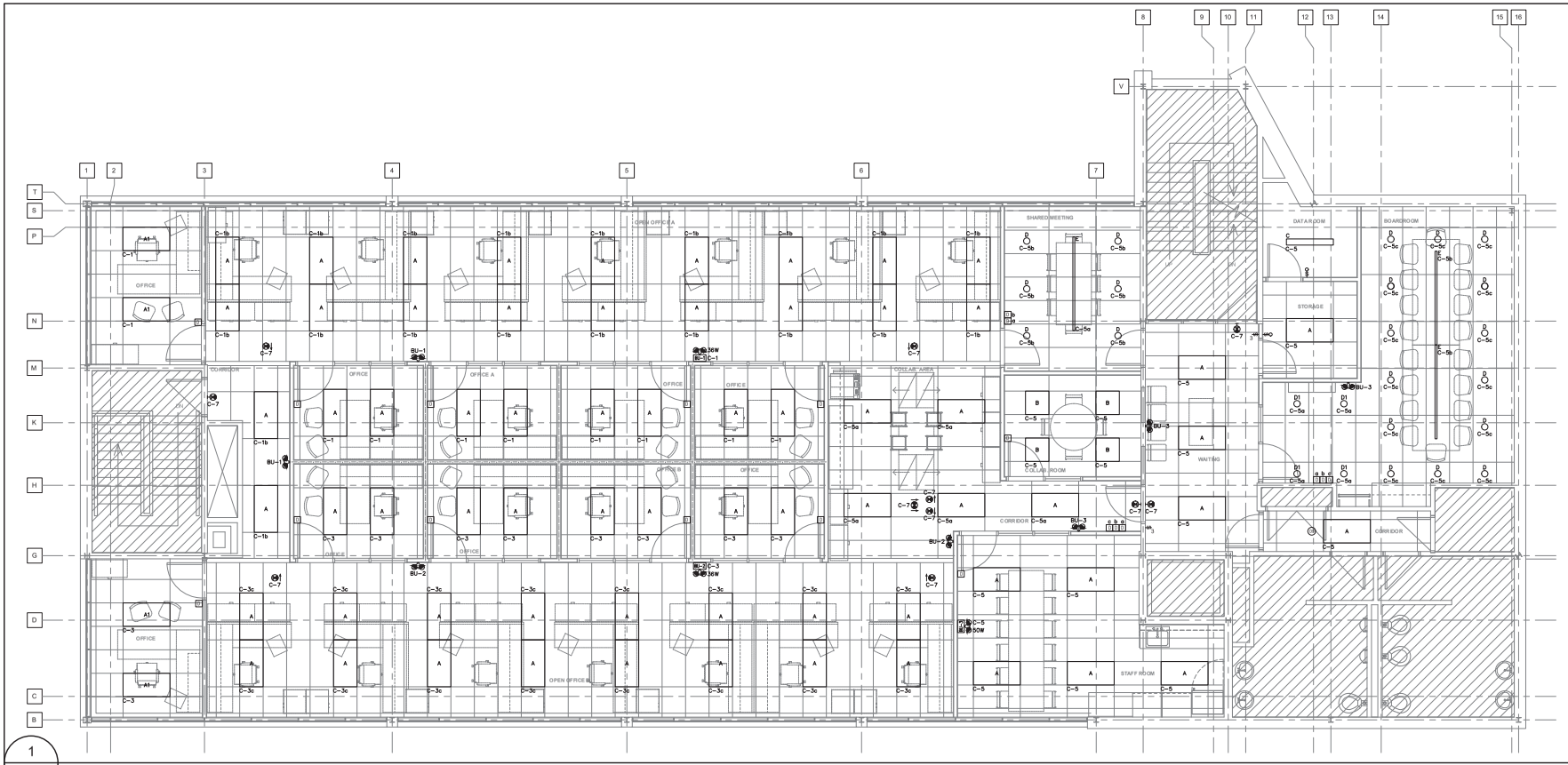
DRAWN BY DESSINÉ PAR
K.C.S.

APPROVED BY APPROUVÉ PAR
M.A.M.

DATE
2019-06-28

SCALE ÉCHELLE
AS NOTED

M-6



1 E-1 UPPER FLOOR PLAN - LIGHTING

SCALE: 1/4" = 1'-0"

LIGHTING

- LINEAR LUMINAIRE, REFER TO LUMINAIRE SCHEDULE
- CEILING MOUNTED LUMINAIRE, REFER TO LUMINAIRE SCHEDULE
- BU-1 EMERGENCY LIGHTING SYSTEM DUAL REMOTE HEADS, 'BU-1' INDICATES WHICH BATTERY UNIT SERVES REMOTE. REFER TO LUMINAIRE SCHEDULE
- EMERGENCY LIGHTING BATTERY UNIT C/W DUAL HEADS, 'BU-1' INDICATES BATTERY UNIT IDENTIFIER. REFER TO LUMINAIRE SCHEDULE
- GREEN LED "RUNNING MAN" EXIT SIGN, RECESSED CEILING MOUNT OR WALL MOUNTED AS INDICATED, NUMBER OF FACES AND DIRECTIONAL ARROWS AS SHOWN. REFER TO LUMINAIRE SCHEDULE

LIGHTING CONTROL

- 3 3-WAY TOGGLE SWITCH
- WALL MOUNTED OCCUPANCY SENSOR/SWITCH
- D DIMMER SWITCH, LED COMPATIBLE, 0-10V CONTROL
- CEILING MOUNTED OCCUPANCY SENSOR

EQUIPMENT CONNECTIONS AND CONTROLS

- 120/208V DIRECT CONNECTION
- C COMMUNICATIONS CONNECTION TO MODULAR FURNITURE
- POWER CONNECTION TO MODULAR FURNITURE
- F UNFUSED DISCONNECT SWITCH
- RAT REVERSE ACTING THERMOSTAT
- RECESSED ELECTRICAL PANELBOARD

GENERAL POWER

- 5-15R, 15A, 120V U-GROUND DUPLEX RECEPTACLE – STANDARD MOUNTING HEIGHT AND MOUNTED ABOVE COUNTER
- 5-20R, 20A, 120V T-SLOT U-GROUND DUPLEX RECEPTACLE – STANDARD MOUNTING HEIGHT AND MOUNTED ABOVE COUNTER
- 5-15R, 15A, 120V U-GROUND QUAD RECEPTACLE – STANDARD MOUNTING HEIGHT AND MOUNTED ABOVE COUNTER
- 5-20R, 20A, 120V (T-SLOT) U-GROUND DUPLEX RECEPTACLE C/W GROUND FAULT CIRCUIT INTERRUPTER – STANDARD MOUNTING HEIGHT AND MOUNTED ABOVE COUNTER
- FB FLOOR BOX
- JB JUNCTION BOX

FIRE ALARM SYSTEM

- MANUAL PULL STATION
- FLUSH MOUNTED BELL

COMMUNICATIONS

- TELEPHONE OUTLET – WALL MOUNTED OR MOUNTED ABOVE COUNTER
- WAP WIRELESS ACCESS POINT MOUNTED IN CEILING
- COMBINATION VOICE/DATA OUTLET – WALL MOUNTED OR MOUNTED ABOVE COUNTER, (D=INDICATES NUMBER OF DATA DROPS, V=INDICATES NUMBER OF VOICE DROPS

SECURITY

- CR CARD READER
- ES ELECTRIC STRIKE

MISCELLANEOUS

- ELECTRICAL DRAWING SPECIFIC NOTES
- (1) MECHANICAL EQUIPMENT DESIGNATION

ABBREVIATIONS

- DEL – INDICATES EXISTING DEVICE TO BE DELETED
- EX – INDICATES EXISTING DEVICE TO REMAIN
- MV – INDICATES EXISTING DEVICE TO BE MOVED
- REL – INDICATES EXISTING DEVICE IN RELOCATED LOCATION
- WAP – WIRELESS ACCESS POINT
- WP – WEATHERPROOF WHILE-IN-USE COVERPLATE

2 E-1 LEGEND N.T.S.

LUMINAIRE SCHEDULE

TYPE	MANUFACTURER		DESCRIPTION	VOLTAGE	MOUNTING	LAMP	NOTES
A	LITHONIA #2AVL4-40L-MDR-GZ10-LP835	METALUX #24C22-40-RDP-UNV-L835-CDI-U	2'x4' RECESSED DIRECT/INDIRECT LUMINAIRE, BAKED WHITE ENAMEL FINISH, METAL DIFFUSER ROUND HOLES, 0-10V DIMMABLE LED DRIVER.	120	RECESSED IN T-BAR	41W LED ~4000 LUMENS 3500K CRI=80	–
A1	LITHONIA #2AVL4-50L-MDR-GZ10-LP835	METALUX #24C22-50-RDP-UNV-L835-CDI-U	2'x4' RECESSED DIRECT/INDIRECT LUMINAIRE, BAKED WHITE ENAMEL FINISH, METAL DIFFUSER ROUND HOLES, 0-10V DIMMABLE LED DRIVER.	120	RECESSED IN T-BAR	50W LED ~5200 LUMENS 3500K CRI=80	–
B	LITHONIA #2AVL2-30L-MDR-GZ10-LP835	METALUX #22C22-32-RDP-UNV-L835-CDI-U	2'x2' RECESSED DIRECT/INDIRECT LUMINAIRE, BAKED WHITE ENAMEL FINISH, METAL DIFFUSER ROUND HOLES, 0-10V DIMMABLE LED DRIVER.	120	RECESSED IN T-BAR	31W LED ~3000 LUMENS 3500K CRI=80	–
C	LITHONIA #ZL1N-L48-5000LM-FST-MVOLT-35K-80CRI-WH	METALUX #4SNLED-LD5-50SL-SLN-UNV-L835-CDI-U	4' LONG LED STRIPLIGHT, BAKED WHITE ENAMEL FINISH, SNAP ON FROSTED LENS, 0-10V DIMMABLE LED DRIVER.	120	SUSPENDED AT 9'-0" A.F.F.	34W LED ~5000 LUMENS 3500K CRI=80	1
D	LITHONIA #LDN4-35/10-L04-AR-LS-MVOLT-GZ10-TRW	PORTFOLIO #LD4B10D010/ EU4B10208035/ 4LBOM1/ HB26	4" DIAMETER LED DOWNLIGHT, SPECULAR REFLECTOR, DIFFUSING OPTICAL LENS, WHITE TRIM RING, 0-10V DIMMABLE LED DRIVER.	120	RECESSED IN T-BAR	13W LED ~1000 LUMENS 3500K CRI=80	–

LUMINAIRE SCHEDULE

TYPE	MANUFACTURER		DESCRIPTION	VOLTAGE	MOUNTING	LAMP	NOTES
D1	LITHONIA #LDN4-35/15-L04-AR-LS-MVOLT-GZ10-TRW	PORTFOLIO #LD4B15D010/ EU4B10208035/ 4LBOM1/HB26	4" DIAMETER LED DOWNLIGHT, SPECULAR REFLECTOR, DIFFUSING OPTICAL LENS, WHITE TRIM RING, 0-10V DIMMABLE LED DRIVER.	120	RECESSED IN T-BAR	20W LED ~1500 LUMENS 3500K CRI=80	–
E	LUMENWERX #WA3PO-HLO-LED-80-500-35-8FT-UNV-D1-1-S3WAC36-W	NEORAY #5123-DP-LC500-35-SC4B-ETG-0096-1-D-U-DD-1-W	8' LONG LED PENDANT, EXTRUDED ALUMINUM HOUSING, MATTE WHITE IN COLOR, ACRYLIC LENS, 0-10V DIMMABLE LED DRIVER.	120	SUSPENDED FROM T-BAR AT 8'-0" A.F.F.	49W/FT LED ~500 LUMENS/FT 3500K CRI=80	1
	READY-LITE #RS-3-W-SP	AIMLITE #RPST-U-M-WHT-BAT	SINGLE OR DUAL FACE UNIVERSAL MOUNTING EXIT SIGN, WHITE STEEL HOUSING, 'RUNNING MAN' PICTOGRAM, DIRECTIONAL ARROWS AS INDICATED, INTERNAL BATTERY	120	SURFACE MOUNTED TO WALL OR CEILING	2W LED	–
BU-1	READY-LITE #LDX12-XXVQ-ADN-LD10	AIMLITE #ERGV-12-XXX-2-6WLA-WHT-ATD	DUAL HEAD EMERGENCY LIGHTING BATTERY UNIT, 10 YEAR BATTERY, BATTERY CHARGER, TEST SWITCH, 'CHARGE' & 'ON' LEDS, AUTO TEST OPTION	120VAC/ 12VDC	SURFACE MOUNTED	2-6W LED	3
BU-1	READY-LITE #RL150-D-LD10	AIMLITE #RMMD-2-12-6WLA-WHT	DUAL HEAD REMOTE EMERGENCY LIGHT, WHITE METAL BULLET STYLE HEADS	120VAC/ 12VDC	SURFACE MOUNTED	2-6W LED	2

NOTES:
1. CONFIRM EXACT MOUNTING HEIGHT WITH ARCHITECT PRIOR TO ROUGH-IN.
2. PROVIDE ALL REQUIRED LOW VOLTAGE CONDUIT AND WIRING TO CONNECT TO BATTERY UNIT INDICATED.
3. SEE FLOOR PLANS FOR REQUIRED BATTERY CAPACITY.

3 E-1 LUMINAIRE SCHEDULE N.T.S.

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REVISIONS	DATE

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DRAWING DESSIN

ELECTRICAL UPPER FLOOR LIGHTING PLAN AND LUMINAIRE SCHEDULE

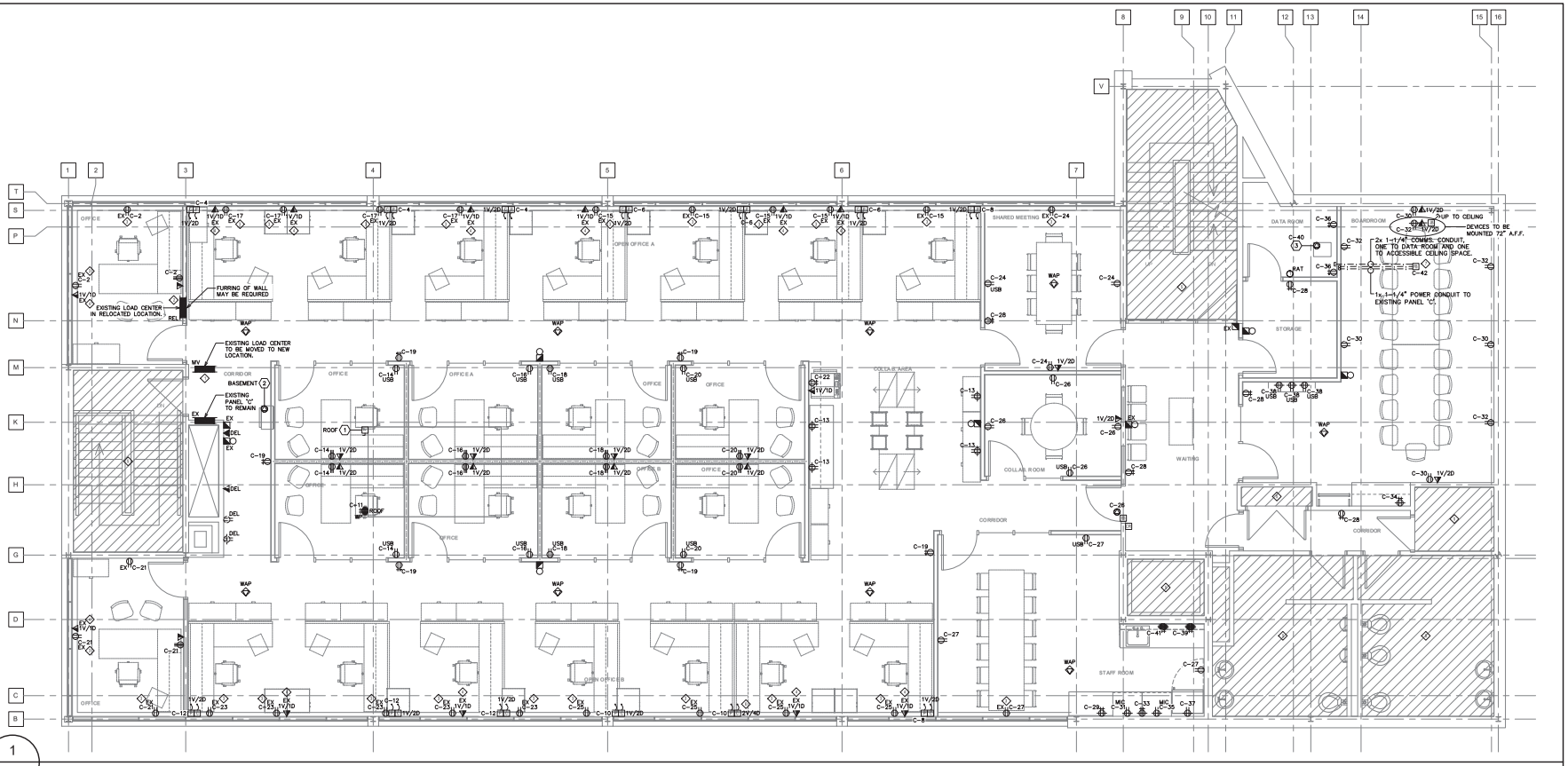
DRAWN BY DESSINÉ PAR J.A.

APPROVED BY APPROUVÉ PAR T.D.

DATE 2019-08-15

SCALE ÉCHELLE AS INDICATED

E-1



1 E-2 UPPER FLOOR PLAN - POWER & COMMUNICATIONS

SCALE: 1/4" = 1'-0"

SPECIFIC NOTES:

1. TRACE OUT ALL EXISTING CIRCUITS TO DETERMINE WHICH CIRCUITS ARE STILL IN SERVICE (TO BE RETAINED) AND REQUIRED TO BE EXTENDED TO THE NEW LOCATION OF THE EXISTING LOAD CENTER.
2. EXTEND ALL EXISTING CIRCUITS TO BE RETAINED TO THE NEW LOCATION OF THE EXISTING LOAD CENTER. IN ADDITION, EXTEND EXISTING PANEL FEEDER TO THE NEW LOCATION OF THE EXISTING LOAD CENTER.
3. DISCONNECT AND REMOVE EXISTING WIRING DEVICE AND COVERPLATE. PROVIDE NEW RECEPTACLE AND COVERPLATE ON CIRCUIT INDICATED.
4. DISCONNECT AND REMOVE EXISTING COMMUNICATIONS OUTLET AND CABLING BACK TO SOURCE. PROVIDE NEW COMMUNICATIONS OUTLETS AND CABLING TO SUIT QUANTITY INDICATED.
5. ALL EXISTING CIRCUITS WITHIN THIS AREA SHALL BE RETAINED. PROVIDE ALL BREAKERS, CONDUIT AND WIRE REQUIRED TO KEEP THESE CIRCUITS IN SERVICE.
6. COMMUNICATIONS CONDUIT SHALL BE 1" MINIMUM TO SUIT CABLING TO BE INSTALLED.
7. NEW FLOOR BOX SHALL BE 8" FIRE-RATED POKE-THROUGH TYPE COMPLETE WITH TWO (2) DUPLEX RECEPTACLES AND PROVISIONS FOR FUTURE DATA IN EACH BOX. BOX SHALL BE LEGRAND WIREMOLD EVOLUTION SERIES CAT.3: B4TC2PBK COMPLETE WITH ALL REQUIRED DEVICES AND COVER PLATES. PROVIDE BOX FOR BOTTOM FEED CONNECTIONS. CONTRACTOR TO CONFIRM EXACT FLOOR BOX AND SYSTEM FURNITURE REQUIREMENTS WITH ARCHITECT PRIOR TO ORDERING. OWNER WANTS TO RUN CONDUITS, CABLING AND WIRING UP THE LEG OF THE BOARDROOM TABLE, CONFIRM WITH OWNER PRIOR TO ORDERING OF FLOOR BOX.

2 E-2 NOTES

N.T.S.

MECHANICAL EQUIPMENT SCHEDULE

NO.	ITEM	DESCRIPTION	LOCATION	LOAD	VOLTS	ø	BREAKER	FEEDER	DISCONNECT	STARTER	PANEL	NOTES
1	AHU-1	AIR HANDLING UNIT	ROOF	132.5A MCA	208	3	EXISTING 150A-3P	EXISTING	BY MECHANICAL	–	EXISTING CDP PANEL	1
2	RF-B	EXHAUST FAN	BASEMENT	3.2A	120	1	15A-1P	2C#12 AC90+BOND	–	–	EXISTING BASEMENT PANEL	2,3
3	TF-1	EXHAUST FAN	SECOND FLOOR DATA ROOM	3.11A	120	1	15A-1P	2C#12 AC90+BOND	–	–	EXISTING PANEL 'C'	4

NOTES:
1. RE-USE EXISTING FEEDER FROM REMOVED AIR HANDLING UNIT AND CONNECT. EXTEND FEEDER AS REQUIRED.
2. WIRE EXHAUST FAN THRU CONTROLS CONTRACTOR SUPPLIED CONTROL RELAY AND CONNECT TO EQUIPMENT SUPPLIED DISCONNECT.
3. PROVIDE A DEDICATED 15A-1P CIRCUIT FROM NEAREST AVAILABLE 120/208V PANELBOARD.
4. WIRE EXHAUST FAN THRU REVERSE ACTING THERMOSTAT AND CONNECT.

STARTER LEGEND

MS= MANUAL TYPE MOTOR STARTER c/w O/L PROTECTION
HOA= MAGNETIC STARTER C/W HAND/OFF/AUTO SELECTOR SWITCH
VSD= VARIABLE SPEED DRIVE, SUPPLIED BY MECHANICAL CONTRACTOR, WIRED BY ELECTRICAL CONTRACTOR

3 E-2 MECHANICAL EQUIPMENT SCHEDULE

N.T.S.

EXISTING PANEL TO REMAIN. ELECTRICAL CONTRACTOR MAY RE-USE EXISTING BREAKERS AND SHALL PROVIDE NEW BREAKERS AS REQUIRED TO MEET BREAKER LAYOUT INDICATED.

PANEL VOLTAGE: 208					PANEL TYPE:								PANEL 'C'	
CCT	DESCRIPTION	WATTAGE A	WATTAGE B	WATTAGE C	P	BRKR AMP	#	BRKR AMP	P	WATTAGE A	WATTAGE B	WATTAGE C	DESCRIPTION	CCT
1	LIGHTING	1248			1	15*	A	15	1	1200			RECEPTACLES (5)	2
3	LIGHTING		1084		1	15*	B	15	1		1200		MODULAR FURNITURE (3)	4
5	LIGHTING			1213	1	15*	C	15	1			1200	MODULAR FURNITURE (3)	6
7	EXIT SIGNS	100			1	15*	A	15	1	1200			MODULAR FURNITURE (2)	8
9	SPARE		100		1	15	B	15	1		1200		MODULAR FURNITURE (3)	10
11	ROOFTOP RECEPTACLE (1)			200	1	20	C	15	1			1200	MODULAR FURNITURE (3)	12
13	RECEPTACLES (4)	800			1	15	A	15	1	1200			RECEPTACLES (6)	14
15	RECEPTACLES (5)		1000		1	15	B	15	1		1200		RECEPTACLES (6)	16
17	RECEPTACLES (4)			800	1	15	C	15	1			1200	RECEPTACLES (6)	18
19	RECEPTACLES (6)	1200			1	20	A	15	1	1200			RECEPTACLES (6)	20
21	RECEPTACLES (5)		1000		1	15	B	20	1		1200		PRINTER	22
23	RECEPTACLES (5)			1000	1	15	C	15	1			800	RECEPTACLES (4)	24
25	RECEPTACLES (4)	800			1	15	A	15	1	800			RECEPTACLES (4)	26
27	RECEPTACLES (4)		800		1	15	B	20	1		1000		RECEPTACLES (5)	28
29	RECEPTACLE (1)			1000	1	20	C	15	1			800	RECEPTACLES (4)	30
31	MICROWAVE	1200			1	15	A	15	1	800			RECEPTACLES (4)	32
33	RECEPTACLE (1)		1000		1	20	B	20	1		1000		RECEPTACLE (1)	34
35	MICROWAVE			1200	1	15	C	20	1			400	RECEPTACLES (2)	36
37	REFRIGERATOR	1200			1	15	A	15	1	600			RECEPTACLES (3)	38
39	RECEPTACLE(1)		1000		1	20	B	15	1		373		EXHAUST FAN TF-1	40
41	RECEPTACLE(1)			1000	1	20	C						BOARDROOM FLOOR BOX	42
	PHASE LOADS	6548	5984	6413						7000	7173	5600		
	TOTAL PHASE LOADS	13548				13157				12013				
	TOTAL CONNECTED LOAD	38718												
	TOTAL AMPERAGE	108 AMPS												

* INDICATES LOCK-ON BREAKER DEVICE

4 E-2 PANEL SCHEDULE

N.T.S.

dp18022

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EXCEPT FOR REFERENCE PURPOSES, THE DRAWINGS AND SPECIFICATIONS SHALL NOT BE USED FOR ADDITIONS OR ALTERATIONS TO THE PROJECT OR ON ANY OTHER PROJECT.

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STAMP SCEAU

ISSUED FOR TENDER MAR. 03, 2020

REVISIONS DATE

A/B DETAIL / LOCATION OF DETAIL

CLIENT CLIENT

PROJECT PROJET

SPRINGHILL OFFICE FIT-UP
43 Main St., Upper Level
Springhill, NS

DRAWING DESSIN

ELECTRICAL UPPER FLOOR POWER □ COMMUNICATIONS PLAN

DRAWN BY DESSINÉ PAR J.A.

APPROVED BY APPROUVÉ PAR T.D.

DATE 2019-08-15

SCALE ÉCHELLE AS INDICATED

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ELECTRICAL SPECIFICATIONS

1. GENERAL REQUIREMENTS

1.1. THIS ELECTRICAL SPECIFICATION SHALL BE READ IN CONJUNCTION WITH: GENERAL REQUIREMENTS, ARCHITECTURAL SPECIFICATIONS, ELECTRICAL DRAWINGS AND OTHER CONTRACT DOCUMENTS.

1.2. SCOPE OF WORK
1.2.1. THIS CONTRACTOR SHALL PROVIDE ALL LABOUR, MATERIALS, EQUIPMENT AND SERVICES NECESSARY FOR THE INSTALLATION OF COMPLETELY FINISHED, TESTED, BALANCED AND PROPERLY OPERATING ELECTRICAL SYSTEMS AS SPECIFIED HEREIN AND AS INDICATED ON DRAWINGS. THE INTENT IS TO PROVIDE FOR FINISHED WORK COMPLETE IN ALL ESSENTIALS AS CALLED FOR BY THE CONTRACT DOCUMENTS, IN A MANNER CONSISTENT WITH GOOD WORKMANSHIP.
1.2.2. THE WORK INCLUDES, BUT, IS NOT LIMITED TO, THE FOLLOWING:
1.2.2.1. WIRING OF EQUIPMENT SUPPLIED BY MECHANICAL CONTRACTOR
1.2.2.2. POWER DISTRIBUTION
1.2.2.3. BRANCH CIRCUIT WIRING
1.2.2.4. WIRING DEVICES
1.2.2.5. LUMINAIRES AND CONTROL
1.2.2.6. EMERGENCY LIGHTING AND EXIT SIGNS
1.2.2.7. VOICE CABLING AND OUTLETS
1.2.2.8. DATA CABLING AND OUTLETS
1.2.2.9. FIRE ALARM SYSTEM REVISIONS AND VERIFICATION

1.3. CODES AND STANDARDS
1.3.1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH CSA C22-1, CANADIAN ELECTRICAL CODE, PART 1 2018.

1.4. PERMIT AND BY-LAWS
1.4.1. OBTAIN PERMITS AND CERTIFICATIONS PRIOR TO START OF WORK. SUBMIT DRAWINGS TO INSPECTION AUTHORITY. COORDINATE SERVICES WITH UTILITIES AND OTHER SUPPLIERS. PAY ALL FEES ASSOCIATED SUCH THAT ALL WORK INDICATED ON DRAWINGS MAY BE CARRIED OUT.
1.4.2. ALL WORK PERFORMED BY THIS CONTRACTOR SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE CODES, STANDARDS AND THEIR AMENDMENTS, AS WELL AS LOCAL BY-LAWS, AS PERTAINS TO THIS INSTALLATION.

1.5. SITE VISIT
1.5.1. PRIOR TO TENDER CLOSE, THIS CONTRACTOR MUST VISIT SITE AND FAMILIARIZE THEMSELVES WITH THE EXISTING BUILDING AND SITE CONDITIONS WHERE THE WORK HAS TO BE DONE. NO ALLOWANCE SHALL BE MADE FOR PROBLEMS DUE TO LACK OF KNOWLEDGE OF EXISTING CONDITIONS THAT COULD REASONABLY HAVE BEEN ASCERTAINED BY A CAREFUL INSPECTION.

1.6. COORDINATION OF WORK
1.6.1. THIS CONTRACTOR SHALL COORDINATE THEIR WORK WITH THE GENERAL CONTRACTOR AND WITH ALL OTHER SUB-CONTRACTORS.
1.6.2. SCHEDULE AND PERFORM ALL WORK IN EXISTING PREMISES WITH PROJECT MANAGER SO AS NOT TO INTERFERE WITH NORMAL OPERATIONS OF BUILDING OCCUPANTS. ANY DISRUPTIVE WORK SHALL BE SCHEDULED OUTSIDE OPERATING HOURS OF PLACE OF WORK AND AS APPROVED BY OWNER.
1.6.3. COOPERATE WITH OTHER TRADES, OWNER AND OWNER'S FORCES IN CARRYING OUT WORK. REPORT ANY DEFICIENCIES OR DEFECTS IN WORK PERFORMED BY OTHERS THAT AFFECT THIS CONTRACT'S WORK TO ENGINEER IMMEDIATELY.
1.6.4. WHERE WORK IS CARRIED OUT IN EXISTING PREMISES, NOTIFY PROJECT MANAGER AT LEAST 72 HOURS IN ADVANCE OF ANY NECESSARY INTERRUPTIONS IN SERVICES OR ACCESS.

1.7. GUARANTEE
1.7.1. THIS CONTRACTOR SHALL PROVIDE, IN WRITING, A GUARANTEE COVERING ALL LABOR AND MATERIAL FOR A PERIOD OF ONE YEAR FROM FINAL ACCEPTANCE OF WORK BY OWNER. REPAIR AND MAKE GOOD ALL DEFECTS DURING THAT TIME, INCLUDING ANY DAMAGE TO BUILDING INCURRED AS A RESULT OF FAILURE OF ELECTRICAL WORK AND/OR EQUIPMENT INSTALLED.

1.8. DRAWINGS
1.8.1. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC ONLY. SEE ARCHITECTURAL DRAWINGS FOR EXACT DIMENSIONS, LOCATIONS OF ALL WALLS AND OPENINGS. MAINTAIN ONE SET OF PLANS ON WHICH SHALL BE CLEARLY NOTE ALL CHANGES OR DEVIATIONS, IN RED, FROM THE CONTRACT, AND SUBMIT THEM AT THE END OF THE PROJECT MARKED 'AS-BUILT', SIGNED BY THIS CONTRACTOR. THESE DRAWINGS SHALL BE KEPT ON SITE DURING CONSTRUCTION, UPDATED, AND MADE AVAILABLE FOR REVIEW BY ENGINEER, IF REQUESTED.
1.8.2. REVIEW MECHANICAL DRAWINGS AND PROVIDE POWER TO ALL MECHANICAL EQUIPMENT. SEE MECHANICAL EQUIPMENT SCHEDULE, CONFIRM EXACT REQUIREMENTS WITH MECHANICAL CONTRACTOR, REPORT ANY DISCREPANCY TO ENGINEER FOR DIRECTIVE PRIOR TO START OF WORK. COORDINATE AND ASSIST MECHANICAL CONTRACTOR WITH TESTING OF MECHANICAL EQUIPMENT.

1.9. EXTRA WORK
1.9.1. NO ALLOWANCE SHALL BE MADE BEYOND CONTRACT PRICE UNLESS CONTRACTOR RECEIVES SIGNED APPROVAL IN ACCORDANCE WITH GENERAL CONDITIONS.

1.10. CUTTING AND PATCHING
1.10.1. ALL CUTTING, PATCHING AND FIRE-RATING SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR AND/OR PROJECT MANAGER. THIS CONTRACTOR SHALL LOCATE THE EXACT DIMENSIONS AND POSITIONS OF OPENINGS AND HOLES WHERE CUTTING IS REQUIRED. WHERE CUTTING AND PATCHING IS NECESSARY, IT SHALL BE DONE BY THE GENERAL CONTRACTOR AND/OR PROJECT MANAGER INCLUDING PENETRATION OF FIRE RATED WALLS, CEILINGS OR FLOORS.

1.11. SHOP DRAWINGS
1.11.1. THIS CONTRACTOR SHALL SUBMIT, WITHIN TWO WEEKS AFTER BEING AWARDED THE CONTRACT, A MINIMUM OF 6 COPIES, OR 1 ELECTRONIC COPY OF SHOP DRAWINGS FOR REVIEW BY THE ENGINEER OF ALL EQUIPMENT AND MATERIAL SPECIFIED. WORK SHALL NOT PROCEED AND EQUIPMENT/MATERIAL SHALL NOT BE ORDERED UNTIL THE DRAWINGS HAVE BEEN RETURNED STAMPED AND SIGNED. THIS REVIEW DOES NOT RELIEVE THE CONTRACTOR OF THE OBLIGATION OF CHECKING THE DRAWINGS THEMSELVES OR FURNISHING THE MATERIALS SPECIFIED.
1.11.2. WHEN SUBMITTED, SHOP DRAWINGS/PRODUCT DATA MUST BEAR CONTRACTOR'S STAMP REPRESENTING THAT THEY HAVE DETERMINED AND VERIFIED ALL FIELD MEASUREMENTS, FIELD CONSTRUCTION CRITERIA, MATERIALS, CATALOGUE NUMBERS AND SIMILAR DATA AND THAT HE HAS CHECKED AND COORDINATED EACH SHOP DRAWING WITH REQUIREMENTS OF WORK AS INDICATED ON DRAWINGS AND SPECIFICATIONS.
1.11.3. SHOP DRAWINGS REQUIRED FOR: LUMINAIRES, LAMPS, CONTROLS, EXIT SIGNS, EMERGENCY LIGHTING BATTERIES AND REMOTE HEADS, TRANSFORMERS, PANELBOARDS, MOTOR STARTERS, DISCONNECT SWITCHES, WIRING DEVICES AND ANY AND ALL OTHER ELECTRONIC DEVICES OR ITEMS. INFORMATION REQUIRED: MANUFACTURER, MODEL, DIMENSIONS, CONSTRUCTION DETAILS, ACCESSORIES, INSTALLATION DETAILS, CAPACITIES, PERFORMANCE DATA, FINISHES. INCLUDE WIRING SINGLE LINE AND SCHEMATIC DIAGRAMS WHERE APPLICABLE.
1.11.4. ALL MATERIAL SUPPLIED SHALL BE NEW AND CARRY C.S.A. AND/OR U.L.C. CERTIFICATION.

1.12. CLEANING UP
1.12.1. THIS CONTRACTOR SHALL, AT ALL TIMES, KEEP THE SITE NEAT, CLEAN AND FREE FROM ACCUMULATION OF WASTE MATERIALS AND RUBBISH WHICH ARISE OUT OF HIS WORK.

1.13. NAMEPLATES
1.13.1. SUPPLY AND INSTALL ENGRAVED 1/8" THICK PLASTIC LAMICOID STICK-ON NAMEPLATES, BLACK FACE-WHITE CORE, FOR ALL ELECTRICAL EQUIPMENT. THIS SHALL INCLUDE, BUT NOT LIMITED TO, STARTERS, DISCONNECT SWITCHES, PANELBOARDS, PULLBOXES, ETC. ATTACH WITH TWO-WAY TAPE. WORDING SHALL INDICATE DEVICE NAME AS INDICATED OR SYSTEM NAME, VOLTAGE, PHASE, AND POWER SOURCE. CONFIRM WORDING.

1.14. OPERATION AND MAINTENANCE INSTRUCTIONS
1.14.1. THIS CONTRACTOR SHALL INSTRUCT THE OWNER IN OPERATION AND MAINTENANCE OF ALL EQUIPMENT AND SYSTEMS INSTALLED. ALL SAFETY AND CONTROL FEATURES SHALL BE THOROUGHLY EXPLAINED. THREE COPIES OF OPERATION AND MAINTENANCE INSTRUCTIONS, TOGETHER WITH ALL APPROVED SHOP DRAWINGS AND SPARE PARTS LIST INSERTED IN A BINDER, SHALL BE SUBMITTED TO THE OWNER. MANUALS COMPLETE WITH:
a: DETAILS OF DESIGN ELEMENTS, CONSTRUCTION FEATURES, COMPONENT FUNCTION AND MAINTENANCE REQUIREMENTS, TO PERMIT EFFECTIVE START-UP, OPERATION, MAINTENANCE, REPAIR, MODIFICATION, EXTENSION AND EXPANSION OF ANY PORTION OR FEATURE OF INSTALLATION.
b: TECHNICAL DATA, PRODUCT DATA, SUPPLEMENTED BY BULLETINS, DESCRIPTIONS OF ITEMS, AND PARTS LISTS. ADVERTISING OR SALES LITERATURE IS NOT ACCEPTABLE.
c: WIRING AND SCHEMATIC DIAGRAMS AND PERFORMANCE CURVES.
d: NAME AND ADDRESS OF LOCAL SUPPLIERS.
e: COPY OF REVIEWED SHOP DRAWINGS.
f: COPY OF ALL TEST CERTIFICATES.
g: COPY OF ALL FINAL NEW AND REVISED PANELBOARD SCHEDULES.

1.15. DISPOSALS
1.15.1. ADVISE OWNER OF AVAILABILITY OF SURPLUS MATERIAL. TURN OVER ITEMS REQUESTED BY OWNER AND DISPOSE OF REMAINDER IN ACCORDANCE WITH ALL BY LAWS AND LOCAL AUTHORITIES HAVING JURISDICTION. OWNER HAS RIGHT OF FIRST REFUSAL.

1.16. DEMOLITION
1.16.1. DISCONNECT AND REMOVE ALL DEVICES, COMPONENTS, FIXTURES EQUIPMENT AND EXPOSED RACEWAYS, WIRES AND CABLES, BACK TO SOURCE OF SUPPLY, MADE REDUNDANT BY THIS WORK. MAKE SAFE AND OPERATIONAL ANY REMAINING LIVE CONNECTIONS.
1.16.2. ELECTRICAL CONTRACTOR SHALL ENSURE ELECTRICAL CONTINUITY TO EXISTING DEVICES REMAINING.
1.16.3. RELOCATE EXISTING WIRING, RACEWAYS, FIXTURES AND DEVICES AS REQUIRED TO MAINTAIN REASONABLE ACCESSIBILITY AND TO FACILITATE INSTALLATION OF TOTAL PROJECT WORK.
1.16.4. REVIEW LOADING ON EACH AFFECTED CIRCUIT PRIOR TO START OF CONSTRUCTION AND ADJUST AS REQUIRED.
1.16.5. REMOVE CONTAMINATED OR DANGEROUS MATERIALS AS DEFINED BY AUTHORITIES HAVING JURISDICTION RELATING TO ENVIRONMENTAL PROTECTION FROM SITE AND DISPOSE OF IN A SAFE MANNER TO MINIMIZE DANGER AT SITE OR DURING DISPOSAL.

2. BASIC MATERIAL AND METHODS

2.1. EQUIPMENT AND PROPERTY
2.1.1. ANY ALTERNATE PRODUCT PROPOSED SHALL MEET SAME STANDARDS AS PRODUCT SPECIFIED AND COULD BE CONSIDERED ACCEPTABLE ONLY IF APPROVED PRIOR TO INSTALLATION BY ENGINEER. SUCH APPROVAL WILL NOT BE UNREASONABLY WITHHELD.
2.1.2. SPECIFIED PRODUCTS PROVIDED BY THIS CONTRACTOR SHALL BE NEW AND CAPABLE OF PROPER OPERATION. PRODUCTS PROVIDED SHALL BE OF QUALITY BEST SUITED TO THEIR PURPOSE, CSA OR LOCAL INSPECTION AUTHORITY APPROVED AND CAPABLE OF PROPER OPERATION.
2.1.3. CLEAN VISIBLE PORTIONS OF ALL DEVICES AND COVER PLATES AS RECOMMENDED BY MANUFACTURER TO RESTORE FACTORY FINISH.
2.1.4. PROTECT WORK AND OWNER'S PROPERTY FROM DAMAGE THAT MAY ARISE AS A RESULT OF THIS CONTRACTOR'S PERFORMANCE OF WORK. PROMPTLY MAKE GOOD ANY DAMAGES TO WORK AND OWNER'S PROPERTY ARISING FROM THIS CONTRACTOR'S PERFORMANCE OF WORK.
2.1.5. ARRANGE DELIVERIES AND STORAGE WITH OWNER AND AUTHORITIES HAVING JURISDICTION AS APPROPRIATE. PROTECT NEW AND REUSED MATERIALS FROM ABUSE, DAMAGE AND ENVIRONMENTAL CONDITIONS WHICH THEY ARE NOT INTENDED TO WITHSTAND. NOTWITHSTANDING FOREGOING, FOLLOW MANUFACTURER'S RECOMMENDATIONS.

2.2. WIRING METHODS
2.2.1. WHERE CABLES AND CONDUITS PASS THROUGH FLOORS AND FIRE RATED WALLS, PARTITIONS AND CEILINGS, SEAL ALL VOIDS WITH ULC APPROVED FIRE STOP COMPOUND CONFORMING TO CGSB 19-GP-9MA, CAULK OR FOAM AS REQUIRED TO MAINTAIN BARRIER RATING. ACCEPTABLE MANUFACTURERS: DOW CORNING, NELSON, 3M. COORDINATE WITH PROJECT MANAGER.
2.2.2. LOCATE, DIMENSION AND MAKE ELECTRICAL SERVICES OPENINGS. PROVIDE NECESSARY SLEEVES, ESCUTCHEONS AND COVERS.
2.2.3. DRILL AND PROVIDE ANCHORS AS REQUIRED FOR EXPANSION BOLTS, HANGER RODS, BRACKETS AND SUPPORTS.

2.3. TESTING
2.3.1. TEST ALL LUMINAIRES, CONTROLS, WIRING DEVICES, CIRCUIT BREAKERS, DISCONNECT SWITCHES, AND EMERGENCY LIGHTING UNIT EQUIPMENT FOR CORRECT OPERATION AND ABSENCE OF SHORTS OR GROUNDS.
2.3.2. PUT EQUIPMENT AND SYSTEMS IN SERVICE AS MAY BE REQUESTED BY ENGINEER FOR TRIAL USE PROVIDED NO HAZARD OR DAMAGE WILL RESULT NOR GUARANTEES VOIDED.
2.3.3. FOR POWER WIRING, MAINTAIN PHASE SEQUENCE AND COLOR CODING THROUGHOUT. COLOR CODING TO CSA C22.1.

3. CONDUIT AND FITTINGS

3.1. ALL EMPTY CONDUITS SHALL BE COMPLETE WITH PULL CORD, WHERE APPLICABLE. INSTALL NYLON INSULATED BUSHINGS ON ALL VOICE, DATA AND ALL OTHER CABLE "CONDUIT ENDS".

3.2. SUPPORT ALL BOXES INDEPENDENTLY OF CONNECTING CONDUITS.

3.3. DO NOT USE SUPPORTS OR EQUIPMENT INSTALLED FOR OTHER TRADES FOR CONDUIT SUPPORT, EXCEPT WITH PERMISSION OF OTHER TRADES AND APPROVAL OF ENGINEER.

3.4. DO NOT USE WIRE LASHING OR PERFORATED STRAPPING TO SUPPORT OR SECURE RACEWAYS.

3.5. PROVIDE ADEQUATE SUPPORT FOR RACEWAYS DROPPED VERTICALLY TO EQUIPMENT, WHERE THERE IS NO WALL SUPPORT.

3.6. FASTEN EXPOSED CONDUIT TO BUILDING CONSTRUCTION OR SUPPORT SYSTEM USING ONE OR TWO HOLE STEEL STRAPS.

3.7. INSTALL CONNECTORS ON SURFACE CONDUITS, SO THAT SCREW HEADS DO NOT POSE A DANGER TO OCCUPANTS.

3.8. ALL ELECTRICAL AND COMMUNICATION CONDUITS SHALL BE COLOR CODED. OBTAIN COLOR CODING LIST FROM USER.

4. WIRE AND CABLE

4.1. ALL WIRING SHALL BE RUN IN CONDUIT CONCEALED IN ALL AREAS AND SHALL BE RUN PARALLEL TO BUILDING LINES. NO HORIZONTAL CONDUITS SHALL BE RUN IN WALLS. ALL WIRING AND CONDUITS TO BE CONCEALED.

4.2. WIRING:
4.2.1. AC90 (UP TO 10' LENGTHS WHERE PERMITTED).
4.2.2. AC90 FOR LUMINAIRE DROPS IN T-BAR CEILINGS.
4.2.3. TECK 90 CABLE.
4.2.4. RW90 IN EMT CONDUIT, C/W STEEL SET-SCREW CONNECTORS AND COUPLINGS
4.2.5. RW90 IN LIQUID TIGHT FLEXIBLE CONDUIT FOR CONNECTION TO MECHANICAL EQUIPMENT.
4.2.6. CONDUCTORS; #12 RW90 MINIMUM, 600V, CU, IN EMT CONDUIT.

4.3. IDENTIFY WIRING WITH PERMANENT INDELIBLE IDENTIFYING MARKINGS, EITHER NUMBERED OR COLORED TAPES, ON BOTH ENDS OF PHASE CONDUCTORS OF FEEDERS AND BRANCH CIRCUIT WIRING, AND MAINTAIN PHASE SEQUENCE AND COLOR CODING THROUGHOUT.

4.4. ASSURE THAT ALL CONDUCTORS ARE SIZED FOR MAXIMUM VOLTAGE DROP:
4.4.1. MAX. 3%

4.5. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH BELL-ALIANT, EASTLINK AND/OR ROGERS CABLE.

4.6. ALL SOLID COPPER CONDUCTORS WITH THERMOPLASTIC INSULATION (TYPE RW90, 600V) BRANCH WIRING SHALL BE MINIMUM #12 AWG (MAXIMUM 70'); #10 AWG (MAXIMUM 120'); FOR RUNS EXCEEDING 120' VOLTAGE DROP SHALL BE CALCULATED AT THE MAXIMUM OF 3%. #8 AWG AND LARGER CONDUCTORS SHALL BE STRANDED COPPER. USE CONNECTORS, CLAMPS AND SUPPORTS TO SUIT.

5. OUTLET, PULL & JUNCTION BOXES

5.1. PROVIDE ELECTRO-GALVANIZED STEEL SINGLE OR MULTIPLE GANG BOXES FOR FLUSH INSTALLATION FOR ALL DEVICES AND COMMUNICATIONS OUTLETS AS INDICATED. BOXES SHALL BE CODE GAUGE AND SIZED TO MEET THE CANADIAN ELECTRICAL CODE REQUIREMENTS. EQUIP ALL BOXES WITH EXTENSION AND PLASTER RINGS AS REQUIRED.

5.2. PROVIDE 4" SQUARE OR OCTAGONAL OUTLET BOXES FOR FLUSH LIGHTING FIXTURES.

5.3. PROVIDE WELDED STEEL JUNCTION/PULL BOXES WITH HINGED COVERS FOR SURFACE MOUNTING AS REQUIRED TO FACILITATE CONDUCTOR INSTALLATION. GENERALLY SUCH BOXES WILL BE LOCATED SO AS NOT TO EXCEED 100' OF CONDUIT RUN AND 2-90 DEGREE BENDS BETWEEN PULL BOXES. PROVIDE ADDITIONAL JUNCTION/PULL BOXES AS REQUIRED. ENSURE ALL JUNCTION/PULL BOXES ARE ACCESSIBLE WHEN ALL WORK IS COMPLETE.

5.4. SUPPORT ALL BOXES INDEPENDENTLY OF CONNECTING CONDUITS.

5.5. FOR FLUSH INSTALLATIONS, MOUNT OUTLETS FLUSH WITH FINISHED WALL USING TILE RINGS TO PERMIT WALL FINISH TO COME WITHIN 1/4" OF OPENING.

5.6. DO NOT INSTALL OUTLET BOXES BACK-TO-BACK IN HOLLOW WALLS; ALLOW MINIMUM 6" HORIZONTAL DISTANCE BETWEEN BOXES LOCATED ON OPPOSITE SIDES OF SAME WALL.

5.7. ALL BOXES TO BE FLUSHED MOUNTED IN ALL WALLS.

6. WIRING DEVICES

6.1. CHANGE LOCATION OF OUTLETS, AT NO EXTRA COST OR CREDIT, PROVIDING DISTANCE DOES NOT EXCEED 10'-0" FROM THAT INDICATED, AND DIRECTIVE IS GIVEN PRIOR TO INSTALLATION.

6.2. ADJUST OUTLET AS REQUIRED TO SUIT FINAL FINISHES.

6.3. EQUIPMENT MOUNTING HEIGHT IS FROM FINISHED FLOOR TO EQUIPMENT CENTERLINE UNLESS SPECIFIED OR INDICATED OTHERWISE.

6.4. IF EQUIPMENT MOUNTING HEIGHT IS NOT INDICATED, VERIFY WITH ENGINEER BEFORE PROCEEDING WITH INSTALLATION.

6.5. INSTALL ELECTRICAL EQUIPMENT AT FOLLOWING HEIGHTS UNLESS INDICATED OTHERWISE (REFER ALSO TO ARCHITECTURAL DRAWINGS);

6.5.1. LOCAL SWITCHES: 48"
6.5.2. POWER RECEPTACLES - WALL: 16"
6.5.3. POWER RECEPTACLES - ABOVE COUNTERTOP SPLASHBACK: 6" OR AS INDICATED.
6.5.4. COMMUNICATIONS OUTLETS: 16"
6.5.5. EMERGENCY BATTERY & REMOTE UNITS: 8'-6"
6.5.6. WALL MOUNTED EXIT LIGHTS: 8'-6" OR AS REQUIRED.
6.5.7. FIRE ALARM BELLS: 8'-0"
6.5.8. FIRE ALARM PULL STATIONS: 44"
6.5.9. PANELBOARDS: 5'-0" TO CENTER

6.6. SWITCHES: TOGGLE TYPE 15A & 20A, 120V AS INDICATED, SINGLE POLE, 3-WAY MANUALLY OPERATED SPECIFICATION GRADE AS INDICATED. COLOR: WHITE.

6.7. ACCEPTABLE SWITCH MANUFACTURERS: EATON, HUBBELL, LEVITON, PASS AND SEYMOUR.

6.8. ACCEPTABLE SENSOR MANUFACTURERS: SENSORSWITCH, WATTSTOPPER, LEVITON, HUBBELL.

6.9. GROUND FAULT AND DUPLEX RECEPTACLES: CSA TYPE 5-15R, 5-20R, 125V, U GROUND SPECIFICATION GRADE AS INDICATED. UREA MOULDED HOUSING. COLOR: WHITE.

6.10. ACCEPTABLE RECEPTACLE MANUFACTURERS: COOPER, HUBBELL, LEVITON, PASS AND SEYMOUR.

6.11. PROVIDE COVER PLATES FROM ONE MANUFACTURER FOR EACH TYPE OR ASSEMBLY OF OUTLETS THROUGHOUT PROJECT. OPENINGS TO SUIT TYPE AND GANGING OF DEVICES. MATCH EXISTING.

6.12. SHEET STEEL UTILITY BOX COVERS FOR WIRING DEVICES INSTALLED IN SURFACE-MOUNTED UTILITY BOXES.

6.13. MOUNTING HEIGHTS TO MATCHING EXISTING.

6.14. GROUND FAULT RECEPTACLES TO MEET CSA 22.2-144

7. GROUNDING

7.1. THE ENTIRE ELECTRICAL SYSTEM, AS PERTAINS TO THIS INSTALLATION, SHALL, BE GROUNDED IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE SECTION 10 AND LOCAL AUTHORITY HAVING JURISDICTION OVER INSTALLATION.

7.2. MAKE GROUNDING CONNECTIONS IN RADIAL CONFIGURATION ONLY, WITH CONNECTIONS TERMINATING AT SINGLE GROUNDING POINT. AVOID LOOP CONNECTIONS.

8. PANELBOARDS

8.1. PROVIDE CIRCUIT BREAKERS FOR EXISTING PANELBOARDS. MOLDED CASE, BOLT-ON, QUICK MAKE-QUICK BREAK, THERMAL-MAGNETIC TRIPPING BREAKERS WITH (SYMMETRICAL) INTERRUPTING CAPACITY TO MATCH EXISTING. CIRCUIT BREAKERS SHALL BE NEW WITH FULL MANUFACTURER'S WARRANTY AND PURCHASED THROUGH AUTHORIZED DISTRIBUTOR. MATCH EXISTING.

8.2. PROVIDE TYPE WRITTEN DIRECTORIES IN ALL PANELS SHOWING TYPE AND LOCATION OF EACH CIRCUIT. UPDATE EXISTING DIRECTORIES AS REQUIRED.

8.3. EQUIP BREAKERS SERVING EXIT LIGHTS AND ALL EMERGENCY LIGHTING CIRCUITS WITH LOCK-ON DEVICES (NEW AND EXISTING).

8.4. ACCEPTABLE MANUFACTURERS: TO MATCH EXISTING.

8.5. NEW BREAKER FRAMES SHALL MATCH EXISTING PANELBOARDS.

9. MECHANICAL EQUIPMENT

9.1. SEE MECHANICAL EQUIPMENT CONNECTION SCHEDULE AND LEGEND FOR ALL REQUIRED MECHANICAL EQUIPMENT ELECTRICAL CONNECTIONS. THE ELECTRICAL TRADE SHALL PROVIDE THE FOLLOWING, AS APPLICABLE:
9.1.1. THE NECESSARY POWER DISTRIBUTION EQUIPMENT AT THE ELECTRICAL ROOM.
9.1.2. THE NECESSARY CONDUIT AND WIRE TO THE MECHANICAL EQUIPMENT LOCATION.
9.1.3. A TERMINATING DISCONNECT SWITCH, UNLESS PROVIDED FOR BY THE EQUIPMENT MANUFACTURER.
9.1.4. ANY MISCELLANEOUS ITEMS NECESSARY TO COMPLETE THE WORK AS SHOWN ON THE DRAWINGS.
9.1.5. ALL CONDUIT AND WIRING FROM THE TERMINATING DISCONNECT SWITCH TO THE MECHANICAL EQUIPMENT UNLESS NOTED OTHERWISE. LOW VOLTAGE CONTROLS, SHALL BE PROVIDED BY THE MECHANICAL TRADE.
9.1.6. THE ELECTRICAL TRADE SHALL VERIFY ALL MOTOR CONNECTIONS FOR PROPER PHASE ROTATION, WHERE APPLICABLE.

10. LIGHTING (SEE LUMINAIRE SCHEDULE AND LEGEND)

10.1. PROVIDE LUMINAIRES AS INDICATED ON THE LUMINAIRE SCHEDULE AND/OR AS SPECIFIED UNDER THIS SECTION. THESE SHALL BE, COMPLETE WITH ALL NECESSARY PLASTER FRAMES, HANGERS, LAMPS, LOUVERS, DIFFUSERS, CANOPIES, SUPPORTS, BRACKETS, AND REQUIRED HARDWARE FOR A COMPLETE AND FINISHED INSTALLATION. LUMINAIRES IN SCHEDULE AND LEGEND ARE INTENDED TO SET A STANDARD BELOW WHICH EQUIPMENT WILL NOT BE ACCEPTED.

10.2. CONTRACTOR SHALL INCLUDE IN HIS TENDER, THE LUMINAIRE(S) THAT ARE BEING SPECIFIED. IF AN ALTERNATE MANUFACTURER IS NAMED, IT IS MANDATORY THAT THE LUMINAIRE BE EQUIVALENT IN ALL RESPECTS, I.E. SAME LENS, EQUIVALENT FRAME, PERFORMANCE, PAINT FINISH, BALLAST, CONSTRUCTION QUALITY, ETC. ALTERNATE MANUFACTURERS OR ALTERNATE LUMINAIRE TYPES MUST BE OFFERED AS AN ALTERNATIVE ONLY, TO THE BASE BID, WITH A SEPARATE PRICE STATED IN THE TENDER. LOW BIDDER WILL BE DETERMINED ON THE BASIS OF THE SPECIFIED ITEMS, NOT ON "ALTERNATE SAVINGS".

10.3. POSITION LIGHTS AS INDICATED. ADJUST LOCATIONS OF LUMINAIRES TO SUIT CEILING GRID AS INDICATED. ADVISE ENGINEER IF LOCATIONS SHOWN TO CHANGE MORE THAN 6".

10.4. ALL LUMINAIRES WHICH ARE LOCATED IN SUSPENDED CEILINGS SHALL BE SUPPORTED BY APPROVED CHAINS, WHICH SHALL ALLOW THE LUMINAIRES TO BE SUPPORTED INDEPENDENT OF THE CEILING SYSTEM. A 2'x4' FLUORESCENT LUMINAIRE SHALL BE SUPPORTED WITH TWO (2) CHAINS AND A 2'x4' LUMINAIRE SHALL BE SUPPORTED WITH FOUR (4) CHAINS TO THE ROOF STRUCTURE OR SLAB ABOVE. ANCHOR CHAINS TO JOIST AND BRIDGING WHERE POSSIBLE. WHEN CONNECTING TO STEEL DECK, ANCHOR TO SIDE FLUTES. (CONFIRM CONNECTIONS TO DECK WITH STRUCTURAL ENGINEER PRIOR TO INSTALLATION).

10.5. THIS CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL LIGHTING NOT BEING RE-USED UNDER NEW SCHEME WHETHER SHOWN ON DRAWING OR NOT.

10.6. ALIGN LUMINAIRES MOUNTED IN CONTINUOUS ROWS TO FORM STRAIGHT UNINTERRUPTED LINE.

10.7. ACCEPTABLE MANUFACTURERS: REFER TO SCHEDULE

11. EGRESS SIGNS

11.1. EGRESS SIGNS SHALL BE PICTORIAL "RUNNING MAN" TYPE TO CSA 22.2 NO. 141-10 STANDARD.

11.2. TWO (2) SIGNS ARE REQUIRED FOR MULTI-DIRECTIONAL TYPES.

11.3. WIRE ALL EGRESS SIGNS REQUIRING DC POWER TO BATTERY PACK SERVING THE SAME AREA, AS APPLICABLE.

11.4. WIRE ALL EGRESS SIGNS TO AC POWER CIRCUIT, AS PER CODE.

11.5. ALL EXISTING EXIT LIGHTS IN THE BUILDING TO BE REPLACED WITH A NEW RUNNING MAN EXIT SIGN. CONFIRM QUANTITIES ON SITE.

12. EMERGENCY LIGHTING SYSTEM

12.1. EMERGENCY LIGHT BATTERY UNITS: AS SPECIFIED IN LUMINAIRE SCHEDULE.

12.2. EMERGENCY LIGHT HEADS: AS SPECIFIED IN LUMINAIRE SCHEDULE.

12.3. WIRE EMERGENCY BATTERY PACKS TO LINE SIDE OF LIGHTING CIRCUIT SERVING THE SAME AREA FOR AC POWER. WIRE REMOTE HEADS TO BATTERY PACK SERVING THE SAME AREA FOR DC POWER.

12.4. CONNECT HEADS TO EMERGENCY LIGHTING UNIT BATTERIES WITH MINIMUM #12 AWG CONDUCTORS AS INDICATED. SIZE CONDUCTORS FOR MINIMUM 3% VOLTAGE DROP AS PER CEC 2018.

13. ADDRESSABLE FIRE ALARM SYSTEM

13.1. FIRE ALARM SYSTEM: THE FIRE ALARM PANEL IS EXISTING. PROVIDE THE REQUIREMENTS FOR THE INSTALLATION, RE-PROGRAMMING, CONFIGURATION AND CERTIFICATION OF A COMPLETE SINGLE STAGE, ZONED, SUPERVISED FIRE ALARM SYSTEM. COMPLY WITH THE CURRENT APPLICABLE PROVISIONS OF THE FOLLOWING:
- NATIONAL FIRE PROTECTION ASSOCIATION STANDARDS.
- NATIONAL BUILDING CODE.
- LOCAL AUTHORITIES HAVING JURISDICTION.
- UNDERWRITERS LABORATORIES OF CANADA.
- CANADIAN ELECTRICAL CODE PART 1 - 2018 SECTION 32.

13.2. BELLS: TO MATCH EXISTING.

13.3. MANUAL PULL STATION: TO MATCH EXISTING.

13.4. SMOKE DETECTORS: TO MATCH EXISTING.

13.5. THE FIRE ALARM CONTROL PANEL SHALL TURN OFF ALL VENTILATION THROUGHOUT, UPON FIRE ALARM ACTIVATION. CONFIRM WITH EXISTING.

13.6. FIRE ALARM VERIFICATION AND RE-CERTIFICATION SHALL BE BY ULC APPROVED, FACTORY TRAINED PERSONNEL. THE FIRE ALARM CERTIFICATION SHALL BE FROM A ULC CERTIFIED FIRE ALARM SUPPLY AND SERVICE COMPANY, CONFIRMING THAT THE DEVICES INSTALLED, OR MODIFIED UNDER THIS PROJECT, OPERATE IN COMPLIANCE WITH CURRENT REGULATIONS AND AS PER THE MANUFACTURER'S RECOMMENDATIONS.

13.7. FIRE ALARM SYSTEM IS AN EXISTING MIRCOM FX-350 SYSTEM.

13.8. INSTALL FIRE ALARM DEVICES WHERE SHOWN ON PLANS AND MAKE INTERCONNECTIONS IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS

13.17. PROVIDE FIRE ALARM VERIFICATION AND CERTIFICATE AFTER COMPLETION OF WORK ON FIRE ALARM SYSTEM.

14. VOICE SYSTEM

14.1. PROVIDE CATEGORY 6 UTP CABLE TO BIX MOUNT FROM VOICE OUTLET.

14.2. PROVIDE ONE RJ45 JACK FOR EACH VOICE OUTLET C/W COVERPLATE.

14.3. COORDINATE FINAL LOCATION OF ALL VOICE OUTLETS WITH OWNER, PRIOR TO START OF WORK.

14.4. INSTALLATION SHALL BE DONE IN ACCORDANCE WITH LOCAL TELEPHONE PROVIDER STANDARDS.

14.5. VOICE CABLING TERMINATIONS AND TESTING SHALL BE PERFORMED BY AN END TO END "CERTIFIED INSTALLER", SHALL BE CERTIFIED AND SHALL HAVE A 20 YEAR PASSIVE COMPONENT GUARANTY. PROVIDE TEST RESULTS AND CERTIFICATION. CABLES FAILING TEST SHALL BE REPLACED BY ELECTRICAL CONTRACTOR AT CONTRACTORS EXPENSE. THE INSTALLER SHALL BE TRAINED IN INSTALLATION OF THE CABLING SYSTEM USED.

14.6. ALL CABLING TO BE IN EMT CONDUIT.

14.7. CONFIRM ALL VOICE AND DATA REQUIREMENTS WITH OWNER PRIOR TO TENDER CLOSE. OWNER MAY OPT OUT TO HAVE AN OUTSIDE CONTRACTOR DE COMPLETE INSTALLATION EXCEPT FOR CONDUIT RUNS.

15. DATA COMMUNICATION SYSTEM

15.1. MINIMUM SYSTEM PERFORMANCE: CATEGORY 6.

15.2. RUN 4 PAIR, 24AWG, FT6 RATED, UTP CABLES FROM DATA OUTLETS TO DATA ROOM PATCH PANELS, AS PER CSAT529-95.

15.3. PROVIDE ONE RJ45 JACK FOR EACH DATA OUTLET c/w COVER PLATE. TERMINATE AT PATCH PANEL.

15.4. PROVIDE AND INSTALL ONE 24 PORT MODULAR PATCH PANEL ON A 19" MOUNTED RELAY RACK C/W CABLE MANAGERS AND COVERS. COORDINATE ON SITE. DATA RACK, EXISTING OR NEW, IS TO BE SUPPLIED AND INSTALLED BY THE OWNERS OR ITS IT CONTRACTOR.

15.5. PROVIDE ONE 4'-0" AND 15'-0" PATCH CORD FOR EACH OUTLET.

15.6. IDENTIFY ALL CABLES, OUTLETS AND PATCH PANEL JACKS AS DESIGNATED BY OWNER.

15.7. BUSH BOTH ENDS OF ALL COMMUNICATIONS CONDUITS AND BOND AT ONE END.

15.8. THE COMPLETE SYSTEM MUST MEET THE MINIMUM STANDARD NOTED. SYSTEM TO BE TESTED, CERTIFIED AND GUARANTEED FOR TWENTY (20) YEARS FROM DATE OF ACCEPTANCE.

15.9. ALL CABLING TO BE IN EMT CONDUIT.

15.10. DATA CABLING TERMINATIONS AND TESTING SHALL BE PERFORMED BY AN END TO END "CERTIFIED INSTALLER", SHALL BE CERTIFIED AND SHALL HAVE A 20 YEAR PASSIVE COMPONENT GUARANTEE. PROVIDE TEST RESULTS AND CERTIFICATION. CABLES FAILING TEST SHALL BE REPLACED BY ELECTRICAL CONTRACTOR AT CONTRACTORS EXPENSE. THE INSTALLER SHALL BE TRAINED IN INSTALLATION OF CABLING SYSTEM USED.

15.11. CONFIRM ALL VOICE AND DATA REQUIREMENTS WITH OWNER PRIOR TO TENDER CLOSE. OWNER MAY OPT OUT TO HAVE AN OUTSIDE CONTRACTOR DE COMPLETE INSTALLATION EXCEPT FOR CONDUIT RUNS.

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E-3 ELECTRICAL SPECIFICATIONS

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ISSUED FOR TENDER	MAR. 03, 2020
REVISIONS	DATE

A — DETAIL
B — LOCATION OF DETAIL

CLIENT — CLIENT

PROJECT — PROJET

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ELECTRICAL SPECIFICATIONS

DRAWN BY — DESSINÉ PAR: J.A.

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DATE: 2019-08-15

SCALE — ÉCHELLE: AS INDICATED

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