SERVICE COUNTERS
AT GORE MEADOWS & CASSIE CAMPBELL RENOVATIONS

FOR
CITY OF BRAMPTON

ARCHITECTURAL SPECIFICATIONS
Volume 1

MOFFET & DUNCAN ARCHITECTS INC.
PRIME CONSULTANT

DEI CONSULTING ENGINEERS
MECHANICAL & ELECTRICAL CONSULTANTS

VOLUME 1 ARCHITECTURAL SPECIFICATIONS

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

DIVISION 08 - OPENINGS

DIVISION 09 - FINISHES

VOLUME 2 MECHANICAL & ELECTRICAL SPECIFICATIONS

Mechanical & Electrical Specifications are on drawings.

Architectural
Moffet & Duncan Architects Inc.

The seals above pertain to the specification sections bearing the name of the relevant consultant at the bottom of each page.

1.1 **ARCHITECTURAL DRAWINGS**

A0.1 GENERAL NOTES & OBC MATRIX
A1.0 DEMOLITION & PROPOSED FLOOR PLAN, DEMOLITION & PROPOSED RCP
A1.1 MILLWORK ELEVATIONS, PROPOSED FLOOR PLAN, DOOR & FRAME SCHEDULE
A1.2 MILLWORK SECTIONS
A0.2 GENERAL NOTES 7 OBC MATRIX
A2.0 DEMOLITION & PROPOSED FLOOR PLAN
A2.1 DEMOLITION & PROPOSED RCP
A2.2 ELEVATIONS & PROPOSED FLOOR PLAN
A2.3 MILLWORK SECTIONS, DOOR SCHEDULE

1.2 **MECHANICAL DRAWINGS**

M1.1 KEY PLAN, LEGEND & SCHEDULES
M2.1 GROUND FLOOR PART PLAN - DEMOLITION & RENOVATION
M3.1 GROUND FLOOR PART PLAN - FIRE PROTECTION, DEMOLITION & RENOVATION
M4.1 MECHANICAL SPECIFICATIONS

1.3 **ELECTRICAL DRAWINGS**

E1.1 KEY PLAN, LEGEND AND DETAILS
E1.2 ELECTRICAL DETAILS AND PANEL SCHEDULES
E1.3 SPECIFICATIONS
E2.1 DEMOLITION AND RENOVATION PLAN
E1.1 KEY PLAN LEGEND AND DETAILS
E1.2 SPECIFICATIONS
E2.1 DEMOLITION PLAN
E3.1 RENOVATION PLAN

END OF SECTION

1.1 SEPARATE PRICE

.1 Provide Separate Price for scope of work for service counter and all associated work at Cassie Campbell Community Centre. Separate Price shall be inserted where indicated on the Request for Tender documents.

.2 The Contract shall be subject to the requirements of the General Conditions of Stipulated Price Contract CCDC 2 - 2020 and the City's Supplementary General Conditions.

1.2 TENDERS

.1 Refer to the City of Brampton's Request for Tender for bidding requirements. Bid documents will be distributed through Bids & Tenders e-bidding website.

.2 Submit stipulated sum tenders to City of Brampton, per the instructions included in the City's Request for Tender documents. Tender shall be submitted on forms provided.

.3 Tenders will be accepted only from prequalified General Contractors, including prequalified Mechanical and Electrical Subcontractors listed in the City's Request for Tender document.

.4 Tender submission must include a completed **Bid Bond** and an **Agreement to Bond**, as well as additional forms or documents as may be required by the Contract Documents and any addenda thereto.

.5 All blanks in the form of tender and supplementary forms of tender shall be filled in or the tender may be invalidated. The Forms shall be signed by the appropriate officers of the Contractor's firm. Incorporated companies shall affix their corporate seal under the hands of their authorized officers.

.6 These instructions for tendering must be FOLLOWED IMPLICITLY. An informal tender, not complying, may be thrown out and not considered.

.7 Tenders shall be valid for **sixty (60) days** from the date of closing above.

.8 Incomplete tenders may be considered informal.

1.3 PHASING AND COMPLETION DATES

.1 Tenders must confirm that contractor will meet critical completion dates listed in the Request for Tender documents.

.2 Work, including site protection, demolition, and construction, must be phased to accommodate the continuation of services in the occupied community centres. Contractor to prepare construction phasing and schedule for work.

.3 Materials and equipment with long delivery times must be ordered as soon as possible on award of Contract.

.4 All work must be ready for occupancy by Owner as per dates noted in Request for Tender Documents.

1.4 **SCOPE OF WORK**

.1 Each proposal shall include the complete work, as called for by drawings and the Specifications issued for the project. The Contractor must include for connection of the Owners equipment. Where manufactured items are noted "N.I.C." they are not included in tender but they must be set in place and connected to services after being supplied to site by the Owner's forces.

.2 In submitting a tender, the bidder agrees to all of the requirements noted in the tender documents.

1.5 **ALTERNATE PRODUCTS**

.1 Tenders shall be based on materials, construction etc. exactly as specified. No products other than those listed in the Contract Documents will be accepted without the WRITTEN approval of the Consultant.

.2 Upon award of Contract, the Contractor shall submit data for the evaluation of proposed alternates, which the Owner may consider, to the Consultant for review.

1.6 **TAXES AND DUTIES**

.1 Include in the tender amount all applicable provincial sales tax, excise taxes, customs duties, freight charges, monetary exchange and all other charges which are in effect or are known to be coming into effect during the course of the Work of this Contract**, except for H.S.T**.

.2 The successful bidder must provide their H.S.T. registration number and this number must be indicated on each application for payment along with the amount of H.S.T. payable for the billing period.

1.7 **BUILDING PERMIT**

.1 Building Permit has been applied for by the Consultant and paid for by the Owner. The Contractor shall expedite and pick up Building Permit at the Municipal Offices. Refer to the General Conditions of CCDC2-2020, and the Supplementary General Conditions.

.2 The Contractor must pay all other necessary fees and charges related to Municipal, Provincial and Federal requirements including plumbing, heating, elevator permit and occupancy permit.

1.8 **CONTRACT DOCUMENTS**

.1 The Contract shall be subject to the requirements of the General Conditions of Standard Construction Document CCDC 2 - 2020 and the Supplementary General Conditions. Successful bidder must sign Stipulated Price Contract using this document, the Project Manuals and the accompanying drawings, including any addenda issued prior to close of tender period, promptly upon notification of award.

.2 All Contractors will be held to have examined and made themselves familiar with the various articles of these Standard Forms and the amendments contained in the Supplementary General Conditions, and the same shall be as binding for all branches of the following specifications as though written in full therein.

1.9 **ENQUIRY AND INSTRUCTION**

.1 All correspondence, enquiries, instructions, etc. in connection with the work shall be made **in writing** through the Bids & Tenders e-bidding site, per the instructions in the Owner's Request for Tender.

.2 Any revisions noted during the tender period will be clarified by means of written Addenda, which will be posted and distributed through **Bids & Tenders**. Such Addenda shall form part of the contract.

.3 Bidders, including Subcontractors, finding discrepancies in, or omissions from, the drawings or specifications or other contract documents, or having any doubt as to the intent or meaning of any part thereof, shall notify the Owner through **Bids & Tenders**. A clarification or explanation of the enquiry, if necessary, will be issued by addendum through **Bids & Tenders**.

.4 No oral instructions will be valid.

1.10 **REJECTION OF PROPOSALS**

.1 The Owner reserves the right to reject any or all proposals submitted, without explanations, and to waive any informalities in same. The lowest or any tender shall not necessarily be accepted.

1.11 **FINAL ACCEPTANCE**

.1 It must be clearly understood that final acceptance of this contract is subject to approvals of the Owner and other bodies and these may delay final approval. There will be no adjustments in the tendered price for a period of **sixty (60) days** from receipt of tenders due to delays resulting from obtaining necessary approvals.

1.12 **ERRORS IN TENDER**

.1 The Owners shall not entertain requests for gratuitous payments arising from errors alleged to have been made in a tender which the Owners have accepted.

1.13 **SUBCONTRACTORS**

.1 The selection of Subcontractors shall be acceptable to the Owner and to the Consultant. If the required substitution of a Subcontractor affects the sub-tender price, an adjustment will be made to the Contract Price by the amount only of the difference in sub-tenders, without additional overhead or profit to the Contractor. THERE SHALL BE NO CHANGE IN ANY SUB-TRADES LISTED IN THE TENDER AND SUPPLEMENTARY TENDER FORMS WITHOUT THE WRITTEN CONSENT OF THE OWNER.

.2 If the Tenderer proposes to do the Work with persons directly employed by him and not subcontract them he shall insert the words "By Own Forces" provided he can submit proof that his forces have had previous experience in this field.

.3 Subcontractors shall be actually engaged as their own recognized business, in the line of the Work required by the specifications and shall carry out themselves the work for which they may be awarded by subcontract. They shall not be permitted to re-subcontract their work or portions thereof to other contractors. This includes shop drawings.

1.14 **FAIR WAGE AND LABOUR**

.1 Rate of wages, hours and conditions of the Work shall be in accordance with Provincial codes and as generally recognized and accepted in the locality.

.2 Labour forces employed on the site shall have compatible affiliation with any labour organization. Union contract itself is not a prerequisite.

END OF SECTION

1.1 CONTRACT DOCUMENTS

.1 Contract documents for work under this contract consists of the following:

.1 Standard Construction Document CCDC 2, 2020
.2 Supplementary Conditions
.3 Specifications as listed in Index to Specifications
.4 Drawings as listed in List of Drawings
.5 All Addenda issued prior to closing of the tender
.6 Amendments incorporated prior to the signing of the Contract, as agreed to between the signing parties.

1.2 PRODUCTS SUPPLIED BY OWNER

.1 Products, including appliances, indicated on the drawings as "N.I.C.", or so noted in specifications, are not included in the Contract but will be supplied by the Owner. These are to be put in place and connected to services by the Contractor.

.2 The Owner will provide manufacturer's installation instructions for each such product, when available.

.3 The Contractor's duties with respect to products supplied by the Owner include:

.1 Unload and handle at site.
.2 Remove and dispose of packaging. Inspect delivered products notify Owner and Consultant of any damage or missing components.
.3 Temporarily store products in secure and suitable storage, if they are not to be installed immediately.
.4 Install products complete with all mounting brackets and supporting hardware included, as applicable.
.5 Connect to services as applicable.
.6 Coordinate with millwork subcontractor to provide trim at items installed in cabinetry.

1.3 RELATION OF TRADES

.1 These specifications have been divided generally into sections conforming to Construction Specifications Canada Master Format 2004 for the purpose of ready reference. They must be read as a whole. The responsibility for apportioning the work or of settling disputes related to same shall rest entirely with the Contractor.

.2 The Contractor is responsible for co-ordinating all trades. He is solely responsible for determining the lines of demarcation between Contractor and/or trades. Neither the Consultant nor the Owner assume any responsibility for any such determination or for any dispute arising concerning it. No extras will be considered due to any such dispute concerning either labour or materials.

.3 Specifications & drawings form an integral part of the Contract Documents. Any subject or item omitted from one but which is mentioned or reasonably implied in the other, shall be considered properly and sufficiently specified and will be part to the work.

1.4 **EXAMINATION OF SITE**

.1 Examine existing building and site immediately prior to commencing Work to confirm that building and site as received by the Contractor, including adjoining Municipal lands, conform to information on tender documents.

.2 Notify Consultant immediately if site conditions are not acceptable. Commencement of the Work of this Contract will be taken as acceptance of site conditions. No extras will be considered unless accepted in advance of performance of the work, in writing, by Owner and Consultant.

1.5 **ACCEPTANCE OF WORK IN PLACE**

.1 Before starting his work and from time to time as the work progresses, each subcontractor shall examine the work and materials installed by the other subcontractors insofar as it affects his own work, and shall promptly notify the Consultant IN WRITING, if any condition exists that will prevent him from giving a satisfactory result in his own work.

.2 Should the subcontractor start his own work without such notification, it shall be construed as an acceptance by him of all preceding work and as a waiver of all claims or questions as to its suitability for receiving his work.

.3 All Subcontractors installing building finishes and site work shall submit written confirmation of acceptance of existing conditions, to the Consultant, prior to commencing their work. Finishing work and landscaping work may not commence without submission of this confirmation. Receipt of this confirmation will be considered a prerequisite for certification of payment to the relevant Subcontractors.

1.6 **MATERIALS AND WORKMANSHIP**

.1 All materials shall be new and the best of their respective kinds. Where a specific grade or brand is not indicated preference shall be given to materials of Canadian manufacture. Pre-packaged materials shall be delivered and stored in unopened containers.

.2 All work performed under this Contract shall be done by mechanics skilled in their respective trades. They shall make use of such templates, jigs or special tools as may be required for the operation involved.

.3 The Contractor is responsible for maintaining quality of workmanship. He shall report to the Consultant whenever the Work or material of any trade does not meet the required standard.

.4 The acceptance of any materials or workmanship shall not be a bar to their subsequent rejection, if found defective.

.5 Rejected materials and workmanship, and any work which is found defective, shall be removed and replaced or made good by the Contractor without cost to the Owner and to the satisfaction of the Consultant.

.6 Adequate, dry storage facilities shall be provided and all stored materials shall be protected from damage and theft.

.7 Perform Work in accordance with the best industry practice of the type of work specified, unless the Contract Documents stipulate more precise requirements, in which case, the more precise requirements shall govern.

.8 Do Work in a neat, plumb & square manner. Ensure that various work components are properly installed, forming tight joints and appropriately aligned junctions, edges and surfaces, free of warps, twists, waves, or other such irregularities.

.9 Wherever indicated on the drawings or specifications, or in the manufacturers'/suppliers' written instructions, arrange to have manufacturers'/installer's representatives inspect the Work which incorporates their materials, products or items.

.10 Do not permit materials to come in contact with other materials such conditions may result in corrosion, staining, discolouration or deterioration of the completed Work. Provide compatible, durable separators where such contact is unavoidable.

.11 Where equipment or elements are supported by the walls or structure, shop drawings must be stamped by an Ontario Registered Professional Engineer confirming that the wall/structure is capable of supporting the equipment/element and that the anchorage provided is adequate to support the equipment/element together with any potential load or stress.

.12 The design of the Work is based on the full interaction of its component parts. No provisions have been made for conditions occurring during construction. Ensure that no part of the Work is subjected to a load which will endanger its safety or which might cause permanent deformation.

.13 Conceal pipes, ducts, conduit, wiring and other such items requiring concealment preferably in, wall or ceiling construction of all finished areas. If in doubt as to method of concealment, or intent of the Contract Documents in this regard, request clarification from the Consultant before proceeding with the Work.

.14 Lay out mechanical and electrical work well in advance of concrete placement and furring installation to allow for proper concealment. Test and inspect Work before applying pipe covering and before it is concealed.

.15 Provide and maintain control lines and levels required for the Work. Lay out the Work in accordance with these lines and levels and dimensions indicated on the drawings.

.16 Verify lines, levels and dimensions and report any errors or inconsistencies on the drawings to the Consultants.

.17 Final responsibility of satisfactory completion of all the Work, however, lies with the Contractor.

1.7 **SECURITY**

.1 The Contractor shall be responsible for security of all areas affected by the Work of this Contract until taken over by the Owner. Steps shall be taken to prevent entry to the Work by unauthorized persons and to guard against theft, fire and damage by any cause.

1.8 **SCAFFOLDING**

.1 All necessary scaffolding shall be provided and constructed according to by-law and safety regulations.

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

.3 Erect scaffolding independent of building walls.

.4 Avoid interference with other trades.

.5 Move when not in use to permit installation of other work and promptly remove when no longer required.

.6 The provision of scaffolding shall be a matter of agreement between the Contractor and Subcontractors.

1.9 **PROTECTION OF OTHER WORK**

.1 Each trade shall avoid damage to other trades and shall take all measures necessary and provide all masking and materials necessary to provide adequate protection.

.2 Each Contractor and Subcontractor shall be held responsible for all damage to work installed by others that is caused by this work or by anyone employed by him.

.3 Patching and repairing of damaged work shall be done by the contractor who installed the work, as directed by the Consultant, but the cost of same shall be paid for by the contractor who is responsible for the damage.

1.10 **FASTENINGS**

.1 All fastenings must be permanent, of same metal or compatible with any metals with which they are in contact, of adequate size and spacing to ensure permanent anchorage against load or shear.

.2 Exposed fastenings must be evenly spaced, neatly laid out and must not mar surfaces of prefinished materials.

.3 No ram setting or similar techniques will be permitted without prior written approval of the Consultant.

.4 No wood plugs and no anchorages which cause spalling or cracking will be accepted.

.5 Generally use plain washers. Where vibration may occur, use lock type washers and where fasteners are stainless steel use resilient washers.

.6 All fasteners exposed on the exterior must be stainless steel.

1.11 **SUPPLY AND INSTALL**

.1 Unless specifically noted "supply only", any reference to supply intends the supply and installation of material or item so noted.

1.12 **OCCUPATION BEFORE COMPLETION**

.1 If the Contractor, for any reason, does not have the job completed by the completion date and the Owner, of necessity, is forced to occupy any part of the building before the whole of the work is completed, the Contractor will not be entitled to any indemnity for interference with his operation.

1.13 **GENERAL REQUIREMENTS**

.1 All Subcontractors shall examine carefully all drawings and specifications to inform themselves fully of all conditions and limitations pertaining to the work of the contract.

.2 All Subcontractors shall co-operate and co-ordinate their work for the proper completion of the work, including co-ordination of delivery dates and commencement of sub-trades work.

.3 The responsibility for all work, including temporary structures, shoring and erection shall at all times rest with the Contractor and his Subcontractors. The Consultant will review construction methods and shop drawings for general arrangements only. The method of obtaining the results contemplated by the Contract Documents shall be determined by the Contractor.

.4 The undertaking of periodic site review by the Consultant or Owner's representative shall not be construed as supervision of actual construction, nor make him responsible for providing a safe place for work, visit, use, access, travel, or occupancy of their employees or agents.

.5 The Contractor shall be fully responsible for co-ordinating and expediting the work of all Subcontractors and shall employ the necessary and qualified personnel to provide the required quality of labour and materials and to prevent delays in the progress of the project. Each trade shall be afforded all reasonable opportunities for the installation of its work and for the storage and handling of its materials.

1.14 **COORDINATION**

.1 Coordinate all work and preparation on which subsequent work depends to facilitate mutual progress, and to prevent any conflict.

.2 Review all drawings to identify interference issues prior to commencing construction. Request and review interference drawings from all electrical trades. Review all shop drawings, samples, product data, mock-ups, and other required submittals for potential interference issues and co-ordinate with the trades to avoid these conflicts.

.3 Where interference issues arise during construction, correct work at no expense to the Owner where the interference could have reasonably been foreseen.

.4 Ensure that each trade makes known, for the information of the Contractor and other trades, the environmental and surface conditions required for the execution of its work; and that each trade makes known the sequence of others' work required for installation of its work.

.5 Ensure that each trade, before commencing work, knows requirements for subsequent work and that each trade is assisted in the execution of its preparatory work by trades whose work depends upon it.

.6 Mechanical and Electrical trades in particular, shall ensure that items, such as electrical panels, outlets, diffusers, switches, etc., are located where they will not interfere with the installation or operation of other items.

.1 Check all drawings for the location of items to be installed later, such as millwork, and other wall or ceiling mounted items.
.2 Ensure items installed do not interfere with the operation of equipment or fittings, such as the swinging of doors, etc.

.7 Review all shop and layout drawings, templates, and other required submittals for coordination purposes.

.1 Ensure that all information necessary for the location and installation of materials, openings, inserts, anchors, accessories, fastenings, connections and access panels are provided by each trade whose work requires co-operative location and installation by other trades and that such information is communicated to the applicable installer.
.2 Ensure that shop drawings for aluminum and hollow metal work are coordinated with the openings for doors, frames and windows; site measurements must be indicated on the drawings.
.3 Review millwork shop drawings to ensure adequate clearance from walls, doors, windows, electrical equipment, etc.

.8 Deliver materials supplied by one trade to be installed by another well before the installation begins.

.9 Trades giving installation information in error, or too late to incorporate in the work, shall be responsible for any extra work caused thereby.

.10 Immediately remove any work which is unsatisfactory for subsequent work, as directed by the Consultant or by the appointed inspection firms.

1.15 **SPECIAL REQUIREMENTS FOR OCCUPIED BUILDINGS**

.1 All work outside of the construction enclosure must be scheduled with Owner.

.2 All work included in this contract to be carried out ‘after hours’, as per City of Brampton schedule. ‘After hours’ period to last between the hours of 11pm to 6am for Cassie Campbell & 10 pm to 5am for Gore Meadows.

.3 Maintain all emergency exits at all times. Do not interfere with building access, particularly in the 30 minutes before 6 am each day and 30 minutes before and after 11 pm each day for Cassie Campbell & 30 minutes before 5 am each day and 30 minutes before and after 10 pm each day for Gore Meadows.

.4 All work which will result in excessive noise, dust, odours, or other unpleasant or unhealthy situations, shall take place outside of regular office hours, on evenings, weekends, or holidays.

.5 When a fire watch is required it shall be at the cost of the Contractor. Any time the alarm needs to be taken offline, Contractor to include the cost for all necessary fire watch by City security at an hourly rate of $ 27.20 + HST with a minimum of 4 hours dedicated for the duration of the fire watch. Hiring City security for the fire watch is mandatory. 48-hour notice is required for fire watch.

.6 Ensure continuity of all utilities, including power and water. Schedule any required interruptions outside of regular office hours, in coordination with the Owner.

.7 Suppress dust, avoid conditions likely to disperse mould or fungus of any kind, and take steps reasonably necessary to maintain the safety and comfort of the building occupants.

.8 Cease any activity if advised by the Owner that it is disruptive or offensive to building occupants.

.9 Workers are not permitted to use washrooms, building entrances, or parking areas other than those designated by the Owner.

.10 Refer to Section 01 35 20 for additional site safety requirements which apply when the building is occupied.

1.16 **ACCESS TO THE PROJECT**

.1 The Contractor for this work shall at all times allow the Owner or any other contractor or their employees in the building or around the premises, undisturbed, whether union or non-union, as may be required in the execution of other portions of the building work and installation of equipment, etc.

.2 Cooperate fully with forces carrying out any work on behalf of the Owner.

1.17 **SUB-TRADE AWARDS**

.1 The Contractor shall, on notice of award of the contract, obtain the Consultant's approval of a complete list of all persons or firms to which he proposes to sublet any part of the work, the trades or divisions of work which are to be sublet to each, and the amount of each trade. He shall provide to the Consultant a financial breakdown showing all divisions of the work amounting to the full sum of the contract.

1.18 **SAFETY DATA SHEETS**

.1 The Contractor shall submit material and safety data sheets prior to commencing installation and application of at least the following:

.1 lead-free solder
.2 sealants and caulking
.3 resilient flooring
.4 painting and finishing
.5 fertilizers
.6 pesticides

.7 herbicides
.8 all adhesives
.9 any other product which may give off air borne particles after installation

.2 The Contractor and all of his Subcontractors must note that specifically, Asbestos and Asbestos containing materials, solder for piping containing lead, and Painting & Coatings containing lead and/or mercury must be excluded from any part of the Work.

.3 The Contractor must submit Certificates of Compliance, prior to the application for Substantial performance, for each of the following items:

.1 An affidavit relative to the use of Lead-free solder for all domestic water lines, regardless of location.
.2 Products for which Material Safety Data Sheets have been submitted and accepted.
.3 Other Work/Products identified in the Contract Documents as requiring a Certificate of Compliance.

.4 Each Certificate of Compliance must indicate names and addresses of the project, the Owner, the date of Issue, produce description including name, number, manufacturer, with a statement verifying that the Work/Product installed meets specified requirements and, if applicable, complies with the submitted and accepted Material Safety Data Sheets.

.5 Each Certificate of Compliance must be issued on the trade's letterhead, properly executed, under whose work the respective Work/Product has been provided.

.6 Each Certificate of Compliance must be endorsed by the Contractor with his authorized stamp/signature.

.7 The Contractor must ensure that submissions are made to allow sufficient time for review without delaying progress of scheduled completion.

.8 WHMIS Material Safety Data Sheets (MSDS) are required to be provided before or with the first delivery of every controlled product.

.9 Ensure that worksite copies of MSDS's are available to workers wishing to consult them and to the health and safety representative and/or joint health and safety committee.

.10 Ensure that workers are instructed in the purpose and content of MSDS.

.11 Provide prescribed information on any workplace controlled product, including confidential business information, to a doctor or nurse who needs it for diagnosis or emergency medical treatment.

.12 WHMIS MSDS sheets to be kept on site at all times.

.13 The completion security account will not be paid to the Contractor without submission of all required affidavits and requested material and safety data sheets.

1.19 **REGULATING DOCUMENTS**

.1 Refer to Section 01 41 00, Regulatory Requirements. Conform to applicable Codes and Building By-Laws. Conform to the requirements of the authorities having jurisdiction, such as public utilities. Where required under The Occupational Health and Safety Act, engage a Professional Engineer to design formwork and falsework for concrete.

.2 Provide copies of documents referred to in the Specification for joint use of Contractor and Consultant, on site.

1.20 **CONTRACTOR'S RESPONSIBILTY**

.1 The Contractor will be responsible to take all necessary steps to protect personnel (workers, visitors, general public, etc.) and property from any harm during the course of the contract. The list of Contractor's responsibilities identified below is by no means comprehensive, nor is it in any priority or critical order. It is here, merely to identify the most often forgotten or ignored responsibilities of the Contractor and is reproduced only as a reminder. The Consultants and the Owner advise the Contractor that it is he who is responsible for all aspects and facets of the Project, from start to completion, from compliance with Occupational Health and Safety regulations to compliance with all codes and statutes.

.2 The Owner may perform periodic monitoring to ensure that safety requirements are met, and that safety records are properly kept and maintained. Continued disregard for safety standards can cause the Contract to be cancelled and the Contractor removed from the site.

.3 All work procedures and equipment shall be in accordance with Owner and Legislation standards.

.4 All equipment shall be in safe operating condition and appropriate to the task.

.5 Only competent personnel will be permitted on site. During the site introduction, the Owner will determine who is competent. The Contractor will cause to remove from the site any persons not observing or complying with safety requirements.

.6 The Contractor shall comply with all Federal, Provincial and Municipal Safety Codes and Regulations and the Occupational Health and Safety Act. He shall insure that all of his Subcontractors, suppliers, installers, etc. comply with all applicable codes, regulations, and acts.

.7 The Contractor shall supply competent personnel to implement his safety program and ensure that the Owner's standards, and those of the Occupational Health and Safety Act, are being complied with.

.8 The Owner may hire Commissioning Agents to perform inspections of building systems at the closing stages of the work of this contract. The Contractor shall cooperate with and coordinate the work of the Owner's Commissioning Agent on site.

.9 The Contractor shall report to the Owner and jurisdictional authorities any accident or incident involving personnel and/or property of the Contractor, Owner, or Public, arising from the Contractor's or any of his Subcontractors, execution of the work.

.10 Provide the Owner with a copy of each site visit report by the Ministry of Labour, as soon as the report is issued.

.11 The Contractor shall include all provisions of this contract in any agreement with Subcontractors, and hold all subcontractors equally responsible for safe work performance.

.12 If the Contractor is responsible for a delay in the progress of the work due to an infraction of legislation or Owner Health and Safety requirements, the Contractor will, without additional cost to the Owner, work such overtime, and acquire and use for the execution of the work such additional labour and equipment as to be necessary, in the opinion of the Owner's Representative, to avoid delay in the final completion of the work or any operations thereof.

1.21 **MANUFACTURER'S INSTRUCTIONS**

.1 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods.

.2 Notify Consultant in writing of any conflict between these specifications and manufacturer's instructions. Consultant will clarify any such conflict when requested.

1.22 **AIR, VAPOUR, AND THERMAL SEAL**

.1 Ensure that exterior walls, windows, floor and roof surfaces provide an air-tight and vapour-tight membrane to prevent problems due to building vapour migration.

.2 In general, the air/vapour barrier must be achieved on the interior side of the thermal insulation.

.3 The air barrier/vapour retarder membrane, together with flashings and caulking shall provide a complete and continuous air barrier/vapour retardant envelope. All trades must co-ordinate their work with the work of other trades to ensure that the continuity and integrity of the envelope is maintained.

1.23 **SAFETY REQUIREMENTS**

.1 Comply with safety requirements outlined in Section 01 35 20.

1.24 **TRUCKING COSTS**

.1 The Contractor is responsible for all costs related to trucking required for the Contract. No extra costs will be considered for weight load or limits due to seasonal conditions or restrictions on load capacities imposed by any authorities or any similar limitations or factors.

1.25 **INDEPENDENT TESTS AND INSPECTIONS**

.1 The Contractor shall appoint inspection firms as directed by Consultant and make payments from the cash allowances specified in Division noted, except for the following, which shall be included in the contract.

.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 Testing, adjustment and balancing of electrical equipment and systems.
.4 Mill tests and certificates of compliance.
.5 Re-testing as described under the Quality Control subsection, below

.2 The Consultant will authorize payment of inspection services from specified cash allowances.

.3 Where tests or inspections reveal work not in accordance with Contract requirements, Contractor shall pay costs for additional tests or inspections as Consultant may require to verify acceptability of corrected work. In the case of soil compactions, the first retest only will be considered as part of inspection allowance.

.4 The Contractor shall furnish labour and facilities to:

.1 Provide access to work to be inspected and tested.
.2 Facilitate inspections and tests.
.3 Make good work disturbed by inspection and test.
.4 Pour concrete test cylinders and store as directed by Inspection Firm.

.5 Notify Inspection Firms sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.

.6 Where materials are specified to be tested, delivery representative samples in required quantity to testing laboratory.

.7 Pay costs for uncovering and making good work that is covered before required inspection or testing is completed and approved by Consultant.

1.26 **CASH ALLOWANCES**

.1 Include in the Contract Price for Gore Meadows Recreation Centre a stipulated sum Cash Allowance in the amount of **$10,000.00** to be expended as outlined below, which shall appy to the following aspects of the Work:

Authorities Having Jurisdiction (fees, not deposits)
Hollow Metal Doors, Frames, Screens Testing and Inspection
Hardware Inspection (Third party)
Interior Sign Allowance, supply and installation

.2 Include in the Separate Price for Cassie Campbell Recreation Centre, a stipulated sum Cash Allowance in the amount of **$10,000.00**, to be expended as outlined below, which shall apply to the following aspects of the Work:

Authorities Having Jurisdiction (fees, not deposits)
Hollow Metal Doors, Frames, Screens Testing and Inspection
Hardware Inspection (Third party)
Interior Sign Allowance, supply and installation

.3 Cash Allowances, unless otherwise specified, cover the net cost to the Contractor of services, products, construction, machinery and equipment, freight, handling, unloading, storage installation and other authorized expenses incurred in performing the Work.

.4 The Contract Price, and not the Cash Allowance, includes the Contractor's profit in connection with such cash allowance.

.5 The listing of a Cash Allowance in this section shall not be construed to imply the deletion from the base contract of any work which may be specified elsewhere. Where the expenditure of a cash allowance is not specifically outlined in the specifications, it shall be expended as per instructions and specifications to be provided by the Consultant at a later date.

.6 The Contract Price will be adjusted by written order by the Consultant to provide for an excess or deficit to the Cash Allowance. Any unused portion of the allowance shall be returned to the Owner at the conclusion of the Contract.

.7 A schedule shall be prepared by the Contractor to show when items called for under Cash Allowances are required, so that the progress of the Work is not delayed.

.8 Expend cash allowances as directed by Consultant in writing. Allowances will be adjusted to actual cost with no adjustment to Contractor's charges. Cash expenditure must identify the H.S.T. separately.

.9 Material Allowances

.1 Material allowances shall include the following:
- .1 Net cost of material
- .2 Applicable taxes and duties, excluding H.S.T.
- .3 Delivery to site

.2 For Material Allowance, the contract shall include:
- .1 Handling at site, including unloading, uncrating, storage and hoisting.
- .2 Protection from elements, from damage.
- .3 Labour, installation, and finishing.
- .4 Other expenses required to do cash allowance work (ie contract co-ordination).
- .5 Overhead and profit.

.10 Material and Installation Allowances:

.1 Material and Installation Allowances shall include the following:
- .1 Net cost of material
- .2 Applicable taxes and duties, excluding H.S.T.
- .3 Deliver to site
- .4 Handling at site, including unloading, uncrating, storage and hoisting
- .5 Labour, installation and finishing

.2 For Material and Installation Allowances, the contract shall include:
- .1 Protection from elements, from damage
- .2 Overhead and profit
- .3 Other expenses required to do cash allowance work (ie contract co-ordination)

.11 Testing and Inspection Allowances:

.1 Testing and Inspection Allowances shall include the following:
- .1 Net cost of testing and inspection firm, and laboratory services, designated and authorized by Consultant.
- .2 Applicable Taxes, excluding H.S.T.

.2 For Testing and Inspection Allowances, the contract shall include:
- .1 Overhead and profit
- .2 Supply of material tested
- .3 Other testing and re-testing work specified
- .4 Other expenses required to do cash allowance work (ie contract co-ordination)

1.27 **WARRANTIES**

.1 The following is a summary of the warranties required by the contract:

	# Years
Entire Building, General Contract	**1**
Finish Carpentry	2
Architectural Casework	2
Caulking and Sealants	2
Applied Fireproofing	3
Hollow Metal Doors and Frames	3
Finish Hardware	3
Panic Devices and Door Closers	5
Glass and Glazing	10
Acoustic Ceilings	2
Painting	2½

.2 Additional warranties may be noted within the specification sections.

1.28 **ADDITIONAL DRAWINGS**

.1 Consultant may furnish additional drawings to assist proper execution of the Work. These drawings will be issued for clarification only. Such drawings, however, shall have the same meaning and intent as if they were included with plans referred to in the Contract Documents.

1.29 **QUALITY CONTROL**

.1 The Consultants and authorized Owner staff shall have access to all areas of the Work, including any off site construction facilities.

.2 The Contractor shall give timely notice requesting inspection if Work is designated for special tests, inspections, or approvals by the Consultants, or any other authorized Owner staff, or testing and inspection company.

.3 If the Contractor covers, or permits to be covered Work that has been designated as outlined above, he shall uncover such work, have the inspections and tests satisfactorily completed and make good such work at no additional cost to the Owner.

.4 The Consultants or the authorized Owner Staff may order any part of the Work to be examined, if such Work is suspected not to be according to the Contract Documents. If, upon examination, such work is found not to be in accordance with the Contract Documents, then the Contractor shall correct such Work and pay for cost of examinations and correction. If such Work is found to be in full accordance with the Contract Documents, the Owner shall pay for the cost of examination and making good.

.5 If defects are revealed during inspection and/or testing, the appointed agency may request additional inspection and/or testing to ascertain the full degree of defects. The Contractor shall correct the defects and irregularities as reported by the inspection and/or testing agency, at no additional cost to the Owner and the Contractor shall pay all associated costs for retesting and reinspection.

.6 The Contractor shall provide any tools, materials or equipment that may be required by the inspection and/or testing agencies in retesting the Work. (E.g. Video camera rental to reinspect incorrectly installed sewer lines.)

.7 The employment of inspection and/or testing agencies does not, in any way, affect the Contractor's responsibility to perform the Work in strict accordance with the Contract Documents.

.8 The Contractor shall remove all defective work, whether the result of poor workmanship by him or his subtrades, use of defective or damaged products, whether or not incorporated into the Work and any Work that has been rejected by the Consultants or authorized Owner Staff as failing to conform to the Contract Documents. Replacement and execution of the affected Work shall be done in full accordance with the Contract Documents, making good other trades' work damaged by such removals or replacements at no additional charge to the Owner.

.9 If, in the opinion of the Consultant and/or the authorized Owner Staff, it is not expeditious to correct the defective Work, or Work not performed in accordance with the Contract Documents, the Owner, may, at its sole discretion, deduct from the Contract Price, the difference in value between the work performed and that required by the Contract Documents, the amounts of which shall be determined by the Owner.

1.30 **ENVIRONMENTAL DESIGN REQUIREMENTS**

.1 Indoor air quality is of major importance in the building. It is the intention of this Contract that the materials and products used be as low as possible in emissions of volatile organic compounds (VOCs). Low or no VOC products shall be used where these are available and suitable for the application. This is particularly of concern with regard to paints and other finishes, adhesives, sealants, and products manufactured using these materials.

.2 Any cleaners, solvents, fuels, aerosol sprays and other chemical products used during construction should also be low VOC emitting where possible. Provide good ventilation when using any products that may emit VOCs.

1.31 **START-UP**

.1 No work is to commence until purchase order issue and after preconstruction meeting.

.2 New work cannot commence without a building permit (if required).

1.32 **PAYMENT PROCEDURES**

.1 Refer to CCDC2 2020, Stipulated Price Contract, Part 5, Payment, and amendments included in Supplementary Conditions.

.2 Before submitting first request for payment, submit a Schedule of Values, which shall be a detailed breakdown of the Contract price, as directed by the Consultant and as per the Owner's format. Breakdown must equal Contract price. After approval by Consultant, cost breakdown will be used as basis for progress payments.

.3 Notwithstanding the amounts indicated on the Schedule of Values for the various aspects of the Work, the Owner reserves the right to retain additional funds for some items, where listed in the specifications. This includes amounts to be retained for maintenance manuals and for commissioning, as outlined in the applicable specification sections.

.4 Applications for payment shall list HST separately.

1.33 **REQUESTS FOR SUBSTITUTIONS**

.1 Products, materials, equipment, and methods of construction included in the Contract Documents are to be used in the execution of the Work of this Contract unless otherwise accepted by the Consultant in writing. Substitute products and materials may not be ordered or installed without written acceptance from the Consultant.

.2 Changes proposed by the Contractor are considered requests for “Substitutions”. Requests for Substitutions are to be submitted only by the Contractor.

.3 Submit a complete package, including information and documentation outlined below, for evaluation by the Consultant.

.4 A Request for Substitution must include the following information:

.1 Data sheets for both the specified item and the proposed substitution, enabling side by side comparisons.

.2 Complete description of the proposed alternative product or material, including:
.1 Laboratory tests results
.2 dimensions, gauges, weights, etc.

.3 An explanation of how the proposed substitute differs from the specified product
.1 in physical properties
.2 in quality and performance

.4 A list of any effects the proposed substitution would have
.1 on service connections (wiring, piping, ductwork, etc.)
.2 on the work of other trades
.3 on construction Schedules

.5 Evidence that manufacturers warranties and guarantees for the proposed substitutes are the same, or exceed those required under the Contract.

.6 Information on the availability of maintenance services and replacement materials for proposed substitute.

.7 Names, addresses, and phone numbers of fabricators and suppliers for proposed substitute(s).

.8 Confirmation that the proposed substitution, if accepted, would have no cost impact, or indication of a credit (or extra cost) associated with the substitution.

.5 Submissions of Requests for Substitution must be received by the Consultant well prior to any shop drawing submissions. The Shop Drawing process is not an acceptable means of requesting a substitution, and submission of drawings for products that have not been accepted will result in the automatic rejection of the Shop Drawing submission.

.6 The burden of proof of the merit of the proposed substitution lies with the Contractor.

.7 Substitution requests deemed incomplete or incorrect by the Consultant will be rejected.

.8 The Consultant may require the submission of further information in order to make an informed determination on the suitability of the proposed substitution. Allow a minimum of 10 working days, upon receipt of all required information, for the Consultant's decision. Substitutions requested too late, not allowing sufficient time for thorough review by the Consultant, will be rejected.

.9 The Owner's decision, based upon recommendations of the Consultant, of acceptance or rejection, of a proposed substitution shall be final.

END OF SECTION

PART 1 - GENERAL

1.1 GENERAL PROCEDURES

.1 Changes in the Work ordered by the Consultant in accordance with the General Conditions of the Stipulated Price Contract shall be valued in accordance with the General and Supplementary Conditions of the Stipulated Price Contract and as more fully specified herein.

.2 The standard documentation for effecting changes in the Work shall be as follows:

.1 Consultant's Notice of Contemplated Change issued to the Contractor on standard form and accompanied by necessary Drawings, Schedule, Details and Specifications.

.2 Contractor's Quotation submitted to the Consultant showing amount by which the Contract Sum shall be adjusted by way of increase or decrease if the change is ordered.

.3 Consultant's formal Change Order issued to the Contractor on Standard Form after Owner's approval. Formal Change Order becomes valid when signed by Consultant, Contractor, and Owner.

.3 Where a change is not expected to result in an increase or decrease to the scope or cost of work, the Consultant may issue such change as a Jobsite Instruction. Should the Contractor determine that any part of a Jobsite Instruction will result in extra costs, or credits, they shall notify the Consultant, and request the issuance of a Notice of Contemplated Change for the relevant portion of the work. A Jobsite Instruction does not authorize work which will result in a change in the Contract Price.

.4 Standard form of Jobsite Instruction, Notice of Contemplated Change and Change Order may be viewed at the Consultant's office during normal working hours.

1.2 VALUATION OF CHANGES

.1 Quotations submitted by the Contractor in response to Consultant's Notice of Change shall be fully detailed and itemized to facilitate checking and processing by the Consultant. Quotations shall be submitted in triplicate and shall:

.1 List Work proposed to be carried out by Contractor's Own Forces showing labour, material, and equipment charges together with quantities and costs (unit rates if applicable) in the assessment of such charges.

.2 List Work proposed to be carried out by Subcontractors showing the amount quoted by each Subcontractor as verified by the Subcontractor's quotation which shall show labour, material, plant and equipment charges together with quantities and costs (unit rates if applicable) upon which the quotation is based.

.3 In evaluating a change, the net cost shall be the net difference in quantity between the original and revised Work. For example: If the change affects the omission of $3m^3$ and the addition of $4m^3$ of an item, the value of the change will be assessed by applying the net difference of $1m^3$ (extra) and applying the appropriate mark-up specified herein.

.2 Unit rates are only applicable if they have been accepted by the Owner in advance and included in the Contract.

.1 Unit prices cover the full cost of performing the units of work described, including all labour and materials, duties, taxes, shipping and handling charges, foreign exchange charges, transportation, travelling costs, all overhead and profit, all co-ordination fees, insurance premiums, and all other charges, but excluding HST.

.3 Where Contract unit rates are to be modified:

.1 Where a change involves an extra of more than $10,000.00 (using Contract unit rates), a new unit rate must be negotiated to reflect a fair rate considering the volume of work involved.

.4 Where unit rates are not established in the Contract, quote costs as follows:

.1 material prices shall be the net price paid by the Contractor (or Subcontractor) after deduction of all trade discounts and the like other than reasonable discount for prompt payment.

.2 plant and equipment costs shall not be more than rates quoted in the latest edition of "Rental Rates on Contractor's Equipment" published by the Canadian Construction Association.

.3 labour costs shall be the actual rate paid to the workers in accordance with the fair wage provision of the Contract plus a “fair wage burden” mark-up of thirty-eight percent to cover Welfare contribution, Pension contribution, Vacation Pay, Trade Improvement Fund, Promotional Fund, Training Fund, Supplementary Unemployment Benefits, Check Off, Apprenticeship, Trust Fund and similar labour contract payments; Worker's Compensation Insurance, Canada Pension Scheme and other statutory charges on labour.

.5 “Overhead”, means all expenses to carry on work, except items included in the cost as defined above, and shall include but shall not be limited to: use of Plant, tools; administrative and supervisory staff; personal vehicles, travel; bonds, insurance; health and safety protocols ; and closeout submissions.

.6 The maximum mark-ups for overhead and profit may be applied, as appropriate, to the net costs assessed as above where the effect of the proposed change is an increase in the Contract Sum. If the effect of the change is a decrease in the Contract Sum no mark-up shall be applied. Maximum mark-ups for overhead and profit shall be as set out in the Supplementary Conditions to CCDC2, included in the Owners’ Bid Documents.

.7 When work deleted from the Contract is later added back into the Contract, additional overhead and profit will not apply to the reinstated work. Overhead and profit amounts are not included in credits and so remain included in the Contract amount.

.8 It shall be understood and agreed that the mark-ups specified above shall be deemed to provide for payment in full for all items that in the custom of the Construction Industry in Ontario are considered to be site or head office overhead, profit, supervision, administration and labour costs.

.9 Claims for extras will not be considered unless they can be verified by the Consultant. Site work and all below grade work must be visually inspected by the Consultant and documented by an independent third party BEFORE the work is hidden.

.10 The signing of a Change Order by all parties shall be deemed to be formal acceptance by the Owner of the Contractor's quotation. Following the issue of a Change Order the Owner will not entertain claims for extra payments due to errors alleged to have been made in the Contractor's Quotation.

.11 Under no circumstances will a claim for extra be considered if it is for work recommended by the Inspection Company unless the Consultant has been advised and his approval obtained PRIOR TO THE EXECUTION OF THE WORK.

END OF SECTION

PART 1 - GENERAL

1.1 SITE SUPERVISOR

.1 The Contractor shall be fully responsible for co-ordinating and expediting the work of all Subcontractors and shall employ a qualified Site Supervisor who shall be in full time attendance on this project.

.2 Prior to the Preconstruction Meeting, the Contractor shall inform the Consultant of their choice for Site Supervisors and shall provide resumes outlining qualifications and related work experiences.

.3 The Supervisors must have held the Supervisors position previously on the site of an office renovation project in an occupied building of at least $200,000.00 dollars in value.

Site Supervisor shall have as a minimum:

.1 Recent, previous experience with renovation or addition projects involving occupied buildings including (but not limited to) tenants, employees, retail customers, pedestrian and vehicular traffic.

.2 Successful completion of a multi-session Supervisor's training course conducted by a recognised Construction Association in Ontario.

.4 The Supervisors must be assigned to projects for the duration of the construction period, until the buildings are fully occupied by the Owner.

.5 The Owner and the Consultant reserve the right to reject the proposed Supervisors should they feel that they are not fully qualified to assume the responsibilities of the positions.

.6 There shall be a minimum of one full time Site Supervisor dedicated to the site.

.7 Site Supervisor must carry a cell phone at all times during construction with the ability to be reached directly during all work hours and the ability to have voicemail recorded during all non-work hours including weekends and holidays.

.8 Once the Supervisors are confirmed, there will be no change permitted without the written consent of the Consultant.

1.2 CONSULTANT/CONTRACTOR MEETING

.1 Prior to the commencement of the Work, the Contractor together with the Consultant shall mutually agree to a sequence for holding regular "site meetings" on same day (to be determined) of every second week.

1.3 PRE-CONSTRUCTION MEETING

.1 Immediately prior to construction, upon notification, attend at location of Owner's choice, pre-construction meeting, along with authoritative representatives of certain key Subcontractors as specifically requested by the Consultant.

.2 Purpose of meeting is as follows:
- .1 Review project communications procedures.
- .2 Review contract administration requirements including submittals, payment and change order procedures.
- .3 Identify all critical points on Construction Schedule for positive action.
- .4 Identify any product availability problems and substitution requests.
- .5 Establish site arrangements and temporary facilities.
- .6 Review any items which, in the Client's, Consultant's and Contractor's opinion, require clarification.
- .7 Exchange names & addresses of all key personnel representing Owner, Consultant, Contractor and Subcontractors.
- .8 Identify Consultant's inspection requirements.

1.4 **PROJECT MEETINGS**

.1 Consultant shall Chair project meetings on Site, on a regular basis and will issue minutes to Owner's Representative, Consultants, and Contractor.

.2 Consultant shall take minutes of meeting showing:
- .1 List of persons attending.
- .2 Decisions taken.
- .3 Instructions required or issued - Allocating responsibilities to action items.
- .4 All matters discussed.
- .5 Schedule Update - Progress, Delays.

.3 Contractor shall provide suitable on site accommodation for meeting, attend all meetings, arrange for attendance of all necessary Subcontractors, and distribute minutes of previous meeting to Subcontractors and Suppliers as appropriate.

.4 The Contractor's representatives at site meetings must include the project co-ordinator as well as site Supervisor.

.5 Contractor shall hold regular co-ordination meeting with Subcontractors and shall chair and minute each meeting. Copies of minutes shall be distributed to relevant Trades and Consultants and Owner.

.6 In addition to jobsite meetings, Contractor shall arrange for, chair, and record safety meetings and regular meetings with his Subcontractors and suppliers. He shall distribute copies of the minutes of these meetings to all Subcontractors, Owner and Consultant.

1.5 **ON SITE DOCUMENTS**

.1 The Contractor shall maintain the following documents, up to date, in the site office:

- .1 Contract Documents
- .2 Reviewed Shop Drawings - Printed in full colour or redline
- .3 All instructions and changes, i.e. Work Authorization, Jobsite Instructions, Notices of Contemplated Change, Change Orders, etc.
- .4 All inspection and test reports
- .5 Permit drawings and specifications

.6 Authorizations, approval documents, permits, special rulings, etc., issued for the project by Authorities Having Jurisdiction.
.7 Details of tested assemblies being used on the project; ULC, cUL, etc.
.8 As-Built drawings.

.2 Confirm with building inspector, at the commencement of construction, what documents are required for submission both during construction and for occupancy. Keep copies of such documents on site. Refer also to Section 01 41 00, Regulatory Requirements.

.3 Documents listed above shall be printed, full size documents, not only digit format.

.4 Maintain copies of Regulating Documents referred to in the specifications, up to date, in the site office.

.5 Maintain a file of Material Safety Data Sheets (MSDS) for all materials being used on site and make available to all concerned, in the site office.

.6 Maintain a hard copy of available existing construction documents in the site office.

END OF SECTION

PART 1 - GENERAL

1.1 SCHEDULE

.1 Within ten (10) days of contract award, submit a detailed construction schedule. Base the submission on the commencement of completion dates of the Contract and indicate specified restraints and milestones, activities and durations for shop drawing submission and approval, testing, fabrication and delivery, construction sequence and timing, interdependencies and constraints. Include the procurement activities for major structural elements, cladding, windows, and electrical equipment. Ensure the participation of all major Subcontractors and Suppliers. Schedule must include reasonably detailed breakdown of mechanical and electrical work.

.2 Schedule shall show:

.1 Commencement and completion dates of Contract.

.2 Commencement and completion dates of stipulated stages if any.

.3 Commencement and completion dates of Trades.

.4 Order and delivery times for materials and equipment, where possible.

.5 Dates for submission of Shop Drawings, material lists and samples.

.6 Any other information relating to the orderly progress of Contract, considered by Contractor to be pertinent.

.3 The schedule shall be reviewed and updated at every Site meeting.

.4 Include with each update a written report of activity progress reflected in the revised Schedule, and the corrective actions which have been made or are to be taken to maintain progress on the schedule in the future, anticipated delays, resources availability, schedule changes, and work to be completed in the next 1 month period.

1.2 UPDATING AND MONITORING

.1 Set up format of Construction Schedule to allow plotting of actual progress against scheduled progress.

.1 Allow sufficient space for modifications and revisions to the Schedule as Work progresses.
.2 Format shall be approved by the Consultant.

.2 Display copy of Schedule in Site office during complete construction period and plot actual progress weekly.

.3 Updating:

.1 Arrange participation, on Site and off Site, with Subcontractors and Suppliers, as and when necessary for the purpose of updating schedule and monitoring progress.

.2 Conduct reviews of progress and update schedule, distributing copies to Consultant, Owner and Sub-Trades at least once a month or as directed by Consultant.

1.3 **PROGRESS REPORTS**

.1 Keep a permanent written report on the Site of progress of the Work. This record to be open to review by the Consultant. A copy to be furnished to the Consultant upon request.

.2 Indicate daily the number of persons engaged on the work (including subtrades) and the division and section of the work upon which each group of workers is engaged, in sufficient detail to record dates of construction of each particular section of work.

.3 Record to show dates of commencement and completion of trades and parts of the work coming under the Contract, including reports on daily weather conditions, excavation work, erection and removal or forms, and other similar pertinent information.

.4 Report delays (and potential delays) giving reason for delay and action being taken to resolve the problem.

1.4 **PROGRESS PHOTOGRAPHS**

.1 Concurrently with monthly application for payment, submit 10 electronic format colour images as follows:

.1 Images shall clearly show overall progress of Work.

.2 Images shall be properly exposed and in focus; views shall be unobstructed. The Consultants will not accept images which are, in their opinion, substandard and these shall be retaken and resubmitted.

.3 Provide an index with printed images clearly identified with name of project, description of view and date taken. Disks are to be clearly labelled .

1.5 **QUALITY OF WORK / STATUS REPORTS**

.1 The Contractor shall take full responsibility for the quality of work on site. The Contractor shall furthermore notify workers of deficient work immediately upon receipt of notification of deficiencies by the Consultant, Subconsultants and/or Owner.

.2 The Contractor shall provide a monthly status report on the status of deficiencies identified by the Consultant and Subconsultants. The report shall include a description of each deficiency, status of the deficiency, description of corrective action taken, value (cost) to the correct deficiency and trade (person) responsible for deficiency. The report shall be typewritten on the Contractors letterhead. A copy of the report format shall be submitted at least 2 weeks prior to the first progress draw, for review. Submit monthly status reports with each progress draw.

.3 After Substantial Performance, the Contractor shall continue provide the deficiency status reports on a monthly basis, including updated lists of deficiencies identified by the Owner and consultants.

END OF SECTION

PART 1 - GENERAL

1.1 BEFORE COMMENCEMENT OF WORK

.1 Obtain the documents listed under this heading and supply to Consultant within the time stipulated in the Specification, or if not so stipulated, before issue of the first Certificate.

.1 Performance Bond/Labour and Material Bond.

.2 Insurance Policies required under General Conditions of Contract - Insurance.

.3 Certificates of good standing from the Workplace Safety & Insurance Board for the Contractor and all Subcontractors.

.4 Shop Drawing Schedule.

.5 Permits for temporary structures, hoists, etc.

.6 Schedule of Values: Refer to General Conditions of Contract.

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

.8 Construction Schedule.

.9 Equipment Delivery Schedule.

.2 Concurrently, with schedule of values, submit cash flow schedule broken down on a monthly basis, indicating anticipated monthly progress billings for duration of the Contract.

.3 Submit schedule in a format acceptable to the Consultant. Indicate anticipated submission dates and review periods. Highlight critical items.

.4 Submit, in a format acceptable to the Consultant, a list of manufactured equipment complete with order dates, anticipated delivery dates, and dates required on site to meet progress schedule. Update schedule at least once a month or more often if directed by the Consultant. Clearly indicate late deliveries and anticipated impact on construction schedule. Include in schedule required delivery dates for products supplied by Owner.

.5 Schedule of Values:

.1 Before submitting first request for payment, submit a detailed breakdown of the Contract price, as directed by the Consultant and as per the Owner's format. Breakdown must equal Contract price. After approval by Consultant, cost breakdown will be used as basis for progress payments.

1.2 DOCUMENTS AND ACTION REQUIRED DURING PROGRESS OF CONTRACT

.1 Perform the action and/or obtain the documents listed under this heading and supply to the Consultant, within the time stipulated in the Specification or, if not so stipulated, as soon as possible following Consultant's request.

.2 Adjust Cash Allowances by award of separate Contracts, where appropriate.

.3 Documents specified under Section 01 10 00, General Instructions and Section 01 33 23, Shop Drawings, Product Data and Samples.

.4 Progress photographs, submitted concurrently with monthly application for payment. Refer to Section 01 32 00.

.5 Any permits required from Authorities Having Jurisdiction enabling Owner to occupy the work (or part thereof) prior to Substantial Performance of the Contract.

.6 As-Built Documents:

.1 The Owner requires as-built documents for all architectural, and mechanical changes on completion of the construction.

.2 The Contractor, and mechanical and electrical Subcontractors shall obtain, from the Consultant, a complete and separate set of white prints of Contract Drawings and Project Manual to keep on the site at all times.

.3 The drawing prints shall be marked up by responsible personnel of the Contractor and Subcontractors to record clearly, neatly, accurately and promptly showing all locations of buried structural, mechanical and electrical work and deviations from the contract documents.

.4 The Project Manual shall be similarly marked up to reflect deviations from the Contract Documents, as well as indicate materials used, colours selected, etc.

.5 The as-built documents will be reviewed at regular intervals by the Consultant and the quality of performance by the Contractor and Subcontractors in developing these records will be taken into consideration when reviewing the monthly applications for payment submitted by the Contractor.

.6 Prior to the date of Substantial Performance, request from the Consultant updated drawings incorporating all changes made to the building through Change Orders and Jobsite Instructions. Transfer all recordings from the white prints to these updated drawings and return them to the Consultant, as specified in Section 01 78 00, Close-out Submittals.

.7 Mark "as-built" changes in red coloured ink.

.8 Record following information:

.1 Depth of various elements of foundation in relation to first floor level if different from contract documents.

.2 Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvement.

.3 Location of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure.

.4 Field changes of dimension and detail.

.5 Changes made by Change Order or Supplementary Instructions.

.9 Clearly mark each of the drawings,"Project As-Built Record Copy".

.10 Final completion of these Drawings shall be a condition precedent to the issuance of Consultant's final payment certificate.

.11 Refer to Mechanical and Electrical Specifications Divisions for more specific requirements regarding preparation and submission of final Record Drawings.

END OF SECTION

PART 1 - GENERAL

1.1 SCHEDULE

.1 Within 10 working days after award of Contract, prepare and submit to Consultant for comment, a schedule fixing the dates for the submission of all Shop Drawings, product data, and samples.

.2 Allow reasonable promptness for Consultant to review submissions, exclusive of time required for inter-office transmissions.

.3 All shop drawings must be reviewed and stamped by the Contractor prior to submission to the Consultant.

1.2 GENERAL

.1 Submit to Consultant, for review, Shop Drawings, Product Data, Samples, and other required submittals specified.

.2 All shop drawings and related submittals must be reviewed and stamped by the Contractor prior to submission to the Consultant.

.3 Until submittal is reviewed, Work involving relevant product may not proceed.

.4 Do not use for construction, Shop or setting Drawings or diagrams which do not bear Consultant's stamp and name of reviewer.

.5 Shop drawing reviews do not authorize changes in cost or time, which may only be accomplished by an appropriate Change Order issued through the Consultant.

.6 Shop drawings shall be for products as specified or otherwise approved by the Consultant. The shop drawing process is not a means of requesting substitutions. Refer to Section 01 10 00, for the process for requesting approval of subtitutions.

.7 Submission and subsequent review of Shop Drawings constitute a service and does not entitle the Supplier or Subcontractor to the right to remuneration until the materials are supplied and installed on the Site in accordance with the Contract.

.8 The Contractor must include for delivery and pick up of shop drawings to/from the Consultant by hand or courier.

.9 The Contractor must include for reproduction of shop drawings *after* review by the consultants.

1.3 SHOP DRAWINGS

.1 Drawings shall be copies of original drawings prepared by Contractor, subcontractor, supplier or distributor, for the work of the Contract which illustrate appropriate portions of the Work. Shop drawing submissions shall show pertinent information for incorporation of the products and equipment, including the following, as applicable:
   .1 fabrication details
   .2 dimensioned layout drawings, including clearances, with site dimensions

.3 relationship to adjacent work
.4 setting or erection details
.5 performance requirements
.6 operating weights of equipment
.7 installation instructions
.8 service connection requirements, including wiring diagrams
.9 single line and schematic diagrams
.10 additional information as may be specified in applicable Specification Sections.

.2 Note that some shop drawings are required to be approved by a Professional Structural Engineer in the Contractor's employ. These include:
.1 curtain wall
.2 and other items as required in the specifications.
.3 Engineers stamp is also required for all seismic restraints, indicating that they conform to the design requirements of the Ontario Building Code.

.3 Submit Shop Drawings with transmittal forms listing:
.1 the project name and number
.2 the names of the manufacturer, supplier, subcontractor
.3 the applicable Drawing numbers
.4 the number of copies
.5 the names of the items included the submittals
.6 number of Specification section to which the Shop Drawings refer
.7 dates and revision numbers, and submission numbers

.4 All dimensions on shop drawings must be in metric.

.5 Where approvals are required by Authorities having jurisdiction, submit Shop Drawings to those authorities and obtain the approvals required.

.6 On Shop Drawings for fire rated assemblies show required fire rating and ULC design numbers.

.7 Submit two (2) to five (5) copies of printed shop drawings as follows:

.1 Submissions shall be in sufficient quantities for distribution to all reviewers, plus one copy to be returned to the Contractor for reproduction and distribution.

.2 The prime Consultant requires one copy of every submission, of all disciplines.

.3 Each sub-consultant, of each discipline, will retain one copy of the shop drawings. Where one sub-consultant is responsible for the review of more than one discipline, they will require multiple copies, as applicable.

.4 For architectural submissions which do not need to be reviewed by sub-consultants, only two copies are required.

.5 Refer to sections prepared by the sub-consultants for possible variations on these requirements.

.8 Email Submission:

.1 Submittals that are formatted for 11" x 17" (279 x 432mm) sheets or smaller may be submitted by email, provided the total number of pages, for the entire submission, does not exceed 15.

.2 Submittals must be submitted in the same size and scale as they were originally prepared. Drawings may not be reduced in size for email transmission.

.3 If acceptable to the individual reviewers, larger format submittals and larger volume submittals may be reviewed by email submission. The Contractor must subsequently print and submit full sized, red line copies of such reviewed documents to the Consultant.

.4 Email submissions must be in pdf format and must be high quality documents, preferably generated by computer from the original documents (rather than scans of printed documents). If digital submissions are of insufficient quality, hard copies will be required.

.5 Emailed documents shall be reviewed and stamped digitally by the Contractor, or accompanied by a separate sheet from the Contractor listing the documents reviewed and bearing the Contractor's review stamp, along with copies of any revisions made.

.6 Email submission is only used as a convenient means of distributing drawings, in lieu of sending hard copies by courier. Reviewed drawings must still be printed for job site files, record copies, etc. All site copies shall be red line prints or colour prints.

.9 Drawings shall be of a size and quality which will be readily reproduced. Shop drawings must be certified to have been reviewed and corrected by Contractor and sub-contractor responsible for forwarding to the Consultant.

.10 Shop drawings are to be to scale. Scale shall be large enough to adequately review details included. Provide site measured dimensions on drawings wherever possible.

.11 All requirements for shop drawings apply also to resubmissions of shop drawings, as may be required by the Consultant.

.12 Revise all reviewed shop drawings to incorporate Consultant's comments. One complete set of final, revised Shop Drawings, used for construction, shall be submitted to the Consultant.

.13 Shop Drawings are required for the following items:

Construction Hoarding
Hollow Metal Doors & Frames
Architectural Metals
Hardware Schedule and Data
Woodwork and Casework
Flooring and Base
Acoustic Ceilings
Paint
Lighting Fixtures

Mechanical and Electrical Equipment as listed in those specification sections and other items as may be requested within the specifications.

.14 Refer also to the General Conditions of the Contract and Supplementary Conditions.

1.4 **PRODUCT DATA**

.1 Certain Specification Sections specify that manufacturer's standard schematic drawings, catalogue sheets, diagrams, schedules, performance charts, illustrations and other standard descriptive data will be accepted in lieu of Shop Drawings.

.2 The above will be accepted if they conform to the following:
- .1 Delete information which is not applicable to project.
- .2 Supplement standard information to provide additional information applicable to project.
- .3 Show dimensions and clearances required.
- .4 Show performance characteristics and capacities.
- .5 Indicate operating weight of equipment.
- .6 Show wiring diagrams and controls.
- .7 Add to standard sheet the Project identification data.

1.5 **SAMPLES AND MOCK-UPS**

.1 Where specified, shown or considered necessary, submit duplicate samples for Consultant's approval.

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

.3 Samples must correspond in every respect to materials supplied for project.

.4 Construct field samples and mock-ups at locations acceptable to Consultant.

.5 Construct each sample or mock-up complete, including work of all trades required to finish work.

.6 Do not proceed with fabrication or delivery of materials until samples are approved.

.7 Reviewed samples or mock-ups will become standards of workmanship and material against which installed work will be checked on project.

.8 Approval of samples does not imply acceptance of finished work.

1.6 **CONTRACTOR'S RESPONSIBILITY**

.1 Prior to submission to the Consultant, review all shop drawings, samples, product data, and other required submittals as follows:

.1 Verify that the submission is for products as specified, or otherwise approved by the Consultant.

.2 Ensure that the submission is complete.

.3 Note any potential interference issues and co-ordinate with the trades to avoid these conflicts.

.4 Verify:
- .1 Field measurements.
- .2 Field construction criteria.
- .3 Catalogue numbers and similar data.

.2 Coordinate each submittal with requirements of Work and Contract Documents. Refer to Section 01 10 00, General Instructions, and the subsection on Coordination.

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

.4 Stamp, initial or sign each Drawing, certifying approval of submission, verification of field dimensions and measurements and compliance with Contract Documents, prior to submission to the Consultant(s).

.5 The Contractor shall be responsible for reproducing and distributing reviewed shop drawings, except for those copies required by the Architect and Consultants.

.6 After Consultant's review, distribute copies as follows:

- .1 Job Site file (2 copies) - colour or redline copies
- .2 As-built documents file.
- .3 Other prime contractors.
- .4 Subcontractors.
- .5 Supplier.
- .6 Fabricator.
- .7 Authorities having jurisdiction, where required by Codes and/or By-Laws, i.e. structural steel and sprinklers.
- .8 Owner’s Maintenance Manual (revised, as-built copies).

.7 Distribute samples as directed by the Consultant.

.8 Ensure that all samples are approved by authorities having jurisdiction, supplier for correct application in Project, and other parties such as Owner in time to permit approval prior to ordering of quantity delivery to Site.

.9 The Contractor shall advise all Trades, Subcontractors and suppliers of the limits of the Consultant's responsibility with respect to Shop Drawings and other submittals, as detailed below.

1.7 **CONSULTANT'S RESPONSIBILITY**

.1 With reasonable promptness from the receipt of samples and Architectural shop drawings , the Consultant shall review them and return them to the Contractor. Allow 5 working days for review of shop drawings.

.2 Review by the Consultant is for the sole purpose of ascertaining conformance with the general design concept. This review shall not mean that the Consultant approves the detail design inherent in the shop drawings, responsibility for which shall remain with the Contractor, and such review shall not relieve the Contractor of his responsibility for errors or omissions in the shop drawings or of his responsibility for meeting all requirements of the Contract Documents. The Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to the processes or techniques of construction and installation and for co-ordination of the work of all subtrades.

.3 Shop drawing markings shall be interpreted as follows:

.1 Shop drawings marked "REVIEWED" by Consultant and/or Subconsultants are released for construction.

.2 Shop drawings marked "REVIEWED AS NOTED" by the Consultant or his Subconsultants are also released for construction, after revisions noted are made; with final copies sent to the Consultant.

.3 Shop drawings marked "REVISE AND RESUBMIT" by the Consultant or his Subconsultants are NOT released for construction and must be resubmitted after being revised in accordance with the consultants' comments.

.4 Shop Drawings marked with the Consultant's "RECEIVED" stamp only have not been reviewed by the Consultant.

.4 Review by the Architect does not in any way constitute review of the design of engineering elements, which form part of the Contract Document's prepared by others.

.5 Shop drawings for products that are not a specified item, or an approved substitution, will be rejected without being reviewed.

.6 Shop drawings which have not been requested will be returned to the Contractor with no action taken by the Consultant.

.7 The Architect will use the following stamps in reviewing Shop Drawings:

"Review by Moffet & Duncan Architects Inc. does not in any way constitute review of the design of engineering elements, which form part of the Contract Documents prepared by others."

MOFFET & DUNCAN ARCHITECTS INC.

REVIEWED	☐
REVIEWED AS NOTED	☐
REVISE AND RESUBMIT	☐

"This review by Moffet & Duncan Architects is for the sole purpose of ascertaining conformance with the general design concept. This review shall not mean that Moffet & Duncan Architects Inc. approves the detail design inherent in the shop drawings, responsibility for which shall remain with the Contractor submitting same, and such review shall not relieve the Contractor of his responsibility for errors or omissions in the shop drawings or his responsibility for meeting all requirements of the Construction and Contract Documents. The Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of the work of all sub-trades."

MOFFET & DUNCAN ARCHITECTS INC.

REVIEWED BY	
DATE	
PROJECT No.	

END OF SECTION

PART 1 - GENERAL

1.1 CONSTRUCTION SAFETY

.1 Observe and enforce construction safety measures required by the National Building Code of Canada, Canadian Construction Safety Code, Ontario Occupational Health and Safety Act, Workplace Safety & Insurance board (WSIB) and Municipal Statutes and Authorities.

.1 The Contractor is again reminded that the Contractor is responsible for Occupational Health and Safety on this project. The items listed below are only guidelines of the Owner's expectations in this regard and not to be construed to be comprehensive or total in nature.

.2 In particular, the Ontario Construction Safety Act, the regulations of the Ontario Department of Labour and Ontario Hydro Safety Requirements shall be strictly enforced.

.3 In event of conflict between any provisions of above authorities the most stringent provisions will apply.

.4 The Owner will take every reasonable precaution to prevent injury or illness to employees and the public, participating in Owner activities, or performing their duties. This shall be accomplished by providing and maintaining a safe, healthy working environment and by providing the education necessary to perform these activities or duties safely.

.5 The Owner is also vitally interested in the health and safety of Contractors and their workers performing work for the Owner. Cooperation and support of the Contractor in the protection of the workers from injury or occupational disease is a major, continuing objective of the Owner. To achieve these goals, the Owner, in concert with the Contractors, will endeavour to make every effort to ensure that the Contractors provide a work site which is a safe and healthy work environment. The Owner insists that all Contractors and their workers are dedicated to the continuing objective of reducing risk and injury.

.6 The Contractor covenants and agrees to comply with all statutory and other obligations, including without limitation, the provisions of the Occupational Health and Safety Act (Ontario) and all Regulations thereto, and all amending and successor legislation, in connection with all work performed by either the Contractor, Sub-contractors, or any Other Contractor on, or in connection with, the Project.

.7 Without limiting the foregoing, for the purposes of this Contract, the Contractor agrees that it shall be the "constructor" of the Project within the meaning of the Act, and as such, shall assume all the obligations and responsibilities, and observe all construction safety requirements and procedures, and duties of inspection imposed by the Act on the "constructor", as therein defined, for all work and services performed by the Contractor, Subcontractors and Other Contractors on or in connection with the Project. The Contractor further covenants and agrees that the Owner and its existing and former officers, trustees, employees and agents, and their respective heirs, executors, administrators, successors and assigns shall be released from any obligations or liabilities otherwise imposed on the Owner, or on any of them, pursuant to the Act in connection with the Project, and that the Contractor shall assume all liability and responsibility in connection with same. The Contractor agrees to save harmless and indemnify the Owner from any losses, damages, costs and expenses of any kind, or nature whatsoever, including all legal expenses, and all defence costs and related expert or consulting fees, incurred

by the Owner, or any of them, arising in connection with the failure, default, or inability of the Contractor, of the Owner, or any of them, to comply with any of the aforementioned statutory, or other legal requirements, or arising in connection with any breach by the Contractor of any of its covenants, agreements and obligations under this Contract.

.8 The Contractor shall inform and instruct Other Contractors that they, while performing work on this project, are under the authority of the Contractor. Other Contractors are to discuss and co-ordinate with, and follow instructions from, the Contractor on all matters of site access, vehicles, deliveries, storage, temporary facilities, coordination with the work of other subcontractors, work methods, scheduling, labour conditions, construction safety, environmental protection, security and all other matters which relate to the safe and proper execution of construction work.

.9 The Contractor shall ensure that all supervisory personnel on job site are fully aware of the procedures and requirements outlined herein and comply with all requirements specified.

.10 All contractors are responsible to ensure that all machinery and/or equipment are/is safe and that the workers perform their tasks in compliance with established safe work practices or procedures. Workers must receive adequate training in their specific work tasks to protect their health and safety.

.11 The Contractor shall be responsible for all persons and companies performing work, including other Contractors, on this project, at all times, up to and including, the date of Substantial Performance of the Work. Authority for coordination and instructions relating to all matters which relate to the safe and proper execution of construction work shall rest with the Contractor. The Contract Price will include the Contractor's fees for the coordination and supervision of the work of all Other contractors.

.12 In addition to the responsibility of all contractors as outlined in 1.1.10, above, Subcontractors will be held accountable for the health and safety of workers under their supervision.

.13 Every worker must protect his/her own health and safety by working in compliance with the law and with safe work practices and procedures established by the authorities having jurisdiction.

.14 All sections of the Occupational Health and Safety Act for Industrial Establishments, latest edition, and the Occupational Health and Safety Act for Construction Projects, latest edition, shall be enforced, by the Contractor, in their entirety, throughout the duration of the construction project.

.15 The Contractor shall provide the Consultant with the telephone number where the Contractor or his representative can be reached at any time, day or night, for the duration of the contract.

.16 Where an accident, explosion, or fire causes a person injury at the work place, and the worker is disabled from performing the usual task, the Contractor shall prepare a written notice and shall forward same to the Ministry of Labour within four days of the occurrence with a copy to the health and safety representative or the Joint Health and Safety Committee, containing such information and particulars as may be prescribed.

.1 Where a person is killed or critically injured from any cause at the work place, the Contractor shall immediately call the Ministry of Labour. A written notice from the

Contractor shall be given to the Ministry of Labour within forty-eight hours after the occurrence, containing such information and particulars as may be prescribed, with copies to the Consultant and the Owner's Representative.

.2 The Contractor is advised that the accident scene is under the jurisdiction of the Ministry of Labour and no wreckage, articles, etc., shall be interfered with, disturbed, destroyed, altered or carried away at the scene, or connected with the occurrence, until the Ministry of Labour has given permission.

1.2 **REPORT ACCIDENTS**

.1 Promptly report in writing to the Consultant all accidents which cause death, personal injury or property damage, arising out of or in connection with the performance of the work on or adjacent to the site. Where death or serious injuries or serious damages are caused, the accident shall be reported immediately by telephone or messenger to the Consultant and to the relevant public authorities.

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

1.3 **FIRST AID FACILITIES**

.1 Provide at the site the equipment and medical facilities necessary to supply first-aid service to anyone who may be injured in connection with the Work, and to conform to the requirements of the authorities having jurisdiction over the Work.

1.4 **FIRE SAFETY REQUIREMENTS**

.1 The appropriate clauses of the Ontario Building Code, Ontario Fire Code, National Building Code of Canada and National Fire Code relating to fire safety and protection shall be strictly followed.

.2 Provide and maintain free access to temporary or permanent fire hydrants acceptable to local fire department.

.3 Provide sufficient temporary standpipes and connections, fire hose, valves, temporary cabinets, extinguishers, etc. to comply with the requirements of the governing Municipal and Provincial authorities.

.4 Make necessary adjustments and modifications to temporary fire protection as required during progress of the work. Remove such temporary work when permanent system is installed and operating.

.5 Conform to “Guidelines for Maintaining Fire Safety During Construction in Existing Buildings”, provided by the Office of the Ontario Fire Marshal.

.1 Maintain existing exits and access to exits. Where an exit must be blocked, provide an alternate exit acceptable to Authorities Having Jurisdiction.

.2 Provide minimum 45 minute rated fire separations at junction between existing corridors in occupied spaces and new corridors under construction. Any required access through these partitions shall be with rated doors, frames with closers and latching.

.3 Maintain exiting fire department access route or provide new, or temporary, access route acceptable to the fire department.

.4 Do not store combustible materials adjacent to existing building or where such materials could pose a fire hazard to the building or the occupants.

.5 Cover existing windows exposed to construction with 16mm gypsum board on steel stud framing, on interior side of such windows. Louvres shall be similarly protected. Replace doors exposed to construction with hollow metal doors.

.6 Where temporary openings are made in existing floors, pack with mineral wool insulation to create temporary fire barrier.

.7 Existing fire alarm system is to be kept operational throughout the construction period. Keep fire department informed of any temporary shutdowns and arrange for alternate fire safety measures to be implemented during that period.

.8 Refer to the Ontario Fire Code for requirements for temporary shutdown of fire protections systems, including sprinklers and standpipe systems.

.9 Modify Fire Safety Plan in accordance with the Fire Code, when required to facilitate construction. Such modifications shall be determined in cooperation with the Owner and the local fire department.

1.5 **OVERLOADING**

.1 Ensure no part of Work is subjected to a load which exceeds the design live loads shown on the structural drawings. Ensure that scaffolding and false work are not overloaded. Do not cut load bearing members without approval of Consultant.

1.6 **FALSEWORK**

.1 Design and construct falsework in accordance with CSA S269.1 latest version.

1.7 **VISITORS**

.1 Provide hard hats for use by all visitors.

1.8 **ADDITIONAL REQUIREMENTS FOR OCCUPIED SITES**

.1 When building is occupied, additional safety requirements will apply, as outlined below:

.2 Flagman:
.1 Provide a full-time flagman at each vehicular construction entrance.
.2 The location of the Flagman shall be coordinated with the Owner, to ensure the safe guarding of staff, and the general public.

.3 Flagman shall be a designated person, not the Site Supervisor or other construction worker, and shall not be changed during the Project unless approved by the Owner.

.4 Flagman must have means of communication with Site Supervisor (phone or walkie-talkie).

.5 Flagman shall meet and escort all construction traffic from the site **entrance** into and out of the fenced construction area, from street through entrances to hoarding. No unaccompanied construction vehicles will be permitted on property, outside of construction enclosure.

.6 Flagman shall control construction parking at the site. Parking shall be as designated by Owner.

.7 Contractor may provide a temporary shelter for the flagman, if necessary or desired, the cost of which shall be included in the Tender Price.

.8 Flagman shall be properly outfitted to carry out his duties, with appropriate safety clothing and equipment, including reflective vest, hand-held "Stop" sign and a visible identification tag.

.3 Access Control:

.1 The Contractor shall instruct all suppliers and subcontractors that they are required to contact the Site Supervisor by cell phone prior to entering the site, and await escort by the flagman.

.2 Site Supervisor shall then advise the flagman to meet and escort the vehicle.

.3 Gates of construction enclosure must remain closed and locked at all times and only opened for the time required for access/egress of authorized vehicles or personnel.

.4 Site Communication

.1 The Contractor shall provide the Owner's Project Manager with an emergency contact telephone number at which the Site Supervisor or other Contractor representative can be contacted directly during work hours and with voicemail available at all other times, including weekends and holidays, which will be checked regularly.

.2 Site Supervisor and flagman must have means of direct communication available at all times during work hours.

.3 Contractor shall be in daily communication with the Owner to determine any activities which may involve safety concerns, related to the construction area.

1.9 SIGNAGE

.1 Provide signage indicating " Danger - Keep Out", "Hard Hats must be worn at all times", "Safety Shoes must be worn at all times", "No Trespassing", etc., mounted on all sides of Site, and additional signs as necessary to adequately warn the public and workmen of the inherent dangers of the site and requirements to maintain personal safety. Safety Signage is also required at all construction entrances

.2 Signage posted at gates shall state restrictions on hours of entry and egress, as agreed by the Owner, and under no circumstances shall construction traffic be allowed during business operation hours.

END OF SECTION

PART 1 - GENERAL

1.1 HAZARDOUS MATERIALS

.1 The Ontario Occupational Health and Safety Act requires the Owner to provide a list of Designated Substances to all prospective Contractors and they in turn must supply the list to their sub-trades who are likely to handle or disturb the material.

.2 The Owner will provide a survey of Asbestos-containing building materials.

.3 Other materials that may be present in the area of construction may include any or all of the following and would be expected in normal construction:

- .1 Lead: in paint films, in solder or pipe for drinking water, in solder for other pipe or electrical components
- .2 Mercury : found in elemental form in an ampoule in thermostats or in electrical soft switches, as a gas in fluorescent light tubes or in paint films and caulk
- .3 Silica: primarily as Quartz, bound in building materials including but not limited to concrete, brick and block.

.4 In accordance with the Ontario Health and Safety Act and regulations enacted under the Act the Contractor and sub-trades shall take appropriate precautions for the building and their work force. Such precautions may include, for the substances listed, the measures outlined below.

.5 Remove, transport, and dispose of hazardous materials in accordance with applicable laws, including the following:

- .1 Occupational Health and Safety Act, R.S.O. 1990, c. O.1., including the following regulations made under the Act:
  - .1 O.Reg. 213/91, Construction Projects, amended to 345/15 and
  - .2 O.Reg. 278/05, Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations amended 479/10.
- .2 Regulations for the transport of asbestos waste, including:
  - .1 Transportation of Dangerous Goods Act, 1992 (1992, c. 34)
  - .2 Dangerous Goods Transportation Act, R.S.O. 1990, c. D.1
- .3 Environmental Protection Act, R.S.O. 1990, C. E.19, and regulations under the Act, including:
  - .1 O.Reg. 102/94 Waste Audits and Waste Reduction Work Plans
  - .2 O.Reg. 103/94 Industrial, Commercial and Institutional Source Separation Programs
  - .3 R.R.O. 1990, Reg. 347: General - Waste Management

.6 Lead:

- .1 Any operation involving lead-based paints may potentially produce significant exposures to lead if adequate controls are not provided. Exposure varies with the type of operation being employed.
- .2 The presence of lead in building finishes left intact or found peeling in a few locations produces little exposure for workers to lead through contact, inhalation or ingestion.

.3 Operations involving the hand sanding and scraping of lead based paints can elevate exposure through inhalation. The use of a negative pressure respirator equipped with high efficiency particulate air (HEPA) filters is recommended to reduce exposure.

.4 Operations involving the machine sanding or abrasive cutting of paint and other surface coatings containing lead can elevate levels of much finer dust. The spray application of a lead bearing paint or coating produces a respirable fume. These operations increase the likelihood of exposure by inhalation. A negative pressure air-purifying respirator equipped with HEPA filters is recommended for these operations.

.5 Operations involving oxyacetylene torches or other heating operations produces the most significant exposure to lead in particular through inhalation and by contact of lead fumes solidifying on skin. A powered air-purifying respirator equipped with HEPA filters and full body covering is recommended for these operations.

.6 Lead found in solder of other pipe systems and electronic components poses no threat to the work force by inhalation, ingestion or by contact with the exception of maintenance or renovation activities. The maintenance of the pipe or electrical component may produce some exposure to lead fume during the seating on of lead solders but for a short duration of time. Inhalation is the source of entry and exposure is not very significant.

.7 All items identified in this section may be disposed of as regular non-hazardous waste unless concentrated. Metallic lead may be reclaimed through scrap metal dealers.

.7 Mercury

.1 Fluorescent light tubes contain small quantities of mercury gas. These sealed units do not pose any harm in the workplace except in the case of breakage. There are no liquid or residue present after breakage and spill cleaning is not a concern. A recommended practice is to evacuate the work area when breakage occurs. The gas will diffuse in about five to ten minutes and cleanup of the tubes can be performed. Mercury can be taken into the body by inhalation only from this source.

.2 The same precautions as those indicated for lead-based paints would apply to mercury in paints.

.3 Elemental mercury found in ampoules in electrical equipment may be disposed of as regular waste and should be turned over to the Owner for disposal through commercial recyclers. The other forms (light tubes and painted surfaces that have been concentrated) can be disposed of as regular waste.

.8 Silica

.1 Silica is presumed to be present in cement, cement blocks, bricks and mortar of the building. Unless the silica in these materials is reduced to respirable size (5 um or less) and the airborne concentration exceeds the time weighted average exposure of 0.2 milligrams per cubic metre in air, no adverse health effects are expected to occur. Building construction, renovation or demolition do not normally raise excessive exposure to silica with the exception of jack hammering, dry saw cutting or sand blasting. There is little likelihood for the work force to be exposed to excessive levels of respirable silica dust if the material is suppressed with water spray or flow. Respiratory protection is dependent on the type and airborne concentration of respirable silica present in the particular work environment.

.9 Where a friable building material is found enclosed in a wall, floor or ceiling such as fireproofing, insulation on pipe or ducts etc. (that is not fibrous glass) or an acoustical textured material (stucco) or a non-friable material such as cement board or cement pipe, the Contractor shall refer to the Consultant who shall contact the Owner for further direction.

.10 Prior to the disposal of building materials a leachate toxicity test in compliance with Water Management Regulation (Revised Regulation of Ontario 1990/Regulation 347) may be required by the local waster receiving site or the Ontario Ministry of Environment and Energy. Prior to disposal these authorities should be consulted with, and tests performed where required.

END OF SECTION

PART 1 - GENERAL

1.1 REGULATING DOCUMENTS

.1 Conform to the Ontario Building Code (Ontario Reg. 332/12), Ontario Fire Code (Ontario Reg. 213/07), Accessibility for Ontarians with Disabilities Act (Ontario Reg. 191/11), National Building Code of Canada 2010, 2012 Canadian Electrical Code (CEC), CSA B44 - Safety Code for Elevators and Escalators, CSA W59 - Welded Steel Construction, The Occupational Health and Safety Act, Ontario (R.S.O. 1990), the National Fire Code, the local municipal Fire Code, and all other applicable Codes and Building By-Laws. Conform to the requirements of the authorities having jurisdiction, such as public utilities. Where required under The Occupational Health and Safety Act, engage a Professional Engineer to design formwork and falsework for concrete.

.2 Contract forms, codes, standards and manuals referred to in these specifications are the latest published editions at the date of close of tenders. Meet or exceed requirements of specified standards.

.3 Provide copies of documents referred to in the Specification for joint use of Contractor and Consultant, on site.

1.2 DOCUMENTS REQUIRED BY BUILDING INSPECTOR

.1 Confirm with building inspector, at the commencement of construction, what documents are required for submission both during construction and for occupancy. Keep copies of such documents on site.

.2 At the time of request for occupancy, submit a complete package of all required documents to the building inspector. The package shall contain all documents required for the inspector's sign off for occupancy, and should be expected to include the following documents:

.1 Copies of Consultant's General Review Reports

.2 Copies of General Review Reports of consulting engineers

.3 Consultant's and engineers' letters confirming project is ready for occupancy in accordance with the provisions of the Ontario Building Code, Division C, section 1.3.3, Occupancy of Buildings.

.4 Verification of compliance with tested designs for rated assemblies.

.5 Verification of Fire Protection Systems including:

.1 Verification of engineer supervised sprinkler, standpipe and hose system testing.

.2 Material and test certificates for all work, including below ground, in conformance with NFPA-13 and NFPA-14, as applicable.

.6 Verification of Fire Alarm System as follows:
- .1 Testing to CAN/ULC S537
- .2 Installation to CAN/ULC S524
- .3 Monitoring to CAN/ULC S561

.7 Additional documents as required by the municipality.

END OF SECTION

PART 1 GENERAL

1.1 DESCRIPTION

.1 This section describes typical abbreviations and acronyms used in these specifications and on the drawings and schedules.

.2 When references are made in these specifications to the standards, specifications, or other published data of various international, national, regional, or local organizations, such organizations may be referred to by their acronym or abbreviation only.

.3 The list of abbreviations and acronyms is provided to aid in the interpretation of notations in the construction documents and shall not be used to alter the meaning of notes for which the meaning is readily inferable from the context.

.4 Abbreviations and acronyms can have more than one meaning. Their use shall be considered with respect to different subjects and disciplines where the context in which each is used makes the meaning clear.

.1 Example:

.1 CB on floor plans typically refers to a chalkboard

.2 CB on site plans typically refers to a catchbasin

.3 CB on electrical plans typically refers to a circuit breaker

.5 Where additional or alternate abbreviations and acronyms are listed and used on drawings, schedules, and in the specification sections prepared by subconsultants, those shall apply to the documents on which they are noted.

.6 Discrepancies shall be noted and brought to the Consultant's attention for interpretation.

1.2 LIST OF ABBREVIATIONS

A	
AB	Air Barrier
A/B	Anchor Bolt
AC	Air Conditioning
ACT	Acoustic Ceiling Tile
ADD	Addendum
ADJ	Adjustable
AFF	Above Finished Floor
AFG	Above Finished Grade
AHU	Air Handling Unit
ALM	Alarm
ALUM	Aluminum
AMP or A	Ampere
ANN	Annunciator Panel
ANO	Anodized
AODA	Accessibility for Ontarians with Disabilities Act
APPROX	Approximate
AUTO	Automatic
A/V	Audio Visual or Air/Vapour
AVB	Air/vapour Barrier
AWT	Acoustic Wall Treatment
AWU	Acoustic Wall Unit

B	
BD	Board
BEV	Bevelled
BF	Barrier-free
BH	Bore Hole
B/H	Bulkhead
BIT	Bituminous
BLDG	Building
BLK	Concrete Block
BM	Beam
B/M	Bench Mark
BN	Bull Nosed
BOT	Bottom
BP	Bearing Plate
BRDG	Bridging
BRK	Brick
BTU	British Thermal Unit
BUR	Built-up Roofing
BV	Block Vent or Brick Vent

C

°C	Degrees Celsius
CAB	Cabinet
CAP	Cementitious Acoustic Panel
CAR	Carpet
CB	Chalkboard, or Catchbasin
C/B	Catchbasin
CBMH	Catchbasin Manhole
C/C	Centre to Centre
CEC	Canadian Electrical Code
CEM	Cement
CER	Ceramic
CGA	Canadian Gas Association
CH	Cabinet Heater
CJ	Control Joint
CL	Centre Line
CLF	Chain Link Fence
CLG	Ceiling
CLR	Clear
CMU	Concrete Masonry Unit
COL	Column
CONC	Concrete
CONSTR	Construction
CONT	Continuous
CONTR	Contract or Contractor
CONV	Convector
CORR	Corridor
CP	Control Panel
CPT	Carpet
CR	Coat Rack
CS	Convenience Shelf
CSA	Canadian Standards Association
C/S	Concrete, Sealed
CT	Ceramic Tile
cUL	UL Certified for Canada
CTR	Centre
CV	Condom Vendor
CW	Curtain Wall
CW1	Curtain Wall Type 1, etc.
C/W	Complete with
CWT	Ceramic Wall Tile

D

DAMP	Dampproofing
DAT	Datum
DBL	Double
DEMO	Demolish or Demolition
DET	Detail
DF	Drinking Fountain
DIA	Diameter
DIAG	Diagonal
DIFF	Diffuser
DIM	Dimension
DISP	Dispenser
DL	Door Louver
DN	Down
DSP	Downspout
DVTL	Dovetail Joint
DRY	Dryer
DW	Dishwasher
DWG	Drawing

E

EF	Each Face or Exhaust Fan
EC	Emergency Call
ECS	Emergency Call Signal
EJ	Expansion Joint
EL	Elevation
ELEC	Electrical
ELEV	Elevator
EQL	Equal
EQ/T	Equivalent Thickness
EQPT	Equipment
EX	Existing
EXH	Exhaust
EXP	Expansion
EXP STR	Exposed Structure

F

F1	Frame Type 1, etc.
FA	Fire Alarm
FARA	Fall Arrest Roof Anchor
FBD	Fibreboard
FD	Floor Drain
F/D	Fire Damper
FDC	Fire Department Connection
FDN	Foundation
FEC	Fire Extinguisher Cabinet
FFL	Finish Floor Level
F.G.	Fixed Glass
FH	Fire Hydrant
FHC	Fire Hose Cabinet
FIN	Finish
FIX.	Fixture
FLG	Flashing
FLEX	Flexible
FLUOR	Fluorescent
FPR	Fire Protection Rating
FR	Fire Retardant/rated
FRG	Fire Rated Glass
FRR	Fire Resistance Rating
FS	Fire Separation
FTG	Footing
FURR	Furring

G

GA	Gauge
GALV	Galvanized
GB	Gypsum Board
GL	Glass
GRB	Grab Bar
GVL	Gravel
GYP BD	Gypsum Board
GWG	Georgian Wired Glass

H

HB	Hose Bibb
HC	Handicapped
HD	Hand Dryer or Heavy Duty
HM	Hollow Metal
HOD	Hold Open Device
HP	Horsepower
HR	Hour
HRD	Hair Dryer
HTD	High Traffic Doors
HVAC	Heating, Ventilation and Airconditioning
HWT	Hot Water Tank
HYD	Fire Hydrant

I

ID	Inside Diameter
INS	Insulation
INSUL	Insulate
ISOL	Isolation

J

JB	Junction Box

K

KG	Kilogram
kPA	Kilopascal

L

LAB	Laboratory
LAM	Laminate
LAT	Lay-in Acoustical Tile
LAT-1	Lay-in Acoustical Tile (Type 1)
LAV	Lavatory
LB	Pounds
LBL	Label
LDBR	Load Bearing
LDG	Landing
LED	Light Emitting Diode
LF	Light Fixture
LH	Left Hand
LHR	Left Hand Reverse
LIB	Library
LINO	Linoleum
LLH	Long Leg Horizontal
LLV	Long Leg Vertical
LNTL	Lintel
LONG	Longitudinal
LPT	Low Point
LMC	Linear Metal Ceiling
LS	Light Standard
L/S	Litres per Second
LSA	Lateral Support Angles
LVL	Level
LV-1	Louvre (Type 1)
LWB	Light Weight Block
LWC	Linear Wood Ceiling

M

M	Metres
M1	Masonry Type 1 or Mirror Type 1, etc.
MAX	Maximum
MDF	Medium Density Fibreboard
MECH	Mechanical
MEMB	Membrane
MET	Metal
MEZZ	Mezzanine
MH	Manhole
MIN	Minimum
MIRR	Mirror
MISC	Miscellaneous
MLWK	Millwork
MM	Millimetres
MO	Masonry Openings
MOD BIT	Modified Bituminous
MR	Moisture Resistant
MTD	Mounted
MUL	Mullion
MWP	Membrane Waterproofing

N

NAT	Natural
NBCC	National Building Code of Canada
NEMA	National Electrical Manufacturers Association
NFHB	Non-freeze Hose Bibb
NFPA	National Fire Protection Association
NIC	Not in Contract
NO.	Number
NOM	Nominal
NSF	National Sanitation Foundation
NTS	Not to Scale

O

OA	Overall
OBC	Ontario Building Code
OC	On Centre
OD	Outside Diameter
O/H	Overhead
OHS	Overhead Stop
OWSJ	Open Web Steel Joist
OV	Oven

P

P	Paint
PAP	Prefinished Aluminum Panel
PA	Public Address System
PAR	Parallel
PB	Push Button (Door Operator)
PBD	Particleboard
PC	Precast Concrete
PE	Porcelain Enamel
PER.	Perimeter
PERF	Perforated
PERIM	Perimeter
PERP	Perpendicular
PG	Plate Glass
PH	Phase or Potential of Hydrogen
PL	Plaster
PLAM	Plastic Laminate (also P.LAM.)
PLUMB	Plumbing
PLYWD	Plywood
PMF	Prefinished Metal Flashing
PMS	Prefinished Metal Siding
PMP	Prefinished Metal Panel
PNL	Panel
POLY	Polyethylene or Polyolefin
PR	Pair
PREFIN	Prefinished
PRELIM	Preliminary
PSI	Pounds per Square Inch
PT	Porcelain Tile, or Paint
PTD	Paper Towel Dispenser
PTN	Partition
PTW	Preservative Treated Wood
PVC	Poly Vinyl Chloride
PVG	Paving
PWC	Plastic Wall Covering

Q

QT	Quarry Tile

R

R	Radius
RA	Return Air or Roof Anchor
RAD	Radiator
RB	Rubber Base
RCP	Reflected Ceiling Plan
RD	Roof Drain
REBAR	Reinforcing Bar
RCONV	Recessed Convector
RCH	Recessed Cabinet Heater
REC	Recessed
REF	Reference / Refer
REFR	Refrigerator
REINF	Reinforce/d/ing/ment
REM	Remove or Removable
RES	Resilient
REV	Revise / Revision
RFG	Roofing
RFS	Room Finish Schedule
RH	Right Hand
R/H	Roof Hopper
RLG	Railing
RM	Room, or Recess Mounted
RMC	Reinforced Masonry Column
RSF	Resilient Sheet Flooring
RTSF	Rubber Tile Sport Flooring
RPF	Resilient Plank Flooring
RUBB	Rubber
RUH	Recessed Unit Heater
RWL	Rainwater Leader

S

S-1	Stain (Type) 1
SAD	Security Alarm Device
SAN	Sanitary
SC	Security Contact or Solid Core
SCHED	Schedule
SD	Soap Dispenser
SDF	Static Dissipative Flooring
SEC	Special Epoxy Coating
SF	Safety Flooring
SIM	Similar
SK	Sink
SL	Slate
SND	Sanitary Napkin Disposal
SNV	Sanitary Napkin Dispenser
SOG	Slab on Grade
SP	Spandrel Panel
SPEC	Specifications
SPC	Special Coating
SPF	Sports Flooring
SPKR	Speaker
SQ	Square
SRCONV	Semi Recessed Convector
SRF	Slip Resistant Flooring
S.S.	Stainless Steel
ST	Steel
ST.ST.	Stainless Steel
STAG	Staggered
STC	Sound Transmission Class
STD	Standard
STIFF	Stiffener
STOR	Storage
STRUC	Structure or Structural
SU	Storage Unit
SUPPL	Supplement/al
SURF	Surface
SUSP	Suspended
SVF	Sheet Vinyl Flooring
SW	Sidewalk
SWF	Special Wall Finish
SYM	Symbol

T

TB	Tackboard
T&B	Top and Bottom
TBD	To Be Determined
TC	Teacher's Closet, or Top of Curb
TEC	Tectum Panel
T&G	Tongue and Groove
TEMP	Tempered Glass
TERR	Terrazzo
TEL	Telephone
TEMP	Temporary or Tempered
TH	Test Hole
TM	Tilted Mirror
T/O	Top of
TOC	Top of Curb
TOCS	Top of Concrete Slab
TOS	Top of Steel
TPD	Toilet Paper Dispenser
TPG	Tempered Plate Glass
TR	Transom
TYP	Typical

U

U/C	Undercut
U/G	Underground
UH	Unit Heater
UL	Underwriter's Laboratories
ULC	Underwriter's Laboratories of Canada
UNEX	Unexcavated
UNF	Unfinished
UNO	Unless Noted Otherwise
U/P	Unpainted
UU	Urinal
U/S	Underside
UTIL	Utility

V

V	Volts
VAR	Variable, Varies
VB	Vapour Barrier
VCT	Vinyl Composition Tile
VERT	Vertical
VEST	Vestibule
VF	Vinyl Faced
VR	Vapour Retarder
VT	Vinyl Tile
VWP	Vinyl Wall Panel

W

W1	Window Type 1, etc.
W/	With
WAP	Wood Acoustic Panel
WASH	Washing Machine
WB	White Board
WC	Watercloset (Toilet)
WD	Wood
WDF	Wood Flooring
WF	Wash Fountain
WG	Wired Glass
W/O	Without
WP	Waterproofing, Working Point
WR	Washroom
W/R	Water Resistant
WSF	Wood Sports Flooring

END OF SECTION

PART 1 - GENERAL

1.1 QUALITY ASSURANCE

.1 Refer also to the Quality Control Provisions of Section 00 10 00, General Instructions.

.2 Provide a system of quality control to ensure that the minimum standards specified herein are attained.

.3 Bring to the attention of the Consultant any defects in the work or departures from the Contract Documents which may occur during construction. The Consultant will decide upon corrective action and state recommendations in writing.

.4 The Consultant's general review during construction and inspection by independent inspection and testing agencies reporting to the Consultant are both undertaken to inform the Owner of the Contractor's performance and shall in no way augment the Contractor's quality control or relieve him of contractual responsibility.

1.2 NOTIFICATION

.1 Give the Consultant advance notice of shop fabrication, field erection and other phases of the work so as to afford him reasonable opportunity to inspect the work for compliance with contract requirements. Failure to meet this requirement may be cause for the Consultant to classify the work as defective.

1.3 DEFECTIVE MATERIALS AND WORKMANSHIP

.1 Where factual evidence exists that defective workmanship has occurred or that work has been carried out incorporating defective materials, the Consultant may have tests, concrete cores, inspections or surveys performed, analytical calculation of structural strength made and the like in order to help determine whether the work must be replaced, Test, inspections or surveys carried out under these circumstances will be made at the Contractor's expense, regardless of their results, which may indicate that, in the Consultant's opinion, the work may be acceptable.

.2 All testing shall be conducted in accordance with the requirements of the Ontario Building Code, except where this would, in the Consultant's opinion, cause undue delay or give results not representative of the rejected material in place. In this case, the tests shall be conducted in accordance with the standards given by the Consultant.

END OF SECTION

PART 1 - GENERAL

1.1 TEMPORARY COMMUNICATIONS

.1 Install and pay for all communications services on site, including telephone, internet, computer, and printer for Contractor's own use, and for the Owner's and Consultant's use.

.2 Refer also to Section 01 52 00, Construction Facilities.

1.2 POWER AND WATER SUPPLY

.1 City sinks and janitor sinks cannot be used for equipment and tool clean up at any time. No pouring of liquids or disposal of building materials into City sanitary system at any time. Refer to City of Brampton project manager for additional instructions.

.2 Provide all temporary light and power complete with all wiring, lamps and similar equipment as required for completion of the Work. Provide adequate lighting for all workmen, sufficient for safety and for execution of good workmanship, taking particular care to observe all safety requirements. Adequate temporary lighting will be insisted upon. The Owner will not be liable for any loss, damage, delay, or claims for extra costs resulting from lack of services.

.3 Existing building services may be used, as available. This does not include emergency generators or batteries.

.4 Provide an adequate pure fresh water supply for the use of trades. Run supply pipe from nearest available source and maintain in good condition until the permanent system is installed and ready for use. Provide a sufficient number of faucets on each floor.

.5 Ensure continued water and power supply to adjacent residences and buildings throughout the construction period. Arrange for temporary services, including approvals from authorities having jurisdiction, where any interruption is anticipated.

1.3 TEMPORARY HEATING AND VENTILATION

.1 Furnish heating apparatus and fuel for heating the temporary offices and sheds.

.2 Provide for the proper heating and drying out of the work during construction, until the completion of the heating system, by the use of approved propane portable heating equipment. Assume full responsibility for damage caused by temporary heating equipment, such as smoke, or overheating. Furnish all equipment labour and fuel to protect all work and maintain the building at not less than 10°C. The use of Salamanders or other open flame type heaters will not be permitted.

.3 When the building or part thereof is temporarily enclosed, provide sufficient temporary piping and temporary unit heaters or radiators or other suitable heating equipment to maintain all parts of the enclosed work at not less than 15°C. or higher if required by any finishing trade. Maintain strict supervision of operation of temporary heating and ventilating equipment. The Contractor shall be fully responsible for damage caused by temporary heating equipment, such as smoke or overheating.

.4 When building or part of building is enclosed and heated, maintain sufficient ventilation to prevent build up of moisture and condensation, to enable the work of the finishing trades to be correctly applied. Provide adequate ventilation during and after operation involving materials or processes involving potentially harmful fumes or orders.

.5 Provide local exhaust ventilation to prevent harmful accumulations of hazardous substances into atmosphere of occupied areas. Dispose of exhaust materials in manner that will not result in harmful exposure to persons.

.6 Ventilate storage spaces containing hazardous or volatile materials. Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful elements. Store paints & solvents in secure, locked, ventilated room at all times.

.7 Protect ducting system with filters, inspect daily and replace weekly or more frequently as necessary. Finally vacuum clean entire ducting system and renew or replace all filters on substantial completion.

.8 Maintain strict supervision of operation of temporary heating and ventilating equipment.

.1 Enforce conformance with applicable codes and standards.
.2 Enforce safe practices.
.3 Prevent abuse of services.
.4 Prevent damage to finishes.
.5 Vent direct-fired combustion units to outside.

1.4 **REMOVAL OF TEMPORARY UTILITIES**

.1 Remove temporary utilities from site when directed by Consultant and/or at the completion of the project.

1.5 **FIRE EXTINGUISHERS**

.1 An adequate number of ABC type fire extinguishers shall be provided for the protection of the work during construction.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACTOR'S SITE OFFICE

.1 Provide and maintain a site office heated to 22°C, lighted 750 Lx and ventilated, of sufficient size to accommodate 8 persons for site conference and job meetings. The site office may be located in the existing floor area AT EACH BUILDING.

.2 The site office shall be furnished with the following as a minimum requirement:

.1 Desk and chair
.2 File cabinets as required for storage
.3 Plan file for storage of drawings
.4 Table and stacking chairs to provide seating at job meetings
.5 Telephone and computer or other acceptable means of communication as noted below.
.6 Printer/copier.

.3 Mobile telephone will only be accepted in place of site telephone if the contact number for the site is available at all times when construction personnel are on site, and subject to acceptance by Owner and Consultant.

.4 A multi-function fax machine may be accepted in lieu of a computer, printer, and copier on site, subject to acceptance of provisions by Owner and Consultant.

.5 The Contractor shall maintain the following documents, up-to-date, in site office:

.1 Contract Documents
.2 Reviewed shop drawings
.3 All instructions and change documents, ie Work Authorizations, Jobsite Instructions, Notices of Contemplated Change, Change Orders
.4 All inspection and test reports
.5 Permit drawings and specifications
.6 As-built drawings

1.2 STORAGE SHEDS

.1 Storage sheds will not be permitted on site as this is a building of significance in the City.

.2 Storage sheds shall be painted and doors shall be fitted with locks.

.3 Storage is permitted in floor area as long as overloading does not occur and Contractor is responsible for all necessary relocations in the course of thE work.

1.3 SANITARY FACILITIES

.1 Washrooms are to be identified for use of workmen at kick off meeting.

.2 Contractor may use existing sanitary facilities containing adequate sanitary accommodation for all workmen in accordance with local Municipal and Provincial sanitary regulations, and to the approval of Public Health Authorities and the Consultant, with all necessary water, sewage, light and heat supplied in sufficient quantity. The use of washrooms may require removal and replacement of stained equipment upon completion of project.

.3 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.4 **REMOVAL OF TEMPORARY FACILITIES**

.1 Remove temporary facilities from site when directed by Consultant and/or at the completion of the project.

END OF SECTION

PART 1 - GENERAL

1.1 SITE ENCLOSURE

.1 Install temporary hoarding at start of mobilization to separate public from construction area, and to fully secure construction site and material storage.

.2 Provide, erect, and maintain hoarding for construction as required for safety or as otherwise agreed to with the Consultant, or as directed by Authorities Having Jurisdiction. Confirm that hoarding is designed to resist wind loads.

.3 Erect hoarding so as to provide a secure compound for construction equipment & supplies. Hold the Owner harmless from any damage or expense arising from failure to properly execute such work.

.4 Access to construction site to be kept locked except during working hours.

.5 Maintain hoarding during the period of the Contract.

.6 Should the project be stopped for any reason, provide and maintain all necessary fencing and protection to protect building & site from damage.

.7 On completion of the contract, take down and remove hoarding from the site.

1.2 SITE PROTECTION

.1 Parking is permitted on site and truck access for drop-offs must be arranged through City of Brampton Facilities Staff. The Contractor shall be entirely responsible for supervision of project and for protection of public from vehicles in movement, stockpiled materials and construction.

.2 Supply, install and maintain all necessary temporary doors, screens and coverings to protect work areas. All such work shall be neatly painted. Doors shall have hasp and substantial padlock. Owners representative shall have key or combination where access is required. Provide and maintain temporary fencing at excavations, etc. as required for safety. Protect existing asphalt and concrete paving and curbs from damage and make good any damage at completion of project.

.3 Protect all of the work from damage by the elements.

.4 Properly protect floors and roofs from any damage. Take special precautions when moving heavy loads or equipment over floors.

.5 Keep floors free of oils, grease or other such materials likely to discolour them and/or affect bonding of applied surfaces.

.6 Ensure that no part of the Work is loaded greater than it was designed for, when completed. Make any temporary support as strong as the permanent support. Place no load on concrete structure until it has sufficient strength to safely bear such load.

.7 Protect glass and other finishes against heat, slab and weld splatters, using appropriate protective shields and covers.

.8 Provide and maintain, in good working order, appropriately labelled ULC fire extinguishers, to the approval of Authorities Having Jurisdiction.

.9 Provide a minimum of two safety helmets on site at all times for the use of any other Owner authorized visitors to the site. It is the Contractor's responsibility to make certain that any such visitors wear the protective headgear and any other safety gear which may be necessary at that particular time of construction.

.10 Should the job be stopped for any cause, the Contractor shall be responsible for and provide all necessary protection to prevent damage by weather or other cause until the cause of stoppage has been cleared.

.11 The Contractor is responsible for the prevention of vandalism and theft of all tools, equipment and materials.

.12 Any damage to roadways must be repaired immediately, to municipal standards.

.13 Any damage to site by the Contractors forces, delivery vehicles, etc., must be made good at the end of the job. Similarly any damage to curbs, sidewalks, or other municipal property shall be made good by the Contractor.

1.3 **TEMPORARY DUST CONTROLS, DUST PROOF PARTITIONS**

.1 Supply and install a dust proof fire-rated partition, hollow metal door and frame in the existing building at corridors doorways abutting new work prior to any work taking place. Call for review by Owner/Consultant after dust proof partitions are installed.

.2 Dust proof partition shall consist of 92mm steel stud framing to 3 metres height with one layer of 13mm plywood sheathing covered by 10 mil polyethylene sheet caulked all around the partition covered by two layers of 16mm Type X gypsum board with off set joints taped and filled. The gypsum board will be painted with two coats of good quality white paint.

.3 Dust proof partition shall be erected outside of regular business hours and shall remain in place until the new Work is ready for occupancy, and accepted by the Owner.

.4 Place filters in return air vents in all work areas to prevent dust from entering the existing HVAC system.

.5 Ensure interior of all new ductwork is cleaned before connection to the existing HVAC system and commencement of operation of new system components. If system is put into operation before work is complete in any area, provide temporary filters in return air vents and grilles.

.6 Minimize the amount of dirt tracked into the existing building. Provide mats at all entrances, lobbies corridors, stairs and elevator used by construction personnel to enter or exit the building.

.7 Keep dust, dirt, and debris away from fresh air intakes, open doors and windows, and from areas where it could be tracked into the building by students, staff, or visitors to the building. Assume responsibility for cleaning up all dirt, debris, mud, water, snow, etc., tracked in by construction personnel.

1.4 **MAINTAINING INDOOR AIR QUALITY**

.1 Smoking is not permitted inside the building or on the property at any time. The Contractor shall post "No Smoking" signs throughout the work areas to enforce this requirement.

.2 Minimize the time that vehicles are left idling on site. Keep idling vehicles away from open doorways and windows, open areas of the building addition, fresh air intakes, and areas where Owner's employees are gathered.

.3 All adhesives, sealants, paints and coatings applied onsite must be low VOC products.

.4 Products requiring the use of adhesives, sealants, paints and other coatings, are to be assembled offsite as much as possible. Such adhesives, sealants, and coatings shall be low VOC products, where suitable products are available.

.5 No toxic chemicals or fuels are permitted to be stored inside the building.

.6 Refueling of equipment is to be undertaken outside the building.

.7 Gas powered equipment is not to be used inside the building. Use electric or propane powered equipment only, and to acceptance of Owner and Consultant.

1.5 **SECURITY**

.1 The Contractor shall be entirely responsible for supervision of project and for protection of public from vehicles in movement, for stockpiled materials and construction. Vehicular parking and stockpile materials must be maintained on the construction site only. No street parking or stockpiling will be allowed on the Municipal streets.

.2 The Contractor is responsible for the prevention of vandalism and theft of all tools, equipment and materials until date of Substantial Performance of Contract.

.3 The Contractor shall provide 24 hour surveillance on site from date of Substantial Performance to date of acceptance and occupancy by the Owner.

1.6 **REMOVAL OF TEMPORARY BARRIERS**

.1 Remove temporary barriers and enclosures from site when directed by Consultant and/or at the completion of the project.

END OF SECTION

PART 1 - GENERAL

1.1 DIMENSIONS

.1 Ensure that necessary job dimensions are taken and trades are co-ordinated for the proper execution of the work. Assume complete responsibility for the accuracy and completeness of dimensions and for all co-ordination.

.2 Verify that work is executed in accordance with dimensions indicated, that levels and clearances are maintained, and that work installed in error is rectified before construction continues.

.3 Check and verify all dimensions including interfacing of services. Dimensions, when pertaining to the work of other trades, shall be verified with the trade concerned. Ensure that all Subcontractors co-operate for the proper performance of the work.

.4 Do not scale directly from the drawings; this applies to all drawings, whether in paper or digital format. If there is ambiguity or lack of information, immediately inform the Consultant. Any change caused by lack of such review shall be the responsibility of the trade concerned.

1.2 SITE VERIFICATION

.1 Include cost to survey site work to confirm final layout.

.2 Coordinate with forces performing demolition work.

END OF SECTION

PART 1 - GENERAL

1.1 CUTTING AND PATCHING

.1 Before cutting, drilling or sleeving load-bearing elements, obtain approval of location and method.

.2 Do not endanger work or property by cutting, digging, or similar activities. No trade shall cut or alter the work of another trade who has installed it unless approved by that trade.

.3 Cut and drill with true smooth edge to minimum suitable tolerances.

.4 Fit construction tightly to ducts, pipes and conduit to stop air movement completely. The trade performing work that penetrates a fire, air, vapour, moisture, thermal or acoustic separation element of the building shall pack voids tightly with insulation, rated where required; seal air, vapour and moisture barriers; and caulk joints as may be required to ensure that no air movement through the penetration is possible.

.5 Cutting, drilling and sleeving of work shall be done only by the trade who has installed it. The trade requiring drilling and sleeving shall inform the trade performing the work of the location and other requirements for drilling and sleeving. The Contractor shall directly supervise performance of cutting and patching.

.6 Replace and/or make good damaged work.

.7 Patching or replacement of damaged work shall be done by the subcontractor under whose work it was originally executed, and at the expense of the subcontractor who caused the damage.

1.2 CONCEALMENT

.1 Conceal all pipes, ducts and wiring in finished areas except where indicated otherwise.

.2 Where furring out is required, use material similar to adjacent surfaces except where indicated otherwise.

.3 All new horizontal runs of ducts, pipes and conduits shall be concealed in ceiling spaces.

.4 All new duct drops and risers shall be concealed in ceiling spaces, bulkheads or furred out duct shafts. All new pipe and conduit drops and risers shall be buried in walls. New devices in walls shall be recessed.

1.3 MECHANICAL & ELECTRICAL EQUIPMENT

.1 Mechanical & Electrical services must be temporarily capped or terminated as required to permit renovation in existing areas to proceed. There must be no disruption to existing services during regular business hours.

.2 Cutting of holes up to 100mm in size in the existing structure and surfaces required by the trades shall be by those Subcontractors. Cutting and patching of openings greater than 100mm in size shall be by the Contractor in co-ordination with the trades. PATCHING OF ALL HOLES IN EXPOSED FINISHED SURFACES SHALL BE BY THE CONTRACTOR. Electrical trades shall do their own coring of existing slabs as required.

1.4 **BLOCKING UP OF EXISTING OPENINGS**

.1 At existing openings in walls shown to be blocked up, provide required ratings, unless otherwise noted.

1.5 **NEW OPENINGS IN EXISTING WALLS**

.1 Where new openings are shown to be cut into existing walls, provide new lintels over the opening and patch all adjacent materials.

1.6 **EXISTING CEILINGS**

.1 All existing ceiling components and ceiling mounted fixtures and equipment shall be carefully removed as required for new services and reinstalled when work is complete.

.2 Any existing ceiling tiles, which are removed for services or new connections shall be replaced with new tiles. Existing tiles shall be turned over to the Owner's staff if in good condition. Transfer any markings for services from existing to new tiles.

.3 Where new walls are constructed, remove ceilings and grid and replace with new.

.4 Replace existing ceilings with new where indicated on drawings.

1.7 **FINISHES ON EXISTING FLOORS**

.1 Floors of existing building must be finished flush, ready for final finish in areas affected by the work.

.2 Existing concrete floors shall be prepared according to manufacturers instructions for new adhesive applied finishes.

.3 Existing floor finishes shall be removed and old adhesive removed from the existing concrete slab by scraping or solvent, in accordance with Health & Safety requirements. Grinding of floor finishes will not be accepted.

.4 Where new walls are being constructed, and new flooring is not called for in the Room Finish Schedule, remove floor finish below wall to extent required for work, unless indicated otherwise on drawings. Where there is a floor pattern in the room, remove sufficient flooring to replicate the pattern. Provide new floor finish including accent colours where applicable.

1.8 **GENERAL NOTES**

.1 Refer to the Door Schedule, and the Room Finish Schedule, on drawings, and general notes below.

.2 Junction of different floor finishes shall occur on centre line of doors.

.3 Hardware shown on Door Schedule refers to code requirements only. Refer to Hardware Schedule for total hardware required.

END OF SECTION

PART 1 - GENERAL

1.1 GENERAL

.1 Conduct cleaning and disposal operations to comply with local ordinances, anti-pollution laws, and recommendations of Construction Safety Association.

.2 Store volatile wastes in covered metal containers, and remove from premises daily.

.3 Prevent accumulation of wastes which create hazardous conditions.

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

.5 Provide instructions designating proper methods and materials to be used in final cleaning of Work.

.6 Do not bury or burn any rubble, waste or packaging, or surplus materials. No dumping of waste, such as oil or paint, into sewers will be permitted.

.7 Dispose of waste materials in accordance with the Environmental Protection Act, R.S.O. 1990, C. E.19, and regulations under the Act, including:
- .1 O.Reg. 102/94 Waste Audits and Waste Reduction Work Plans
- .2 O.Reg. 103/94 Industrial, Commercial and Institutional Source Separation Programs
- .3 R.R.O. 1990, Reg. 347: General - Waste Management

1.2 MATERIALS

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

1.3 POLLUTION CONTROL

.1 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads. Remove mud deposited on public roads. Provide mud mats at all site access roads.

.2 Prevent dust nuisance to adjacent properties, and general public by taking appropriate pollution control measures as directed by Consultant.

.3 Include daily watering of site to maintain dust control as part of tender submission.

1.4 DISPOSAL OF WASTES

.1 Burying of rubbish and waste materials on Site not permitted.

.2 Disposal of waste or volatile materials, such as mineral spirits oil or paint thinner into storm or sanitary sewers prohibited.

.3 Meet Ministry of the Environment Standards and Guidelines.

1.5 **FIRES**

.1 Fires and burning of rubbish on Site is not permitted.

1.6 **CLEANING DURING CONSTRUCTION**

.1 Maintain entire site and adjoining municipal and/or private property free from accumulations of waste materials and rubbish. Do not allow rubbish to accumulate in work under construction or on roofs. Clean site daily.

.2 Maintain entire site free from accumulations of snow and ice.

.3 Provide on-site containers for collection of waste materials, and rubbish. Empty containers on a regular basis in conformance with Municipal and Provincial Regulations.

.4 Cleaning operations shall include those areas used for temporary site access or used on a temporary basis to facilitate the Work.

.5 Broom clean and vacuum areas as required for application of finishes. Continue to clean on an "as needed" basis and insure that areas which receive paint, floor tile and other critical finishes are kept dry, dust free, and at acceptable temperatures.

.6 Keep all areas of the Work clean and orderly, free from accumulation of dirt, debris, garbage, oily rags, excess material, or such other trash items. Remove such items from all areas of the Work on a daily basis.

.7 Vacuum and/or broom interior building areas when ready to receive painting and other finishes. Continue cleaning on an "as needed" basis until the building is ready for inspection and take-over.

.8 Schedule cleaning operations so that resulting dust and other contaminants do not affect wet, newly painted surfaces, or newly installed equipment, or devices.

1.7 **CLEANING AT COMPLETION OF WORK**

.1 Employ a professional cleaning company to thoroughly clean all areas immediately prior to occupancy of the Work by the Owner. Cleaning company shall be an established firm, bonded and fully insured, and acceptable to the Owner.

.2 Provide manufacturer's printed cleaning and maintenance instructions to cleaning company. All finishes, equipment, fixtures, and other surfaces are to be cleaned in accordance with the product manufacturer's recommendations.

.3 Use cleaning products which are non-toxic, environmentally friendly products, and which will not leave residues or odours on surfaces.

.4 Do not apply sealers, wax, or polish to any flooring without the expressed permission of the Owner. All such products, and the methods of application, must be approved in advance by the Owner.

.5 Remove all temporary protective coverings provided during construction.

.6 Remove all protective film from switchplates and hardware, particularly kick plates. Remove miscellaneous labels from hardware, fixtures, equipment, and appliances, etc.

.7 Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from all exposed interior and exterior finishes, including glass and other polished surfaces. Clean glass both sides. Vacuum inside all cabinets and drawers and leave millwork ready for use. Remove paint spots and smears from all surfaces, including hardware.

.8 Remove stains, spots, marks and dirt from decorated work, electrical fixtures, and the like. Remove protective materials.

.9 Clean hardware, aluminum, stainless steel, and other metal surfaces.

.10 Clean resilient and sheet flooring and all floor and wall tile.
.1 Clean no-wax resilient flooring in accordance with manufacturer's instructions.

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

.12 Clean all plumbing fixtures and fittings, including those located inside cabinetry or otherwise hidden from continuous view.

.13 Vacuum clean all new carpeting, and all existing building interiors affected by construction operations.

.14 Remove debris and surplus materials from the roof areas and accessible concealed spaces.

.15 Replace heating, ventilation and/or air conditioning filters at Substantial Performance, whether or not the units were operated during construction operations. If any units were operated without filters, clean ducts, blowers, and coils.

.16 Ensure that all clean up operations specified in other sections has been performed.

.17 Conduct final inspection of interior and exterior surfaces, and concealed spaces.

.18 Leave premises ready for immediate occupation without further cleaning, all to the Consultant's approval.

1.8 **REPAIR WORK**

.1 All equipment, including electrical equipment, shall be turned over in "as new" condition. Repair any damage, including dents and scratches. Repaint or touch up paint finish as necessary to return to new condition. Replace all broken glass.

.2 Repair any damage incurred during cleaning operations.

.3 Replace all broken glass.

END OF SECTION

PART 1 - GENERAL

1.1 TAKEOVER PROCEDURE

.1 Subject to detailed instructions included in these specifications, conform to OAA/OGCA document 100, Take-Over Procedures.

1.2 ACTION REQUIRED AT OCCUPANCY

.1 When of the opinion that the Occupancy Requirements have been met, perform an inspection of the work, accompanied by the major subcontractors. Submit an inspection report, confirming that the occupancy requirements have been met, to the Consultant and the Owner.

.2 Next, arrange for a review of the Work with the Consultants and Owner. The Consultant will determine whether the Work is ready for occupancy.

.3 When partial occupancy of uncompleted project is required by the Owner, co-ordinate the Owner's uses, requirements and access with the construction requirements to complete project. Submit a revised construction schedule, taking restrictions on work activities and hours into account; refer to Section 01 10 00 for special requirements in occupied buildings.

1.3 ACTION REQUIRED AT SUBSTANTIAL PERFORMANCE

.1 Perform the actions listed below prior to issue of the Certificate of Substantial Performance of the Contract.

.2 Submit the documents and material detailed in section 01 78 00, Closeout Submittals. Deliver all required submittals to the Consultant for approval PRIOR to Substantial Performance of the Work. Final payment will not be made until all these items have been received and approved.

.3 Prior to applying for a Certificate of Substantial Performance, perform an inspection in accordance with OAA/OGCA Document 100, Stage 2, Contractor's Inspection for Substantial Performance. Submit a copy of the deficiency list to the Consultant.

.4 Ensure all sub-systems ie fire alarm, security, E.M.S., are fully operational prior to Substantial Performance.

.5 When of the opinion that the requirements for Substantial Performance have been met, submit an application for a Certificate of Substantial Performance to the Consultant. The application shall be as outline for Stage 3 of the OAA/OGCA Take-Over Procedures.

.6 Expedite and complete deficiencies and defects identified by the Consultant. Final Certificate for Payment will not be issued until all deficiencies are satisfactorily corrected, inspected, and approved by the Consultant, and all documentation has been handed to the Consultant.

.7 Remove all protection erected, and make good all damage to the Work and adjoining Work due to the lack or failure of such protection. In addition, all debris, surplus materials tools equipment shall be removed from the work areas and the site, and the Project shall be left clean and tidy to the full and complete satisfaction of the Consultant and Owner.

.8 Perform final adjustment of Cash Allowance, specified in Section 01 10 00, General Instructions.

.9 Arrange for Consultant to prepare CAD record drawing files for the Owner using the final as-built drawings provided by the Contractor.

.10 At time of Substantial Performance, instruct the Owner's personnel in operation, adjustment and maintenance of equipment and systems, using operation and maintenance manuals as the basis for instruction.

.11 Prior to final site review, start up and demonstrate operation of all systems to the Owner and the Consultant.

.12 Review cash and contingency allowances in relation to contract price, change orders, hold-backs and other contract price adjustments.

.13 Review inspection and testing reports to verify conformance to the intent of the documents.

.14 Review condition of all equipment, which has been used in the course of the Work to ensure turnover at completion in "as new condition" with warranties, dated and certified from time of Substantial Performance of the Contract.

.15 Provide on-going review, inspection, and attendance to building call back, maintenance and repair problems during the warranty periods.

.16 Continue to submit monthly deficiency status reports, as specified in Section 01 32 00, Construction Progress Documentation.

1.4 **TOTAL PERFORMANCE / TOTAL COMPLETION**

.1 Upon completion of all items noted on the deficiency list, clean all areas, surfaces, and components affected by corrections and completion of deficient items.

.2 Ensure that all services, equipment, and apparatus are properly tested and adjusted.

.3 Letter of Completion:

.1 Submit a Letter of Completion to the Consultant stating that the Contract is complete, that all deficiencies identified by the Consultant, Subconsultants, Inspectors and Owner have been rectified, and requesting final reviews by Consultant and Subconsultants.

.2 Sign and return deficiency lists, issued by Consultant and Subconsultants, to confirm completion of all deficiencies identified thereon.

.4 Final Site Review:

.1 Consultant will conduct one site review for Total Performance, within ten (10) working days of the request by the Contractor. Should the Contractor fail to provide the Letter of Completion, the Consultants will be under no obligation to perform a site review within the above noted time.

.2 Additional site reviews, as requested by the Contractor or as necessitated due to the Contractor's failure to complete work as required, shall be paid for by the Contractor at a rate of $500 per visit, per consultant, plus the cost to prepare additional site review reports at per diem rates (rates as recommended by the OAA or PEO, or as negotiated in advance).

.5 Submit a final request for payment, incorporating all approved changes to the Contract price, and adjustments to the Cash Allowance.

.6 Final Certificate for Payment will not be authorized until all deficiencies are satisfactorily corrected, reviewed and signed off by the Consultant, and required submittals have been completely and accurately provided.

1.5 **RELEASE OF SECURITY DEPOSITS FROM AUTHORITIES HAVING JURISDICTION**

.1 Contractor shall be responsible for obtaining release of all securities paid by the Contractor.

.2 Coordinate with Consultant and provide all submittals required by the Consultant and Owner in order to obtain release of securities paid by the Owner. Refer to Section 01 78 00, Closeout Submittals; note that funds will be retained in the Contract to cover the value of closeout submittals, including submittals required for the release of securities.

1.6 **WARRANTY PERIOD**

.1 The Warranty Period on this Project will expire **twelve (12)** months from the date of Substantial Performance of the Work, except for extended warranties as called for throughout the Specifications or equipment not certified by Consultant at time of Substantial Performance.

1.7 **UTILITY CHARGES**

.1 The Owner will retain responsibility for utility service billings for the building.

END OF SECTION

PART 1 - GENERAL

1.1 SUBMITTALS REQUIRED FOR OCCUPANCY

.1 Refer to Section 01 41 00, Regulatory Requirements for documents required to be submitted to Authorities having Jurisdiction, for occupancy.

1.2 SUBMITTALS REQUIRED AT SUBSTANTIAL PERFORMANCE

.1 Prior to Substantial Performance of the Contract, perform the actions detailed in section 01 77 00, Closeout Procedures, and submit the following documents and materials:

.1 Deficiency list prepared by Contractor for both interior and exterior areas of the project.

.2 Certificates of good standing from the Workplace Safety & Insurance Board for the Contractor and all Subcontractors

.3 Operations and Maintenance Manuals, including warranties. If manuals are unavailable, the designated value of the submittals will be retained in the Contract; see below.

.4 One complete set of final approved Shop Drawings (bound separately) indicating corrections and changes made during fabrication and installation

.5 Keys and construction cores

.6 Maintenance materials

.7 As-Built Documents as specified in Section 01 33 00, Submittal Procedures

.8 Inspection Certificates required by Provincial, Municipal and other authorities having jurisdiction.

.2 Deliver all required submittals to the Consultant for approval prior to Substantial Performance of the Work. Final payment will not be made until all these items have been received and approved.

1.3 MAINTENANCE MANUALS

.1 At Substantial Performance, submit to Consultant one hard copy] and one digital copy of Architectural, Electrical Operations Data and Maintenance Manuals made up as follows:

.1 Bind data in vinyl hard covered, three-ring loose leaf binders for 212.5mm x 275mm (8-1/2" x 11") size paper. Digital copy shall be submitted in pdf (portable document format) on a single USB flash drive with label or tag identifying project.

.2 Enclose title sheet, labelled "Operation Data and Maintenance Manual - Architectural", BHive INTERIOR RENOVATIONS, date and list of contents. Enclose similar sheet labelled Mechanical & Electrical in applicable manuals. Include the following information:

.1 name of project
.2 name of Owner

.3 name of Consultant
.4 name of Contractor
.5 date of Substantial Performance.

.3 Organize contents into applicable sections of work to parallel project specification break-down. Mark each section by labelled tabs protected with celluloid covers fastened to hard paper dividing sheets.

.4 All data related to a section of work or product shall be grouped together, except for shop drawings, unless otherwise requested by the Owner. Confirm method of organization with Owner prior to assembling manuals. Typically, each section shall be organized, as applicable, as follows:
.1 General information; identify section of work, subcontractor(s) responsible
.2 Warranty
.3 Guarantees, Bonds
.4 Schedules (hardware, paint)
.5 Product data sheets
.6 Material safety data sheets (MSDS)
.7 Operating manual
.8 Maintenance instructions
.9 Receipts for maintenance materials, keys, etc.,
.10 Inspection and testing reports

.2 Provide one copy of each of the following in the first binder:

.1 Contractor's final statutory declaration on CCDC form 9A-2001
.2 Workers' Compensation and Insurance Board (WSIB) certificate
.3 certificates of approval of the work by the Building Department (if available)

.3 Also provide a disk or memory stick containing all construction progress photos submitted; refer to Section 01 32 00. Provide an index with printed images clearly identified with name of project, description of view and date taken. Disks are to be clearly labelled.

.4 Include the following information, plus any additional data required within the specifications.

.1 List of all Subcontractors, major suppliers, and local equipment service representatives, their addresses and telephone numbers.

.2 Date of Substantial Performance (commencement of warranty periods) and termination dates of warranties.

.3 Operating manuals including lubricating, repair and other instructions to keep all electrical/electronic equipment in good working order. Reviewed shop drawings of same. Refer to Electrical Specifications for further requirements.

.4 Door and Frame Schedule (as-built); insert in front of Division 8 section in manuals.

.5 Final hardware schedule, revised to include all changes during construction, including local manufacturer's descriptive and service literature. Include AHC's final inspection report.

.6 Final finish/colour schedule; insert in front of Division 09 section in manuals.

.7 Provide paint schedule indicating paint brand and formulas used.

.8 Maintenance instructions for all types of floor finish and other special finishes. Include instructions for cleaning, repairing, refinishing and freshening, and warnings of damaging or dangerous practices where necessary.

.9 All warranties, guarantees, bonds, etc., properly completed and signed, which extend beyond the general warranty period, for all work and equipment as specified or as otherwise supplied and installed, from manufacturers and trades. Warranties, guarantees and bonds shall include:

.1 Name and address of project.
.2 Warranty commencement date.
.3 Duration of warranty.
.4 Clear indication of what is being warranted and what remedial action will be taken under warranties.
.5 Signature and seal of Contractor.

.5 List additional material used in project showing name of manufacturer and source of supply.

.6 Neatly type lists and notes. Use clear drawings, diagrams or manufacturer's literature.

.7 Supply copies of inspection and testing reports, inspection and acceptance certificates, all bound in all three copies of manuals.

.8 Supply Operations and Maintenance manuals, and other required documentation as specified for Electrical work.

.9 Manuals must bear seal and signature of Contractor.

.10 Maintenance Manuals must be delivered, complete and in one package, to Consultant. The final Certificate for payment will not be issued until ALL documentation has been received, reviewed, and approved, by Consultant.

1.4 **SHOP DRAWING MANUAL**

.1 Provide one complete set of final approved Shop Drawings, bound separately. Shop drawings shall be the drawings reviewed and stamped by the consultants. Mark-up shop drawings to indicate corrections and changes made during fabrication and installation.

.2 Provide a digital copy of the shop drawing manual, included on the USB flash drive with the digital copy of the maintenance manuals.

1.5 **MAINTENANCE MATERIALS**

.1 Where supply of maintenance materials is specified, deliver items as follows:

.1 Materials in unbroken cartons or, if not supplied in cartons, they shall be strongly packaged.

.2 Clearly mark as to content.

.3 If applicable give colour, room number of area where material used.

.4 Obtain signed receipt from the Owner's designated representative and store in an assigned, lockable room.

.2 Copies of signed receipts for maintenance materials are to be included in the maintenance manuals.

.3 Replacement materials are for the sole use of the Owner and must not be used by Contractor to replace deficient work.

1.6 **AS-BUILT DRAWINGS AND RECORD DOCUMENTS**

.1 Provide As-Built Drawings, as specified in Section 01 33 00, and Record Documents (electronic files).

.2 Prior to the date of Substantial Performance, request updated drawings from the Consultant. Transfer all "as-built" markups from the on-site drawings to these updated drawings and return them to the Consultant for preparation of Architectural Record Drawings.

.3 Record documents shall consist of the original documents altered to reflect all changes and information indicated on as-built documents.

.4 The Consultant shall prepare architectural Record documents and be reimbursed for costs by the Contractor through the Cash Allowance included in the Contract.

.5 Refer to Electrical Specification Division for specific requirements regarding preparation and submission of final electrical Record Drawings.

1.7 **REVIEW OF MANUALS BY CONSULTANT**

.1 Submit all manuals for review by the Consultant. Mechanical & Electrical manuals may be forwarded directly to the consulting engineer for review.

.2 The Contractor is responsible for confirming the completion of the manuals prior to forwarding to the Consultant for review. If any items are outstanding, provide tabs at the appropriate locations and indicate the nature of the outstanding documents to be inserted.

.3 Do not submit partially complete manuals to the Consultant; only documents which cannot be provided at the time of Substantial Performance are permitted to be flagged for later insertion. The Consultant will review manuals once for completion and will then review only one resubmission. If additional reviews are required, the Contractor will be invoiced for the Consultant's time at a rate of $90/hour.

1.8 **VALUATION OF CLOSEOUT SUBMITTALS**

.1 Due to the high value to the Owner of the closeout submittals, including maintenance manuals and submittals required by Authorities Having Jurisdiction, for the purpose of project administration and calculation of Substantial Performance, the Closeout Submittals will be assigned a value of **$2,000.00 per location** for all disciplines (architectural and electrical).

.2 The full assigned value of the submittals for each discipline will be held in the Contract until such time as all closeout submittals required for that discipline are delivered to the Consultant and are deemed complete and acceptable by the Consultant and applicable subconsultant.

.3 Architectural record drawings are to be prepared by the Consultant and paid through the Contingency or Cash Allowance, and are not included in the valuation of closeout submittals.

END OF SECTION

PART 1 - GENERAL

1.1 GENERAL

.1 Maintain existing fire rated separations in building.
- .1 All ceiling tile to be fire guard type. Provide boxing of fixtures in rated ceilings as typically required for rated floor and roof assemblies.
- .2 Provide new firestopping at tops of all corridor walls where none is existing. Where existing corridor walls do not extend to the underside of the roof deck, provide rated gypsum board enclosures, filled with mineral wool insulation, between top of wall and underside of deck and firestop perimeter and all penetrations.
- .3 Provide new firestopping at all new penetrations through corridor walls, and at existing penetrations where no firestopping is existing.
- .4 Examine existing building to determine the extent of the firestopping work required at existing corridors.

.2 Test methods used to determine fire hazard classification and fire endurance rating shall be as required by Ontario Building Code.

.3 Upon request, furnish the Consultant with evidence of compliance to fire protection requirements as noted in documents or specified codes, etc.

.4 Materials and components used to construct fire rated assemblies and materials requiring fire hazard classification shall be listed and labelled, or otherwise approved, by fire rating authority. Labelled materials and their packaging shall bear fire rating authorities label showing product classification.

.5 Fire and time rated door assemblies shall include doors, frame, anchors, and hardware and shall bear label of fire rating authority showing opening classification and rating.

.6 Construct new fire rated assemblies in accordance with applicable fire test report information issued by fire rating authority. Deviation from fire test report will not be allowed. Where existing conditions do not conform to current tested assemblies, conform to similar assemlies acceptable to Authorities Having Jurisdiction and the Consultant.

.7 Construct fire rated assemblies as continuous, uninterrupted elements except for permitted openings. Extend fire rated walls and partitions from floor to underside of structural deck above.

.8 Materials which have a fire hazard classification shall be applied or installed in accordance with fire rating authority's printed instructions.

.9 Provide firestopping as specified in Section 07 84 00.
- .1 Firestopping shall be a tested system consisting of non-combustible materials, smoke sealant, and means of support, used to fill gaps between fire-rated separations or between fire separations and other assemblies, and used around items that penetrate a fire separation.
- .2 Firestopping system shall be tested for the time period required for the fire separation; ie. 1 hour, 2 hours, etc.

.3 Fill and patch voids and gaps around openings and penetrations in and at perimeter of assemblies so as to maintain continuity and to produce a fire resistant, smoke tight seal, acceptable to jurisdictional authorities.

.10 Provide fire blocks to compartmentalize concealed spaces as required by the OBC.
.1 Fire block means a material, component or system that restricts the spread of fire within a concealed space or from a concealed space to an adjacent space.
.2 Fire blocks are also referred to as fire stops in the OBC.

.11 The Contractor shall ensure that all fire safety features called for in the Contract Documents are supplied and installed to meet fire safety standards established by those authorities having jurisdiction. The Contractor shall ensure that the work of Subcontractors is properly coordinated to achieve the intent of this Specification.

.12 Nothing contained in the Drawings or Specifications shall be construed as to be in conflict with any law, by-law, or regulations of municipal, provincial, or other authorities having jurisdiction. Work shall be performed in conformity with all such laws, by-laws, and regulations.

1.2 **CONCEALED FIRE SEPARATIONS**

.1 Fire separations above finished ceilings shall be assumed to be compromised and this contractor shall include costs to repair / replace fire separations / firestopping.

.2 Costs for repairing / replacing fire separations / fire stopping shall be based upon item 1.1.10 in Section 07 84 00 - FIRESTOPPING AND SMOKE SEAL.

END OF SECTION

PART 1 - GENERAL

1.1 GENERAL

.1 The Contractor shall be responsible for the commissioning process identified in the Mechanical Specification and Electrical Specification.

1.2 PRODUCTS

.1 Provide all material, equipment and instrumentation to complete the commissioning process specified.

1.3 EXECUTION

.1 Provide an experienced M&E co-ordinator who will supervise the commissioning work specified in the mechanical and electrical specifications.

.2 Provide a commissioning schedule which shall identify all test to be performed. The schedule shall be in three parts; a master commissioning schedule, a detailed mechanical commissioning schedule, and a detailed electrical commissioning schedule.

.3 Ensure co-ordination and co-operation between divisions and trades to complete the commissioning process.

.4 Ensure all tests identified are conducted, the associated forms completed and forwarded to the Consultant.

.5 Ensure the building and systems are ready for testing and that the building is clean and safe for equipment operation.

.6 Prepare the building and documentation for the acceptance procedure when all systems have been completed and tested.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK

.1 Execution Section 01 73 00

1.2 REFERENCE

.1 Conform to all laws, By-Laws and regulations of the authorities having jurisdiction and, in particular, the Ontario Occupational Health and Safety Act; The Environmental Protection Act; The Ontario Building Code, Ontario Regulation 350/06; The Ontario Fire Code, Ontario Regulation 388; The National Building Code, 2005; and the National Fire Code.

.2 CSA S350-M, code of practice for safety in demolition of structures.

.3 Ontario regulations under the Environmental Protection Act:
- .1 O.Reg. 102/94 Waste Audits and Waste Reduction Work Plans
- .2 O.Reg. 103/94 Industrial, Commercial and Institutional Source Separation Programs
- .3 O.Reg. 347/90 General - Waste Management; refer to "Definitions"

.4 Ontario regulations under the Occupational Health and Safety Act:
- .1 O.Reg. 213/91 Construction Projects
- .2 All regulations regarding “Designated Substances”
- .3 O.Reg. 860/90 Workplace Hazardous Materials Information System (WHMIS)

.5 Conform to “Guidelines for Maintaining Fire Safety During Construction in Existing Buildings”, provided by the Office of the Ontario Fire Marshal.

1.3 EXAMINATION OF EXISTING STRUCTURE

.1 Examine the existing building before tendering to be familiar with the detailed extent of demolition, dismantling, relocation and reassembly required.

.2 Copies of the original working drawings for the construction of the building are available for viewing, in the office of the Consultant, during the tender period.

.3 No allowance will be made for failure to obtain complete information prior to close of tenders.

1.4 SUMMARY OF WORK - INTERIOR ALTERATIONS

.1 The following summarizes the location “Work” in the existing buildings:

.1 **Gore Meadows Community Centre**
10150 The Gore Rd., Brampton, Ontario L6P 0A6

- .1 Remove existing individual millwork counters and build one continuous counter to accommodate 4 staff members (1 Service Brampton and 3 Recreation staff)
- .2 Add door behind the counter area to create new entrance for staff.
- .3 Existing double doors near the exit to become new public entrance to the fitness area.

.4 Remove, store and reinstall at new location, existing sliding and fixed glass panels. Protect existing track and fasteners.

.2 **Cassie Campbell Community Centre**
1050 Sandalwood Pkwy W., Brampton, Ontario L7A 0K9

.1 Remove existing small counter area and replace with counter to accommodate 2 staff.
.2 Add door behind the counter area to create new entrance for staff.
.3 All associated work and finishes.

.2 At areas of the "Work", general scope of work is as follows:

.1 Entirely remove existing materials to the extent required for completion of new work.

.2 Remove flooring, resilient flooring at areas indicated on Drawings.

.3 Remove all millwork as required for proposed modifications to cabinet work and new work, including mechanical and electrical.

.4 Make good all affected surfaces and paint.

.5 Remove and store existing materials for reuse where noted in Drawings. If damaged during removal, discard and notify Consultant.

.6 Unless note otherwise, building materials resulting from demolition under this contract shall become the property of the Contractor, and shall be removed by the Contractor.

1.5 **PROTECTION**

.1 Protect adjacent surfaces against damage which might occur from demolition work or other cause. Make good damage resulting from Work of this Contract.

.2 Protect existing building from damage and contamination during demolition activities. Provide temporary barriers, dust control measures, security controls, supports, and such additional protection as may be required by specific demolition work.

.3 Temporary barriers shall consist of polypropylene sheeting secured in place to enclose work area in office areas.

.4 Take precaution against contamination of air.

.5 Maintain all required exiting for safe operations within the existing building.

.6 Remove and safely store all wall hangings, pictures and wall mounted devices during the work, then reinstall all items upon completion of the work.

1.6 **SERVICES**

.1 Seal and cap mechanical and electrical services in order to facilitate removals indicated on drawings. Mark location and type of service of all capped services at the site. Submit record drawing showing locations and dimensions of all capped services.

PART 2 - PRODUCTS

2.1 Not Used

PART 3 - EXECUTION

3.1 **DEMOLITION - INTERIORS**

.1 Refer to drawings for demolition plans and notes.

.2 Demolish any acoustic ceilings and drywall partition walls in small sections.

.3 Remove interior walls, partitions, ceilings, and millwork as indicated on drawings, and as required to accommodate new construction.

.4 Upon discovery of mould or mouldy materials advise the Owner who will arrange for Hazardous Materials Consultant to specify removal and disposal of these separately in accordance with applicable laws.

.5 Any items noted to be re-used or re-located are to be removed carefully, packaged appropriately, and handed over to Owner.

.6 At the end of each day's work, leave work in a safe condition so that no part of the remaining structure is in danger of collapse.

.7 Do not burn any refuse or debris at the site.

3.2 **REMOVAL OF EXISTING FLOOR FINISHES**

.1 Remove existing materials and store for reuse in areas.

.2 Existing floor finishes shall be removed and old adhesive removed from the existing concrete slab by scraping or solvent, in accordance with Health & Safety requirements. Grinding of floor finishes will not be accepted.

.3 Existing concrete floors shall be prepared according to manufacturer’s instructions for new adhesive applied finishes.

.4 Protect existing flooring, to remain, from damage.

3.3 **MECHANICAL AND ELECTRICAL WORK**

.1 Mechanical and Electrical services must be temporarily capped or terminated to permit renovation in existing areas to proceed.

.2 Patching of all holes in exposed finished surfaces shall be by the Contractor.

3.4 **COMPLETION OF WORK**

.1 Remove all surplus materials, equipment and rubbish from the site.

.2 Leave site in condition to meet approval of the Consultant.

.3 On completion of Demolition work, thoroughly clean all existing surfaces to remain, including ceiling space. No debris or dirt shall remain to be enclosed by new construction.

END OF SECTION

YPART 1 - GENERAL

1.1 SCOPE OF WORK

.1 Supply and installation of miscellaneous steel supports and other steel fabrications.

1.2 RELATED WORK

.1	Concrete	Section 03 30 00
.2	Rough Carpentry	Section 06 20 00
.3	Architectural Casework	Section 06 41 13
.4	Painting and Repainting	Section 09 92 00

1.3 REFERENCE STANDARDS

.1 Conform to CSA-W59, Welded Steel Construction (Metal Arc Welding)

.2 Use fabricator fully approved by Canadian Welding Bureau, in conformance with the requirements of CSA-W47.1

.3 Conform to CAN/CSA-S16, Limit States Design of Steel Structures (Consolidation)

1.4 SUBMITTALS

.1 Submit Shop Drawings in accordance with Section 01 33 23. Show and describe detail work of this Section.

.2 Include large scale details of members and materials, connections, joining details, and of anchorage devices, dimensions, gauges, thicknesses, description of materials, metal finishing specifications, as well as all other pertinent data and information.

.3 Indicate field dimensions on shop drawings.

.4 Include Engineering calculations substantiating that the design loading of railings and ladders conform to the requirements of the Ontario Building Code.

.5 Shop drawings for shall be stamped by a professional structural engineer, registered in the Province of Ontario, retained by the Contractor, who shall be responsible for the structural design of metal fabrications.

1.5 FABRICATION

.1 Design, fabricate and erect structural steel members in accordance with CAN/CSA-SI6.1.

1.6 INSPECTION AND TESTING

.1 The Owner will appoint a Testing and Inspection Company who shall ensure that the deflection and lateral support angles for non-loadbearing masonry walls have been securely anchored to wall and to structure above.

.2 The cost of this testing and inspection shall be paid through the Cash Allowance included in the Contract; refer to Section 01 10 00.

.3 Contractor shall cooperate with inspectors and provide full access to all places where the work is being performed.

PART 2 - PRODUCTS

2.1 MATERIALS

.1	Structural Steel:	to CAN/CSA - S161.1; CAN/CSA-G40.20/G40.21.
.2	Mild Steel Shapes:	CAN/CSA A3-G40.20/G40.21, grade 350W.
.3	Welding Materials:	to CSA W59, CSA W55.3 for stainless steel, ASTM A371; for aluminum, ASTM B 285 and CSA-S244.
.4	Sheet Steel:	wiped coated, ASTM A 446; structural quality Grade A or B, maximum permissible working stress, Grade A 137,895 kPa, Grade B 154, 442 kPa.
.5	Prime Paint:	CGSB 1-GP-40 M.
.6	Bituminous Paint:	CGSB-1-GP-108 M.
.7	Zinc-Rich Coating:	organic zinc rich coating, “ZRC 221 Cold Galvanizing Compound” by ZRC Worldwide.
.8	Steel pipes:	to CAN/CSA-G40.20 type 300W; heavy duty, Schedule 40 or better.
.9	Galvanizing:	to CAN/CSA G164, G90.
.10	Sheet Aluminum:	2mm thick, clear anodized, satin finish.
.11	Stainless Steel:	Type 304 for interior work, Type 317 for exterior applications, No. 4 brushed finish
.12	Reflective Tape:	3M Diamond Grade Fluorescent Yellow Conspicuity Markings; 50mm wide fluorescent, retroreflective tape for exterior applications.
.13	EPDM Gasket:	Continuous gasket fabricated of 19mm thick, by minimum 19mm wide, 40 durometer EPDM flat cord, as manufactured by Budlar Flexible Products Inc., or approved equivalent.

.14 Bolts and anchors bolts: to ASTM A307-82A.

.1 Supply angles, bolts, anchors, sleeves and any other attachments to structure necessary for the installation of work under this Section.

PART 3 - EXECUTION

3.1 GENERAL

.1 Execute work according to details and reviewed shop drawings.

.2 Take all measurements at the building before proceeding with fabrications.

.3 Report discrepancies in dimensions to the Consultant who shall determine the adjustments to be made.

.4 Where drawings indicate modifications to existing metal fabrications, the work shall be done by the subcontractor responsible for the work of this Section.

3.2 WORKMANSHIP

.1 Use only workmen skilled in the Work of this Section. Do work to best standard practice and in accordance with applicable laws, by- laws and regulations. Conform to the requirements of Authorities Having Jurisdiction.

.2 Fit and assemble work in shop where possible. Execute work according to details and reviewed shop drawings. Where shop fabrication is not possible, make trial assembly in shop.

.3 Make joints in built-up sections with hairline joints in the least conspicuous locations and manner.

.4 Welding:
- .1 to CSA W59.
- .2 Weld all connections, unless otherwise noted.
- .3 File or grind exposed welds smooth and flush, so as to be invisible after painting.

.5 Counter sink screws, unless otherwise noted.

.6 Make workmanship of best grade of modern shop and field practice known to recognized manufacturers specializing in this work. Fit joints and intersecting members accurately. Make work in true plumb, true, square, straight, level and accurate to sizes and shapes detailed, free from distortion or defects detrimental to appearance or performance.

.7 Insulate metals where necessary to prevent corrosion due to contact between dissimilar metals and between metals and masonry, concrete or plaster. Use bituminous paint, butyl tape, building paper or other approved means.

.8 Supply all fastenings, anchors and accessories required for fabrication and erection of the work. Make exposed metal fastenings and accessories of same material, texture, colour and finish as base metal on which they occur unless otherwise shown or specified. Keep exposed fastenings to an absolute minimum and inconspicuous, spacing them evenly and setting them out neatly. Make fastenings of permanent type.

.9 Draw mechanical joints to hairline tightness and seal countersunk screws and access holes for locking screws with metal filler where these occur on exposed surface.

.10 Thoroughly clean all ferrous metals, by methods suitable to remove burrs, weld spatter, rust, loose mill scale, oil, grease, dirt and other foreign matter. Apply one coat of prime paint to all surfaces except those requiring field welding. Brush on thoroughly and work well into all crevices.

.11 After erection and installation, thoroughly clean the work and apply field touch up of same formula as shop coat to all damaged or unpainted surfaces. Work all paint well into all joints, crevices and open spaces.

.12 Galvanize all exterior work and all steel which will be embedded in concrete or masonry. Partially embedded items shall be galvanized beyond the point of embedment, to protect steel at junction point. Do galvanizing after welding.

.13 After installation, remove any rust and touch up all galvanized work with two coats zinc rich coating.

.14 Finish painting is specified in Section 09 92 00.

3.3 **SUPPORT STEEL**

.1 Provide and install miscellaneous structural steel supports and any other steel fabrications required for reception desks and associated work.

3.4 **MISCELLANEOUS ITEMS**

.1 Examine the drawings and provide all metal brackets and supports detailed or indicated, with the exception of items included in custom cabinetry.

.2 Anchor Bolts, Lag Screws, etc.: Supply anchor bolts, washers and nuts, lag screws, expansion shields, toggles, straps, sleeves, brackets, etc. where required or called for on Drawings for work of this Section. Such items occurring on or in exterior wall or slab shall be hot dipped galvanized. Thread dimensions shall be such that nuts and bolts fit without re-threading or chasing threads.

.3 Miscellaneous Sections:

.1 Provide all miscellaneous steel angles, channels, tubes, plates, etc. of shapes and sized noted or required which are not included on Structural Drawings or called for in other Sections of the Specifications.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK

.1	Metal Fabrications	Section 05 52 00
.2	Door Hardware	Section 08 71 00
.3	Painting	Section 09 90 00
.4	Gypsum Board	Section 09 29 00

1.2 REFERENCES

.1	CAN/CSA O80-Series	Standards for Wood Preservation
.2	CSA O121	Douglas Fir Plywood
.3	CSA O141	Softwood Lumber
.4	CSA O151	Canadian Softwood Plywood
.5	CSA B111	W ire Nails, Spikes and Staples.

.6 National Lumber Grading Authority (NGLA), Standard Grading Rules for Canadian Lumber

1.3 DELIVERY AND STORAGE

.1 Do not deliver materials until they are required for incorporation into the work.

.2 Protect materials, under weatherproof cover, both in transit and on site.

.3 All exterior and interior finish materials shall, upon delivery, be neatly stored in a dry place and shall be protected from damage due to weather, water, or any other cause.

1.4 PROTECTION

.1 Protect fire-retardant materials against high humidity and moisture.

.2 Protect countertops and cabinets with 6 mm plywood or other suitable sheet material.

.3 Protect installed hardware from damage and blemishes.

.4 Protect existing doors from damage.

PART 2 - MATERIALS

2.1 MATERIALS

.1 Wood materials: straight, sawn square, true, dressed four sides, properly sized and shaped to correct dimensions from nominal sizes indicated or specified.

.2 Lumber grade and moisture content:

.1 Comply with the official grading rules of NLGA for the particular lumber and grade, and structurally complying with the latest requirements of the Ontario Building Code.

.2 Comply with CSA Standard O141 Softwood Lumber. Use only grade marked lumber.

.3 All wood materials:

.1 Well seasoned NLGA, free from defects which impair strength and durability.
.2 Moisture content limit:
.1 S-GRN: Unseasoned
.2 S-DRY: Maximum 19% moisture content
.3 KD: Maximum 15% moisture content

.4 Pressure Treated Lumber to CSA O80.

.5 Lumber for Exterior Fences and Enclosures: Select Grade Eastern White Cedar.

.6 Blocking, cant strips, grounds, nailing strips:

.1 NLGA No. 2 Ontario White Pine, No. 2 Red Pine, all complying with the grading rules of the NLGA for Construction,
.2 Douglas Fir dense complying with COFI standard grading and dressing rules.

.7 Douglas Fir plywood:

.1 All veneer play; comply with CSA Standard O121, COFI Exterior.
.2 Western softwood plywood - comply with CSA Standard O151, COFI Waterproof glue WSP. Exposed two sides shall be grade G2S, and exposed one side shall be grade G1S.

.8 Wood preservative

.1 Pentox Green preservative and Osmose Cut End preservative, as manufactured by Osmose Pentox Inc.; Pentox Conservator Clear for painted wood.
.2 For painted surfaces use clear type and for concealed surfaces use green tinted type.

.9 Fire Retardant Treatment: To ULC S102; flame spread rating 25 or less.

.10 Rough hardware:

.1 Nails, screws, bolts, lag screws anchors, special fastening devices and supports as required for the erection of all carpentry items.
.2 For preservative treated wood, use only stainless steel hardware, with the following exception:
.1 where galvanized steel items, such as gates, flashings, etc., are being attached to wood, galvanized steel fasteners shall be used.
.3 Do not mix stainless steel with galvanized steel; contact of these dissimilar metals can cause galvanic corrosion.
.4 Stainless steel hardware to be type 317.
.5 Galvanized hardware must be hot-dipped galvanized as follows:
.1 fasteners meeting CAN/CSA-G164 minimum zinc coating of 600 g/m^2 (ASTMA153 Class A or B1 G185)
.2 connectors meeting CAN/CSA-G164 minimum zinc coating of 600 g/m^2 (ASTM A653 Class G-185 sheet) or better.
.3 Electroplated galvanized hardware is not permitted.

PART 3 - EXECUTION

3.1 PREPARATION

.1 Examine surfaces to receive the work of this Section and proceed only when conditions are satisfactory for a proper installation.

.2 Lay out work carefully and to accommodate work of other trades. Accurately cut and fit; erect in proper position true to dimensions; align, level, square, plumb, adequately brace, and secure permanently in place. Join work only over solid backing.

3.2 INSTALLATION - GENERAL

.1 Provide running members of the longest lengths obtainable.

.2 Slowly feed machine-dressed members using sharp cutters. Provide finished members free from drag, feathers, slivers or roughness of any kind. Remove machine marks by sanding.

.3 Machine sand surfaces exposed in the finished work and hand sand to an even smooth surface free of scratches.

.4 Properly frame material with tight joints and rigidly secure in place. Use glue-blocks where necessary.

.5 Design construction methods for expansion and contraction of the materials.

.6 Conceal joints and connections wherever possible. Locate prominent joints only where directed.

.7 Match joints made on the site with joints made in the shop.

.8 Unless otherwise specified glue and blind screw or nail all work. Set and fill and plug surface screws using matching wood plugs.

.9 Accurately scribe, cope and mitre members where required to produce hairline joints.

.10 Erect work plumb, level, square and to the required lines.

.11 Do not regard blocking, strapping and other rough carpentry indicated as complete or exact. Provide rough carpentry items required for the installation of the Work of other Sections.

3.3 INSTALLATION - ROUGH CARPENTRY

.1 Blocking and Grounds: Fasten wood nailers, blocking, bucks, grounds curbs, copings and strapping solidly to supporting materials in true planes so that they will remain straight and not be loosened by work of other Trades.

.2 Framing: Do all wood framing in accordance with the Ontario Building Code -latest version, and to CAN 3 086 as applicable.

.3 Preservative:

.1 Apply preservative to concealed wood members in contact with exterior walls and roof before fixing in place.

.2 Apply preservative to all cut ends of pressure treated wood.
.3 Preserve all other wood indicated to be preserved. Use clear preservative for items to be painted.
.4 Preserve wood by immersing in preservative for at least one hour.

3.4 **INSTALLATION - PLYWOOD BACKING**

.1 Supply and install 19mm thick backboards of fir plywood, fire retardant, pressure treated, solid, good 2 sides, sanded both sides, on metal studs / furring at locations of new electrical panels.

.2 Fasten to wall using fasteners and spacing suitable to wall type to provide secure, sturdy installation which will carry equipment load without damaging wall.

END OF SECTION

PART 1 - GENERAL

1.1 WORK INCLUDED

.1 All finished wood items and trim, other than custom cabinetry, shown on drawings.

.2 Factory finishing of all wood for clear finish, to specifications for casework.

.3 Factory application of clear fire retardant coating for all wood installed in corridors or public areas.

1.2 RELATED WORK

.1	Metal Fabrications	Section 05 52 00
.2	Rough Carpentry	Section 06 10 00
.3	Architectural Casework	Section 06 41 13
.4	Plastic Laminate Work	Section 06 41 19
.5	Painting	Section 09 92 00

1.3 DELIVERY AND STORAGE

.1 Protect materials against high humidity and moisture at all times.

PART 2 - MATERIALS

2.1 MATERIALS

.1 Wood materials - straight, sawn square, true, dressed four sides, properly sized and shaped to correct dimensions from nominal sizes indicated or specified.

.2 Lumber grade and moisture content - comply with the official grading rules of NLGA for the particular lumber and grade, and structurally complying with the latest requirements of the Ontario Building Code. Comply with CSA Standard 0141 Softwood Lumber. Use only grade marked lumber.

.3 All wood materials: well seasoned NLGA, free from defects which impair strength and durability. Moisture content limit: S-GRN: Unseasoned; S-DRY: Maximum 19% moisture content: KD: Maximum 15% moisture content.

.4 Hardwood Lumber: select white birch, suitable for clear finish except as noted.
Clear maple, suitable for clear finish
Clear oak, suitable for clear finish

.5 Douglas Fir plywood: all veneer ply; comply with CSA Standard 0121, COFI Exterior. Exposed two sides shall be grade G2S, and exposed one side shall be grade G1S

.6 Canadian Softwood Plywood: all veneer ply; comply with CSA Standard 0151, COFI Waterproof glue WSP. Exposed two sides shall be grade S2S, and exposed one side shall be grade S1S.

.7 Hardwood plywood : all veneer ply conforming to CSA 0115 and AWMAC. Birch or maple ply for stain finish, where noted on drawings.

.8 Fasteners:
- .1 Wood screws: electroplated, to CSA-B35.4
- .2 Nails and Staples: to CSA-B111

.9 Finish:
- .1 As specified in Section 06 42 13
- .2 Stain to be top quality, compatible with finishing system, in colours to be selected by the Consultant.

.10 Clear Fire Retardant Coating:
- .1 Interior clear, two-component coating for wood; satin finish
- .2 Flame Spread Rating (Class A) tested to CAN/ULC S-102 and Class 1 tested to ASTM E-84-09 on Douglas Fir.
- .3 SafeCoat Clear by Quantum Technical Services Ltd.

.11 All steel furring and framing shall conform to the specifications of Section 09 29 00.

PART 3 - EXECUTION

3.1 PREPARATION

.1 Examine surfaces to receive the work of this Section and proceed only when conditions are satisfactory for a proper installation.

3.2 INSTALLATION - GENERAL

.1 Provide running members of the longest lengths obtainable.

.2 Slowly feed machine-dressed members using sharp cutters. Provide finished members free from drag, feathers, slivers or roughness of any kind. Remove machine marks by sanding.

.3 Machine sand surfaces exposed in the finished work and hand sand to an even smooth surface free of scratches.

.4 Properly frame material with tight joints and rigidly secure in place. Use glue-blocks were necessary.

.5 Design construction methods for expansion and contraction of the materials.

.6 Conceal joints and connections wherever possible. Locate prominent joints only where directed.

.7 Match joints made on the site with joints made in the shop.

.8 Unless otherwise specified glue and blind screw or nail all work. Set and fill and plug surface screws using matching wood plugs.

.9 Accurately scribe, cope and mitre members where required to produce hairline joints.

.10 Erect work plumb, level, square and to the required lines.

3.3 **FINISHING**

.1 Finish wood generally in accordance with the specifications for casework in Section 06 41 13.

.2 Wood to be for clear finish, except where stain finish is indicated on drawings and schedules.

.3 Fire Retardant Coating:

.1 Finish wood trim and other wood fabrications in corridors with a clear, fire retardant coating, to achieve as maximum flame spread rating of 25. Conform to manufacturer's printed instructions.

.2 Mix two component coating system in accordance with manufacturer's directions.

.3 Surface preparation:

.1 Surface must be clean, dry, and in sound condition, free of all oil, dust, grease, loose particles and rust.

.2 Stain wood in colour selected by the Consultant, where applicable.

.3 Apply a sanding sealer coat on wood to reduce absorption of the fire retardant coating.

.4 Ensure that sealer and stain are fully cured to avoid off-gassing and subsequent blistering of the fire retardant coating.

.5 Do not sand after application of the coating.

.4 Install wood prior to application of the fire retardant coating.

.5 Apply fire retardant coating by spraying or brushing, in accordance with manufacturer's printed instructions.

.1 Ensure all containers are kept tightly closed when not being poured into mix containers. Do not leave containers standing open.

.2 If spraying, use and flush airless spray equipment in strict accordance with manufacturer's instructions.

.3 Avoid touching or handling the substrate once the coating has been applied as areas will mar easily.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK

.1	Rough Carpentry	Section 06 10 00
.2	Plastic Laminate	Section 06 41 19
.3	Resilient Base	Section 09 65 00
.4	Painting	Section 09 90 00
.5	Tackboard	Section 10 11 00
.6	Electrical Work	Division 26

1.2 QUALIFICATIONS

.1 The Work of this Section shall be provided by a specialist millwork firm established in Ontario for a minimum of five years and able to produce evidence of satisfactory completion of quality casework comparable with Work specified under this Section.

.2 Manufacturer shall be a member in good standing of the Architectural Woodwork Manufacturers Association of Canada (AWMAC).

.3 All Work to conform to minimum standard for premium Grade Work as specified in Quality Standards for Architectural Woodwork prepared by Architectural Woodwork Manufacturers Association of Canada.

1.3 INTENT

.1 The intent of this Section is that the casework shall be manufactured and finished at the plant, delivered to the Site and immediately installed by this Section including provision of necessary strapping, backings, bearers, rough hardware and finish hardware. Touch up finish immediately prior to completion of the Work and leave in perfect condition.

.2 It is also the intent of this Section that all casework be manufactured with low or no VOC products, to minimize VOC emissions in the finished products.

1.4 SUBMITTALS

.1 Submit Shop Drawings of all finish carpentry and in accordance with Section 01 33 23.

.2 Draw Shop Drawings in related and/or dimensional positions with sections. Scale minimum 1:10.

.3 Shop Drawings shall show fabrication details, materials, jointing, description of anchorage and hardware. Dimensions shall be based on actual measurements taken at the Site. Provide details and dimensions for all fittings and the like for mechanical and electrical connections to this work.

.4 Submit product data for all finishes.

.5 Submit samples of materials, construction method and wood stain finish for Consultant's approval.

.6 Submit samples of all hardware.

.7 Submit one full size sample of proposed units of Type selected by Consultant prior to proceeding with the remainder of cabinet work.

1.5 **CO-OPERATION**

.1 Co-operate with other Sections and do all cutting, fitting and making good of own work for all Sections as may be necessary to carry out the true intent of the Drawings and Specifications. Examine the work and materials installed by others insofar as it affects this Work, and report to Consultant any such work not done properly.

1.6 **MEASUREMENTS**

.1 Take necessary measurements at the Building of spaces and conditions to which work must conform or through which access is required. Take such measurements prior to fabrication of the Work of this Section and in ample time to avoid delays in the Work.

1.7 **DELIVERY AND STORAGE**

.1 Do not deliver finished material during rain or damp weather or until "Wet Trades" have completed their work and windows are glazed or covered. Carefully protect from damage of any kind.

1.8 **WARRANTY**

.1 Provide an extended Warranty to the General Conditions of the Contract to **two (2) years** from date of Substantial Performance of the Contract.

.2 The warranty shall cover replacing, reworking and/or refinishing to make good defects in architectural woodwork due to faulty workmanship or defective materials, which appear during this two (2) year period. Work showing defects during this period shall be replaced or made good without delay and at no cost to Owner.

PART 2 - MATERIALS

2.1 **MATERIALS**

.1 All wood must be straight and true, dressed 4 sides and conform to details. It must conform to official grading rules of Canadian Lumberman's Association for quality and moisture content. It must conform to NBC Structural requirements and be grade stamped according to CSA Standards 0140 or 0151. Stained woods and plywoods must be selected for colour and grain uniformity.

.2 All materials shall be low VOC products.

.3 Softwood Lumber: Conform to CAN/CSA 0141 and National Lumber Grades Authority requirements.

.4 Hardwood Lumber: Conform to National Hardwood Lumber Association (NHLA) requirements. Maple for stain finish to AWMAC Premium Grade.

.5 Hardwood Plywood: Conform to CSA 0115 and AWMAC. Maple veneer plywood for natural finish. Exposed faces to be natural grade per AWMAC. Interior of cupboard and closet doors to be classified as exposed faces.

.6 Canadian Softwood Plywood: Veneer plywood conforming to CSA 0151.

.7 Douglas Fir Plywood: Veneer plywood conforming to CSA 0121.

.8 Poplar Plywood: Veneer plywood conforming to CSA 0153.

.9 Wood Particleboard:
- .1 Conform to CAN3-0188.1.
- .2 fabricated from 100% recycled or recovered wood fibre, containing no added urea formaldehyde, and certified by the Forest Stewardship Council (FSC). Conform to ANSI A208.1/Grade M-2, with formaldehyde emissions of 0.09 ppm or less.
  - .1 No Added Urea Formaldehyde (NAUF) products; Nu Green 2 Particleboard as manufactured by Uniboard, ZCore as manufactured by Panolam Industries, TafiLam-Eco as manufactured by Tafisa Canada, or Vesta particleboard as manufactured by Flakeboard.

.10 Hardboard: Conform to CGSB 11-GP-3M.

.11 Nails and Staples: Conform to CSA B111.

.12 Plastic Laminate: Refer to Section 06 41 19 for plastic laminate work.

.13 Glue: Waterproof synthetic resinous glue, of approved type for general carpentry work and thermo-setting type for plastic laminate work, low VOC emitting. Adhesives shall be free of urea formaldehyde. All adhesives to conform to CSA 0112 Series.

.14 Glazing: Refer to Section 08 81 00.

.15 Typical Furniture Finish:
- .1 Finish shall be Premium Grade, AWS System 9, UV curable, acrylated epoxy, polyester or urethate; semi-gloss.
- .2 System shall consist of stain (where noted), sealer and transparent top coat.
- .3 The individual components of the system used must be chemically compatible to assure perfect adhesion and a top quality, durable final finish.
- .4 Stain to be of colour as later selected.
- .5 Refer to Furniture Finishing (Wood), below.

.16 Chemical resistant transparent finish:
- .1 polymerizing two component catalytic conversion varnish system especially formulated for chemical reagent resistance.
- .2 The individual components of the system used must be chemically compatible to assure perfect adhesion and a top quality, durable final finish.
- .3 Finish to be of colour as later selected.

.4 VOC emissions shall conform to the limits set by regulation SOR/2009-264 under the Environmental Protection Act.

.5 Refer to Furniture Finishing (Wood), below.

2.2 CABINET HARDWARE

.1 The hardware specified herein is to be provided as listed. Any proposed substitutions must be submitted to the Consultant for approval prior to shop drawing submission. Proposed substitutions must be equal or better quality than the specified items and will be considered at the Consultant's discretion. Hinges must be as specified.

.2 Furnish and install all hardware to custom millwork as follows:

Hardware for 19mm thick cupboard doors			Finish
Hinges	Hettich	Selekta Pro 2000	619
Roller Catches	Richelieu	807V	603
Pulls	CBH	220 x 89mm	630
Cupboard Deadbolt Lock	Hafele	235.08.358	polished nickel
	complete with lock cores 210.04.606 and cylinder rosettes 210.04.062		
Strike Plates	Hafele	gable catch: 239.61.319 bottom slot: 239.08.705	black
Elbow Latch & Strike	Richelieu	55401.80	Nickel
Hardware for drawers			
Slides	Knape & Vogt	6505 (length to suit)	Zinc
Pulls	CBH	220 x 89mm	630
Drawer locks	Hafele	235.08.303	nickel
	complete with lock cores 210.04.606 and cylinder rosettes 210.04.062		
Strike Plate	Hafele	239.08.705	black
Hardware for Adjustable Wood Shelves			
Pilaster Strips	Knape & Vogt	255 ZC Steel	Zinc
Shelf Clips	Knape & Vogt	256 ZC Steel	Zinc

.1 Furniture Glides: Shepherd Hardware Products Surface Grip Anti-Slip Pads #9645 screw-on glides, 38mm diameter pads with screws.

.2 Linear Grilles:
- .1 Nailor Industries linear bar grille, model 49-240-E-SA-C-MM, in sizes and capacities shown on drawings and in conformance with mechanical air flow schedules.
- .2 Provide alignment strips for linking continuous sections at sill and kick locations.
- .3 Frames to be narrow profile, extruded aluminum with satin anodized finish, with concealed fasteners.
- .4 Provide all fasteners.

.3 Grommets: Richlieu 60091-60, Grey.

.3 Keying:
- .1 All locks in a room to be keyed alike.
- .2 Provide locks at the following locations:
  - .1 all lower cabinets and drawers,
  - .2 all upper and lower cabinets and drawers in science rooms, and
  - .3 elsewhere as indicated on drawings.
- .3 Provide 6 extractor keys.

2.3 FABRICATION - GENERAL

.1 Check job dimensions and conditions and notify the Consultant in writing of unacceptable conditions. Do not proceed until remedial instructions are received.

.2 As far as practical, assemble work at the shop and deliver to the job ready for installation. Leave ample allowance for fitting and scribing on the job.

.3 Fabricate work square and to the required lines. Recess and conceal fasteners and anchor heads. Fill with matching wood plugs. All fixed elements must be glued and screwed or dowelled to ensure rigid construction.

.4 Comply with glue manufacturer's recommendations for lumber moisture content, glue life, pot life, working life, mixing spreading, assembly time, time under pressure and ambient temperature.

.5 Make all necessary cut-outs in the furniture for sinks and electrical switch and outlet boxes and pre-drill all mounting holes for fittings and outlet boxes. Refer to Electrical Drawings and specifications.

.6 Provide and install pipe covers, scribing pieces, top, bottom and/or and closures and filler panels where necessary, including wherever units require furring out or blocking to existing conduits, pipes, etc.

.7 Service cover panels to be provided at all kneehole drawer units, kneehole front rails and knee drawer table assemblies. End closing panels to be provided at all exposed ends of service strips and island/peninsula assemblies. Front filler panels to be provided where called for on Drawings and as required by field conditions.

.8 Avoid sharp corners and edges at exposed surfaces; smooth or round surfaces as appropriate. At microwave shelves, and similar projecting items, radius corners to avoid potential of injuries to building occupants.

.9 Resilient base around all toe spaces is specified in Section 09 65 00.

2.4 **BASE CABINET CONSTRUCTION**

.1 All cabinet work shall be factory assembled in modular, unitized construction. Carefully machine with dovetailed mortised and tenoned or blind dado joints. Each unit shall be self supporting and designed to be bolted together with fasteners inside units with plastic plugs over fasteners. All joints to be securely glued. Fabricate units as per Drawings and as specified.

.2 Gables to be 19mm. plastic laminate faced particle board, tongue and grooved to solid framing members. Provide plastic laminate edging at all exposed edges.

.3 Provide top front, top back rails and posts of solid hardwood 19mm x 50mm framing members, tongue and grooved together and dadoed to gables.

.4 Bottom to be 19mm plastic laminate faced particle board.

.5 Provide all base cabinets with minimum 100mm high toe space of 19 mm material set back from front face of cabinets 100 mm minimum. Provide one coat of sealer to toe space. Ensure compatibility with resilient base adhesive.

.6 Doors generally to be flush overlay 19mm minimum plastic laminate faced particle board with laminate faced fronts, backs and edges all four sides of colour to match door face. Interior face of door to be considered a finished face.

.7 Back panels minimum 6mm thick plastic laminate faced particle board removable within unit where access required behind. Removable panels to have plastic laminate edge trim, all four sides.

.8 Refer to detail Drawings.

.9 Drawer Construction

.1 Fronts - 19mm plastic laminate faced particle board and plastic laminate edges on all four sides. Interior face may be backing sheet.

.2 Sides and back - 13mm plastic laminate faced particle board all glued and dovetailed together and to front. Back to be tenoned to sides.

.3 Drawer bottom to be 5mm tempered hardboard grooved into sides, back and front members.

.4 Provide all drawers with spring hinged stops to prevent accidental removal of drawer. Provide guides and slides for all drawers as specified above, sized for depth of drawer. Top hung drawer slides or grooved drawer sides for runners are not acceptable.

.10 Shelves - 19mm. minimum plastic laminate faced plywood with plastic laminate edging, front and back.

.11 Sit all adjustable shelves on pilaster clips. Pilasters to be recessed into gables.

2.5 **RECEPTION DESKS**

.1 Provide and install counter tops and work surfaces of types noted on drawings and herein specified. Refer to Section 06 41 19.

.2 Install all galls and accessories supplied in Division 08.

.3 Provide high quality 50mm diameter plastic grommets through each gable and through counter tops between gables. Confirm locations with Consultant.

PART 3 - EXECUTION

3.1 **INSTALLATION**

.1 Set and place all materials and components in place, rigid, plumb and secure.

.2 Provide heavy duty fixture attachments for glazing and install metal supports for work surfaces as detailed on drawings.

.3 Install all shelving, counter tops and work surfaces.

.4 Use draw bolts in countertop joints.

.5 At junction of plastic laminate counter, back splash and adjacent wall finish, apply small bead of sealant.

.6 Apply water resistant building paper over wood framing members in contact with masonry or cementitious construction.

.7 After installation, fit and adjust operating hardware for wood cabinet doors, drawers and shelves.

.8 Install glazing at locations indicated on drawings.

END OF SECTION

PART 1 - GENERAL

1.1 SCOPE OF WORK

.1 Provide all plastic laminate countertops as indicated on drawings, except where counters are part of equipment specified elsewhere.

.2 Provide plastic laminate faced wall panelling, where indicated on drawings.

.3 All plastic laminate work for the project shall conform to the specifications of this section.

1.2 RELATED WORK

.1	Architectural Casework	Section 06 41 13
.2	Finish Carpentry	Section 06 20 00
.3	Door Hardware	Section 08 71 00
.4	Electrical	See Electrical Drawings

1.3 SUBMITTALS

.1 Refer to Section 01 33 23.

.2 Submit two 300 x 300mm samples of all materials to the Consultant for approval. The samples shall be identified by the project number, date and the name of the contractor the samples shall show colours and details of edging, forming and construction. The materials used in the building shall correspond to the approved samples.

.3 Shop Drawings:
- .1 Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices and other components.
- .2 Show full-size details, edge details, attachments, etc.
- .3 Show locations and sizes of furring, blocking, including concealed blocking and reinforcement required.
- .4 Show locations and sizes of cutouts and holes for grommets, electrical outlets and other items installed in countertops.

.4 Submit data sheets for fire-rated plastic laminate, particle board, plywood, adhesives, joint sealants, and sealers.

.5 Submit ULC or cUL certifications for fire-rated products.

.6 Maintenance Data and Materials:
- .1 Submit manufacturer's care and maintenance data, including repair and cleaning instructions. Include in project closeout documents.
- .2 Provide maintenance kit for finishes.

1.4 PROTECTION

.1 Refer to General Instructions Section 01 10 00.

.2 Handle and store countertops in accordance with manufacturers recommendations.

.3 Countertop surfaces shall be covered with heavy kraft paper, or tops shall be put in cartons for protection during shipment.

.4 If protective film is provided, do not remove until counters have been installed.

.5 Remove any stickers immediately after installation

.6 Protect installed countertop surfaces with heavy kraft paper secured in position with masking tape. Do not remove until final inspection.

.7 Comply with the printed directions, issued by the material manufacturers.

1.5 **WARRANTY**

.1 Plastic laminate work shall be warranted against warping or delamination for a period of two (2) years from the date of Substantial Performance of the Contract.

.2 Work showing defects during the warranty periods shall be replaced or made good without delay and at no expense to the Owner.

PART 2 - MATERIALS

2.1 **MATERIALS**

.1 Plastic laminate:

.1 Formica and Pionite, conforming to CAN3-A172.

.2 1.6mm (.062") thick, general purpose grade for flatwork and 1.25mm (.050") thick standard postforming grade for shaped profiles and bends; finishes to be sued, solid and wood grain colours as later selected by the Consultant from the manufacturers standard range of colours. Balancing sheet shall be the same thickness as surface sheet and shall be supplied by the same manufacturer.

.3 Provide fire rated plastic laminate for wall panelling. Fire rated laminate must be ULC or cUL labelled, or equivalent label acceptable to Authorities Having Jurisdiction.

.2 Cores

.1 Wood products shall be FSC certified, manufactured with no added urea formaldehyde. Use fire rated versions of these products where fire rating is required, including core at all wall panelling.

.2 Particle board shall be NuGreen 2 ULEF particle board, as manufactured by Uniboard, or equal by Panolam Industries, Tafipan-Evolvo ULEF by Tafisa Canada, or Duraflake Vesta ULEF by Arauco, meeting the requirements of ANSI A208.1 Grade M-2. Surface shall be smooth, dense, and free from loose particles, or defects which will telegraph through the laminate.

.3 Fire rated particle board core shall be Duraflake Vesta FR by Arauco. Flame spread shall not exceed 25. Smoke Developed shall not exceed 25.

.4 Plywood core - fir core, poplar faced, 3, 5, or 7 ply, exterior grade veneer plywood, urea-formaldehyde free or fir plywood conforming to CSA 0121, graded solid faces, 3, 5, or 7 ply. Faces and second ply shall be without voids,.

.5 Provide waterproof cores in countertops with sinks, in washrooms, and in all other areas where moisture is possible.

.3 Adhesives:

.1 Formulated for use in decorative laminate fabrication and to suit the conditions of application without failure.

.2 Adhesive conforming to CSA 0112 Series, no added urea formaldehyde; Greenguard Children & Schools certified low emitting products.

.3 Adhesive for countertops where sinks will be installed is to be water resistant.

.4 Adhesive shall be acceptable to the laminate manufacturer.

.5 Plastic Laminate adhesives applied onsite and used within the weatherproofing system must have a VOC content equal to or less than 20 g/L.

.4 Sealer: approved water-resistant sealer or glue, low VOC.

.5 Draw bolts: mechanical devices of approved manufacture which can be recessed into the core of decorative laminated panels and used to draw two parts together for permanently tight joints.

.6 Fixing clips: 1.6mm. (16 ga.) steel, galvanized (or prime painted), as detailed.

2.2 **FABRICATION**

.1 Fabricate wall panelling of fire rated materials.

.2 All countertops to be laminate finish, unless otherwise indicated on drawings.

.3 All units shall be shop fabricated. Plastic laminate shall be applied to an approved core with a thermosetting adhesive.

.4 Build work plumb, true and square. Arrange adjacent parts of continuous laminate work to match in colour and pattern.

.5 Obtain the governing dimensions before fabricating items which are to accommodate or abut appliances or equipment.

.6 Veneering of plastic laminate to core material shall be done according to the laminate manufacturer's directions. All veneered work shall be backed with a balancing sheet except where exposed in the finished work, then face veneer to be applied to all exposed surfaces.

.7 Where fabrication is done at the site, laminate and core materials shall be stored in the work area for not less than 48 hours for preconditioning before bonding together.

.8 Form shaped profiles and bends as detailed. For countertops, use postforming or bending grade according to manufacturer's recommendations. Core and laminate profiles shall coincide to provide continuous support and bond over the entire surface.

.9 Self Edging.
- .1 Straight self edging shall be decorative laminate 1.6mm thick.
- .2 Curved self edging shall be postformed material or bending grade.
- .3 Chamfer exposed edges of laminate uniformly, at approximately 15mm.
- .4 Do not mitre the decorative laminate sheet at edges.

.10 Joints
- .1 Locate joints where indicated, where not indicated at approximately 2440 or 3660mm centres also include joints at corners, and changes in superficial area.
- .2 Accurately fit decorative laminate together to provide tight, flush, butt joints. Joints in cored. panels shall be made with 6mm blind splines and draw bolts, one draw bolt for widths up to 150mm, two or more draw bolts at maximum 450mm o.c. for widths exceeding 150mm.
- .3 Seal the core at joints with sealer.

2.3 **CUTOUTS**

.1 Provide cutouts as required for inserts, grilles, outlet boxes, and other fixtures. Radius the internal corners, chamfer the edges, and seal the core.

.2 Provide face finish, to match countertop material where edges will be exposed.

2.4 **EXAMINATION OF SURFACES AND CONDITIONS**

.1 Refer to General Instructions 01 10 00.

.2 Surface and ambient temperatures shall be minimum of 20°C at a relative humidity between 20 to 80%.

PART 3 - EXECUTION

3.1 **INSTALLATION - GENERAL**

.1 Install all work plumb, true and square, neatly scribed to adjoining surfaces.

.2 Make allowances around periphery and where fixed objects pass through or project into countertops or panelling, to permit normal movement without restriction.

.3 Secure work by concealed means in an approved manner (or as detailed). Fasteners shall not be more than 600mm o.c. and 150mm from edges and ends. Where concealed fastening is not possible use stainless steel trim threaded screws with matching cup washers or other approved means.

.4 Sand or chamfer site cut edges of the laminate free from chips. Radius any internal angle cuts. Seal core edges.

.5 Isolate decorative laminate panels from direct contact with exterior metal frames.

.6 Upon completion of installation remove identification marks and clean surfaces. Protect as specified above.

.7 At junction of counter and adjacent wall finishes, apply small bead of sealant. Walls shall be cleaned of chalk lines, dirt, grease, etc., before sealant is applied.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Acoustic insulation.

.2 Includes all insulation indicated on drawings but not specified elsewhere.

1.2 RELATED WORK

.1	Rough Carpentry	Section 06 10 00
.2	Firestopping	Section 07 84 00
.3	Gypsum Board	Section 09 29 00

1.3 REQUIREMENTS OF REGULATING AGENCIES

.1 Where combustible insulation or vapour barrier materials are specified herein, comply with applicable code requirements including supply and installation of approved non-combustible backing and independently supported, non-combustible insulation covering, except where noted specifically as Work of other Sections.

1.4 DELIVERY AND STORAGE

.1 Store packaged materials in their original wrappings or containers with manufacturer's labels and seals intact. Store flammable materials outside the building and protect from all weather hazards and open flame. Abide by all fire protection regulations imposed by the authorities having jurisdiction, and take precautionary measures to avoid fire.

.2 Do not store insulation in direct contact with the earth, road surface or floors. Place suitable forms or skids under the insulation upon delivery to protect the insulation from absorbing dampness from the surrounding terrain or floor. Cover material with approved tarpaulins and secure.

.3 In cold weather, provide warm storage for adhesives such that their consistency is suitable for ease of application

1.5 PROTECTION

.1 Protect surfaces, and in particular the building cladding finish, from being marred or contaminated by the materials.

PART 2 - MATERIALS

2.1 MATERIALS

.1 Sound Attenuation Insulation: AFB acoustic fire batt by Roxul or Thermafiber SAFB Sound Attenuation Fire Blankets (unfaced) from Owens Corning, to thickness shown on drawings, and as required to obtain required S.T.C. rating.

.2 Compressible Filler: Emseal "Backerseal"

.3 Adhesives:
.1 Type recommended by insulation manufacturer for the specific application.
.2 To have adequate early and permanent bond and tensile strength for application, and have a service temperature between high and low temperatures to which they will be subjected.
.3 LePage PL 300 Foamboard Adhesive, or equivalent, for polystyrene board insulation, subject to insulation manufacturer's approval.

PART 3 - EXECUTION

3.1 PREPARATION

.1 Ensure that surfaces to receive adhesive or insulation are dry, firm, straight, slightly textured for bond, and free from loose material, projections, ice, frost. slick, grease, oil or other matter detrimental to bond of the adhesive or uniform bedding of the insulation.

.2 Maintain surface and ambient temperatures constantly between 38°C and 10°C during application and curing of adhesive except as permitted otherwise by the Consultant in writing.

.3 Report surfaces left unacceptable by other trades to the Consultant.

3.2 INSTALLATION - GENERAL

.1 Install insulation to thicknesses shown on the Drawings.

.2 Install all materials in accordance with manufacturer's printed instructions unless otherwise specified herein.

.3 In construction separating interior from exterior, locate vapour barrier on the warm-in-winter side of the insulation.

.4 Ensure a uniform, continuous thermal and vapour barrier effect. Where insulation and vapour barriers are to be provided under other Sections, co-ordinate the work such that thermal and vapor barrier continuity is achieved.

.5 Where hangers for suspended ceilings and where supports for heating ducts pass through insulation, butter apertures liberally with vapour barrier adhesive and ensure continuity of thermal and vapour barrier provisions.

3.3 INSTALLATION OF INSULATION

.1 Pack all crevices and voids, with friction fit batt insulation.

END OF SECTION

PART 1 - GENERAL

1.1 SCOPE OF WORK

.1 Maintaining of existing fire rated separations in building.
- .1 This includes firestopping of penetrations through existing rated partitions and assemblies, where none exists.
- .2 Refer to drawings for locations of fire rated walls.
- .3 Examine existing building to determine the extent of the firestopping work required at existing corridors.

.2 Firestopping of Penetrations in Rated Assemblies.

.3 Fire Resistive Joint Systems.

.4 Perimeter Fire Containment Systems.

.5 Firestopping of Penetrations in Fire Blocking Compartments.

.6 Smoke Seals

.7 Provide all labour, materials, products, equipment and services, to supply and install the firestopping and smoke seal work for the entire project, including at the following locations:

- .1 Openings in new and existing fire rated walls, floors and roofs both empty and those containing penetrations.
- .2 Openings in new gypsum board enclosures at top of existing corridor walls.
- .3 Gaps located within expansion joints.
- .4 Openings in fire rated shafts.
- .5 Gaps between the tops of new and existing fire rated walls and the underside of the roof deck, whether or not the ceiling is part of a “rated assembly”. Note that the existing building assemblies do not conform to current standards.
- .6 Gaps between the tops of new and existing fire rated walls and underside of fire rated floor or roof assemblies.
- .7 Penetrations through construction enclosing compartmentalized concealed areas (fire blocks), involving both empty openings and openings containing penetrating items.
- .8 Penetrations through smoke barriers, including 0-hour rated fire separations.

Note: It is not the intention of this section to delete firestopping work fully specified in the mechanical and electrical specifications. Coordinate with all mechanical and electrical sections to ensure the complete firestopping of the entire building. All firestopping not specifically called for in the mechanical and electrical specifications is to be included under this section.

1.2 RELATED WORK

.1 Fire blocking of concealed spaces:
- .1 Fire separation of concealed spaces shall be provided under applicable specification sections, and as indicated on drawings.

.2 Non-Rated Openings through Floors and Walls:
.1 Non-rated openings through floors and walls shall be sealed under applicable architectural, mechanical, and electrical specification sections.

.3 Metal sleeves for fire rated openings through floors and walls shall be provided under applicable mechanical and electrical specification sections.

.4 Firestopping and smoke seals within mechanical (i.e. inside ducts, dampers) and electrical assemblies shall be sealed under applicable mechanical and electrical specifications sections and only in accordance with the equipment or device manufacturers' installation instructions.

1.3 RELATED SECTIONS

.1	Joint Sealants	Section 07 92 00
.2	Gypsum Board	Section 09 29 00
.3	Mechanical work requiring firestopping	See Mechanical Drawings
.4	Electrical work requiring firestopping	Divisions 26 - 28

1.4 REFERENCE STANDARDS/DOCUMENTS

.1 Underwriters Laboratories of Canada (ULC):

.1	ULC	List of Equipment and Materials, Firestop Systems and Components
.2	CAN/ULC-S101	Standard Methods of Fire Endurance Tests of Building Construction and Materials
.3	CAN/ULC-S115	Standard Method of Fire Tests of Firestop Systems

.2 Underwriters Laboratories, Inc. (UL):

.1	UL	Fire Resistance Directory
	.1 Firestop Devices Certified for Canada	
.2	ANSI/UL 263	Fire Resistance Ratings
.3	UL 2079	Tests for Fire Resistance of Building Joint Systems
.4	UL 1479	Fire Tests Of Through-Penetration Firestops

.3 Intertek — WH Mark Product Directory

.4 American Society for Testing and Materials (ASTM):

.1	ASTM E1966	Standard Test Method for Fire-Resistive Joint Systems
.2	ASTM E814	Test Method of Fire Tests of Penetration Firestop Systems
.3	ASTM E 2174	Standard Practice for On-Site Inspection of Installed Firestops
.4	ASTM E 2393	Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers

.5 Factory Mutual Approval Guide

1.5 PERFORMANCE REQUIREMENTS

.1 Provide firestopping systems of sufficient thickness, width and density to provide and maintain a fire resistance rating, as indicated on drawings and in accordance with ULC, cUL or WH design numbers.

.2 Provide a seal completely filling all annular spaces to prevent the passage of flame, smoke and gases through the opening in the fire separation in which it is installed.

.3 Provide materials which are compatible with all materials used in the system including materials used in or on penetrating items as well as all construction materials used in conjunction or contiguous with the system.

.4 Accessories:
- .1 Provide components for each firestopping system that are needed to install fill materials.
- .2 Use only components specified by the firestopping manufacturer and approved by the qualified testing and inspecting agency for the designated fire resistance rated systems.
- .3 Accessories include but are not limited to the following items:
  - .1 permanent forming/damming/backing materials
  - .2 temporary forming materials
  - .3 substrate primers
  - .4 collars
  - .5 steel sleeves

.5 Provide products that upon curing, do not re-emulsify, dissolve, leach, breakdown or otherwise deteriorate over time from exposure to atmospheric moisture, sweating pipes, ponding water or other forms of moisture characteristic during and after construction.

.6 Provide firestop sealants sufficiently flexible to accommodate motion such as pipe vibration, water hammer, thermal expansion and other normal building movement without damage to the seal.

.7 Pipe insulation shall not be removed, cut away or otherwise interrupted through wall or floor openings. Provide products appropriately tested for the thickness and type of insulation utilized.

.8 Openings within walls and floors designed to accommodate voice, data and video cabling shall be provided with re-enterable products specifically designed for retrofit.

.9 Penetrations through fire-resistance rated floor-ceiling assemblies contained within chase wall assemblies shall be protected with products tested by being fully exposed to the fire outside of the chase wall.

.10 Provide fire-resistive joint sealants sufficiently flexible to accommodate movement such as thermal expansion and other normal building movement without damage to the seal.

.11 Provide through penetration firestop systems and fire-resistive joint systems subjected to an air leakage test conducted in accordance with Standards UL1479 and UL2079, with published L-Ratings for ambient and elevated temperatures as evidence of the ability of the through penetration firestop system or fire-resistive joint system to restrict the movement of smoke.

.12 Testing agency shall be accredited by Standards Council of Canada and approved to perform fire endurance testing as outlined in this section of Work, which includes the following agencies;
- .1 Underwriters Laboratories (Canada). ULC mark.
- .2 Underwriters Laboratories, approved for Canada; cUL mark.
- .3 Intertek Testing Service NA Ltd. (formerly Warnock Hersey); WH mark

1.6 **SUBMITTALS**

.1 Manufacturer's Data:
- .1 Provide submittals in accordance with Section 01 33 23.
- .2 Submit all ULC, cUL, or WH tested systems or designs proposed for use on the project. Submissions must be in compliance with the requirements of the Contract Documents and certified for use in Canada.
- .3 Submit manufacturer's specifications, installation instructions and product data for each material to be used. Materials must be as listed on the submitted tested system documents.
- .4 Submit MSDS for all materials.

.2 Shop Drawings: Submit shop drawings showing typical installation details, including reinforcement, anchorage, fastenings and method of installation for each type of firestopping condition.

.3 Samples: If requested, submit samples of each type of firestopping systems, smoke seals and accessories. Indicate location where material/system shall be utilized.

.4 Qualifications: Submit certificate indicating qualifications of installer.

1.7 **QUALITY ASSURANCE**

.1 Manufacturer: Manufacturer shall be one of the approved manufacturers listed below.

.2 Applicator: Company having a minimum of three (3) years experience in the installation of materials specified herein, on projects comparable to this project, who is certified, licensed or otherwise qualified by the firestopping manufacturer as having been provided the necessary training to install firestop products in accordance with the specified requirements.

1.8 **REGULATORY REQUIREMENTS**

.1 Conform to the Ontario Building Code for fire resistance ratings.

.2 Provide materials, accessories and application procedures which have been listed by ULC, cUL, or tested by a nationally recognized independent testing agency in accordance with ASTM E814, UL 1479, and CAN/ULC-S115 to achieve the required fire protection ratings.

1.9 **ENVIRONMENTAL REQUIREMENTS**

.1 Do not proceed with the installation of firestopping materials when temperatures or weather conditions exceed the manufacturer's recommended limitations for installation.

.2 Ventilate solvent based and moisture-cure firestopping per firestopping manufacturer's instructions by natural means or, where this is inadequate, by forced air circulation.

1.10 **DELIVERY, STORAGE AND HANDLING**

.1 Deliver materials to Site in manufacturer's sealed, undamaged containers, with labels intact. Labels shall identify product and manufacturer, date of manufacture; lot number; shelf life, qualified testing and inspection agency's classification marking, and mixing instructions for multi-component materials.

.2 Handle and store materials in accordance with manufacturer's instructions.

1.11 **PROJECT/SITE CONDITIONS**

.1 Comply with manufacturer's recommended requirements for temperature, relative humidity and substrate moisture content during application and curing of materials.

.2 Maintain minimum temperature before, during, and for minimum 3 days after installation of materials.

.3 Do not install firestopping products when substrates are wet due to rain, frost, condensation, or other causes.

1.12 **SEQUENCING AND SCHEDULING**

.1 Coordinate construction of openings and penetrating items to ensure that through-penetration firestop systems are installed according to specified requirements.

.2 Coordinate sizing of sleeves, openings, core-drilled holes or cut openings to accommodate through-penetration firestop systems.

.3 Do not install firestopping system until Work within opening has been completed. Coordinate with other applicable Sections.

.4 Schedule work of other trades so that firestopping applications can be inspected prior to being covered by subsequent construction.

PART 2 - PRODUCTS

2.1 **APPROVED MANUFACTURERS**

.1 Provide firestopping silicone sealants, water-based sealants, intumescent sealant, mortars, or firestop devices from one of the following manufacturers:
- .1 A/D Fire Protection Systems Inc.
- .2 Tremco Fire Protection Systems Group
- .3 Hilti (Canada) Corporation
- .4 Nuco Inc., Self-Seal Firestops

2.2 **MATERIALS**

.1 Firestop systems:
- .1 Provide a complete system of asbestos-free firestop systems capable of maintaining an effective barrier against flame, smoke and gases in compliance with requirements of CAN4-S115, ASTM E814, and UL 1479 or UL 2079, and listed by ULC, cUL, or Intertek (WH), and approved by jurisdictional authorities and the Consultant.
- .2 Comply with Ontario Building Code requirements for locations and ratings.

.2 Materials specified below are as manufactured by A/D Fire Protection Systems Inc. Equivalent products manufactured by one of the approved manufacturers listed above are acceptable.

.3 Silicone Sealants:
- .1 Primerless, single component silicone sealant, curing to durable, flexible, silicone rubber; to ASTM C 920, Type S, Grade NS, class 25; A/D Firebarrier Silicone Sealant or equivalent.
- .2 For use in: openings with penetrating items subject to high movement; multiple penetration systems; for combustible pipes up to 2-in. diameter; in control joints; in curtain wall joints; expansion joints; floor/wall joints; wall/wall joints; head of wall joints; and as a sealant for smoke barrier construction.

.4 Pourable Sealant:
- .1 Single component, water based, elastomeric sealants, forming durable, flexible, watertight bonds; A/D Firebarrier Seal (pourable) and Seal NS (non-slumping) or equivalent.
- .2 Use non-slumping type for vertical applications.
- .3 Water based firestop sealants for use with: control joints; head of wall joints; floor/wall joints; wall/wall joints; multiple penetration systems; plumbing; mechanical; electrical; and where sprayed sealant application is required or desired.

.5 Intumescent Caulk:
- .1 Single component, water based, elastomeric sealant for use in interior building locations; A/D Firebarrier Intumescent Caulk or equivalent.
- .2 For general use as a firestop sealant with: insulated pipes; pipes; electrical cables and conduit; ducts.

.6 Mortar:
- .1 Non-combustible, fibre reinforced, foamed cement mortar; A/D Firebarrier Mortar or equivalent.
- .2 For use in: large openings; static non-moving penetrations such as cable trays; for multiple penetration systems; electrical and communication bundles; conduits; non-combustible sleeves; and insulated pipes.

.7 Collars:
- .1 Steel collars with intumescent silicone strip, in diameters to suit pipe sizes; A/D Firebarrier Collar or equivalent.
- .2 For use in openings with single combustible pipe penetrations greater than 50mm diameter; confirm maximum pipe diameter (for applicable tested assemblies) with manufacturer.

.8 Pillows:
.1 Self-supporting, sealed polyethylene bags containing intumescent materials and non-combustible insulation; A/D Firebarrier Pillows or equivalent.
.2 For use in openings with: cable tray; multiple cable penetrations; where retrofitting of penetrating items is anticipated; and as a temporary firestop system.

.9 Mineral Wool:
.1 Non-combustible, semi-rigid, preformed mineral wool strips and sheets; A/D Firebarrier Mineral Wool or equivalent.
.2 For use in tested firestop systems, as fire barrier and forming material.

.10 Additional Materials:
.1 All materials shall be by the manufacturer's listed above and shall be components of tested assemblies, acceptable to local authorities having jurisdiction, for the fire rating required.

2.3 **ACCESSORIES**

.1 Damming and backup materials, supports and anchoring devices: Non-combustible, to manufacturer's recommendations and in accordance with the tested system being installed, and as acceptable to local authorities having jurisdiction.

.2 Primers: As required by firestopping manufacturer and compatible with selected system and contiguous materials.

.3 Water: Potable.

.4 Tape: Pressure sensitive masking tape as recommended by the firestopping manufacturer.

.5 Fasteners: Provide suitable fasteners, for applicable substrates, for all collars and other field fastened firestopping components.

PART 3 - EXECUTION

3.1 **EXAMINATION**

.1 Examine substrates, openings, voids, adjoining construction and conditions under which the Work is to be installed. Confirm compatibility of surfaces scheduled to receive firestopping.

.2 Verify that penetrating elements are securely fixed and properly located with the proper space allowance between penetrations and surfaces of openings.

.3 Do not proceed with Work until unsatisfactory conditions have been corrected.

3.2 **PREPARATION**

.1 Surfaces to receive firestopping shall be free of dirt, dust, grease, oil, rust, loose materials, form release agents, frost, moisture or any other matter which would impair the bond of firestopping material to the substrate of penetrating item(s).

.2 Prime substrates in accordance with manufacturer's written instructions or recommendations. Confine primers to areas of bond; do not allow spillage or migration onto exposed surfaces.

.3 Do not apply firestopping and smoke seals to surfaces previously painted or treated with sealers, curing compounds, water repellent or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

.4 Ensure that anchoring devices, back-up materials, clips, sleeves, supports and other related materials used in the actual fire tests are provided.

.5 Mask where necessary to prevent firestopping materials from contacting adjoining surfaces that will remain exposed upon completion of Work. Remove tape as soon as it is possible to do so without disturbing firestopping seal with substrates.

.6 Installation is not to proceed until submittals have been reviewed and returned by the Consultant.

3.3 **INSTALLATION**

.1 Manufacturer's Instructions:
- .1 Comply with ULC, cUL, or WH listings and manufacturer's instructions for the type of material and condition of opening in each case.
- .2 Consult with the manufacturer's technical representative to determine proper procedure for conditions not fully covered by printed instructions.
- .3 Record in writing any oral instructions received, with copy to manufacturer.

.2 Firestopping for vertical applications:
- .1 Non-sag caulk or spray grade sealants, Mortar, Collars or Pillows.
- .2 Mineral wool fire resistant filler, per tested design.
- .3 Install sealants on both sides of walls and other vertical elements.

.3 Firestopping for horizontal applications:
- .1 Non-sag caulk or self-levelling or spray grade sealants, Mortar, Collars or Pillows.
- .2 Mineral wool fire resistant filler, per tested design.

.4 Firestopping for overhead applications:
- .1 Non-sag caulk or spray grade sealants or Mortar.

.5 Install firestopping with sufficient pressure to properly fill and seal openings to ensure an effective smoke seal. Tool or trowel exposed surfaces. Remove excess firestopping material promptly as the Work progresses and upon completion.

.6 Damming: Provide leak-proof dams as required to seal openings and contain liquid sealants, putty or mortar until cured. Install damming in accordance with manufacturer's instructions.

.7 Damming Boards: Install forming/damming materials and other accessories of type required to support fill materials during their application and in the position needed to produce the shapes and depths required to achieve fire ratings of through-penetration firestop systems.

.1 Combustible Type: For temporary dams only. Remove after firestopping material has cured.

.2 Non-Combustible Type: For temporary or permanent dams. Provide non-combustible type wherever damming material cannot be removed after applying firestopping materials.

.8 Void Filler: Use materials recommended by the firestopping manufacturer to seal gaps created by non-combustible type damming boards and to seal around cables, conduits, pipes and where void filler material becomes part of the fire rated assembly.

.9 Sealant:

.1 Install damming material or mineral wool as required.

.2 Apply sealant so air voids are not present and sealant is in full contact with penetrating items. Tool sealant to ensure substrate contact.

.3 Remove excess sealant in accordance with manufacturer's recommendations.

.10 Mortar:

.1 Install damming material as required.

.2 Mix mortar in strict accordance with manufacturers instructions.

.3 Pump, trowel or hand pack mortar through openings to minimum thickness as recommended by manufacturer and as listed by ULC, or cUL, to achieve required fire rating.

.11 Firestopping Mineral Wool:

.1 Install firestopping by compressing material to the minimum required by ULC, cUL, or WH listing.

.2 Apply firestopping in sufficient thickness, depth and density so as to achieve the required fire resistance rating.

.3 Use impaling clips to support and secure firestopping where required by tested system.

.4 Provide mineral wool additionally to provide acoustic separation between spaces.

.12 Where joint application is exposed to the elements, fire-resistive joint sealant must be approved by manufacturer for use in exterior applications.

3.4 FIELD QUALITY CONTROL

.1 Notify Consultant when completed installations are ready for inspection prior to concealing or enclosing an area containing firestopping materials.

.2 Arrange for inspections by the Owners independent inspection and testing company, appointed and paid for by Owner.

.3 Following field inspections, provide all repair as required to ensure compliance with the Contract Documents.

.4 Keep areas of work accessible until inspection by authorities having jurisdiction.

3.5 **CLEANING AND PROTECTION**

.1 Clean all surfaces adjacent to sealed openings to be free of excess firestopping materials and soiling as work progresses.

.2 Upon completion of this work, remove all materials, equipment and debris from the site.

.3 Leave work area and adjacent surfaces in a condition acceptable to the Consultant.

.4 Leave installed work with sufficient protection to enable it to remain untouched until project turnover.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK

.1 Gypsum Board Section 09 29 00

1.2 REFERENCE STANDARDS

.1 ASTM International:

.1	ASTM C 510	Standard Test Method for Staining and Color Change of Single- or Multicomponent Joint Sealants
.2	ASTM C 719	Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle)
.3	ASTM C 794	Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants
.4	ASTM C 834	Standard Specification for Latex Sealants
.5	ASTM C920	Standard Specification for Elastomeric Joint Sealants
.6	ASTM C 1087	Standard Test Method for Determining Compatibility of Liquid- Applied Sealants with Accessories Used in Structural Glazing Systems
.7	ASTM C 1193	Standard Guide for Use of Joint Sealants
.8	ASTM C 1247	Standard Test Method for Durability of Sealants Exposed to Continuous Immersion in Liquids
.9	ASTM C 1248	Standard Test Method for Staining of Porous Substrate by Joint Sealants
.10	ASTM C 1311	Standard Specification for Solvent Release Sealants
.11	ASTM D 2203	Standard Test Method for Staining from Sealants

1.3 APPROVED MANUFACTURERS

.1 The products of the following manufacturers are approved for use subject to meeting the specifications for the particular type of sealants listed below. However, this is not an approval to substitute another type of sealant for those specified unless the material manufacturer requests change in his product in writing to the Consultant.

.1 Canadian General Electric Company Ltd.
.2 Dow Corning Canada Inc.
.3 Tremco

.2 Material manufacturers must be willing to review Shop Drawings and drawing details, visit the site to review sealant installation and provide written reports to the Consultant.

1.4 INSTALLER QUALIFICATIONS

.1 Sealants and caulking shall be installed by a specialized Subcontractor, having skilled mechanics thoroughly trained and competent in all aspects of caulking work, with minimum 5 years documented experience.

1.5 SUBMITTALS

.1 Submit samples of each sealant, in conformance with Section 01 33 23.

.2 Provide colour cards for Consultants selection.

.3 Submit written adhesion and compatibility approval from the sealant manufacturer for all materials to be sealed.

1.6 **WARRANTY**

.1 Extend Contractor's warranty to **five (5) years**, in writing. Warranty shall commence on the date of Substantial Performance.

.2 Defective work shall include, but not be restricted to, joint leakage, cracking, crumbling, melting, running, loss of adhesion, loss of cohesion, or staining of adjacent surfaces

.3 Provide manufacturer's project-specific 20 year non-staining warranty and 10 year weatherseal warranty for "Type A" sealant listed below.

PART 2 - PRODUCTS

2.1 **MATERIALS**

.1 Sealant Type A: For exterior locations. Non-Staining, primer less, silicone weather-proofing sealant:

.1 SilPruf SCS9000 NB, manufactured by Canadian General Electric Company Limited,
.2 Dow Corning 756 SMS, manufactured by Dow Corning Canada Inc., or
.3 Spectrem 3, manufactured by Tremco Ltd., and
.4 conforming to the product properties published.
.5 to ASTM C920 Type S, Grade NS, Class 50, Use NT, M, G, A, and O

.2 Sealant Type B: For interior locations. Non-staining, primer less, silicone hybrid sealant:

.1 SCS7000, manufactured by Canadian General Electric Company Limited.
.2 Dow Corning 756 SMS, manufactured by Dow Corning Canada Inc., or
.3 Spectrem 3, manufactured by Tremco Ltd.
.4 to ASTM C920 Type S, Grade NS, Class 50, Use M, G, A, and O

.3 Sealant Type C: For interior locations where conditions of high humidity exist such as washrooms.. Mildew resistant, one component silicone conforming to CGSB 19-GP-22M and ASTM C920:

.1 CGE SCS1700 Sanitary Sealant,
.2 Dow Corning 786, or
.3 Tremco Tremsil 200 White

.4 Sealant Type D: For interior locations. Paintable, non-staining, primer less, silicone hybrid sealant:

.1 SCS7000, manufactured by Canadian General Electric Company Limited.

.5 Sealant Type E:
- .1 One-part, moisture cure, medium modulus silicone sealant; Contractors Weatherproofing Sealant (CWS) BY Dow Corning; to ASTM C 920 Type S, Grade NS, Class 50, Use NT, M, A, O (granite).
- .2 One-part, moisture-cure, low-modulus silicone sealant; Contractors Concrete Sealant by Dow Corning; to ASTM C 920 Type S, Grade NS, Class 50, Use T, NT, M, G, A, O.

.6 Colours of sealants and caulking when exposed in the finished work to later selection by the Consultant. Allow different colours for different situations and materials. Allow for custom colours for exterior sealants.

.7 Primers for sealing: As manufactured or recommended by the manufacturer of the sealing materials for the specific applications.

.8 Joint backing material:
- .1 circular foam strips, of approved manufacture, compatible with sealant and 50% greater width than joint width;
- .2 Vertical Surfaces: extruded polyolefin foam, Sof Rod by Tremco Ltd.
- .3 Horizontal Surfaces: closed cell polyethylene foam, Standard Backer Rod by Tremco.

.9 Bond Breaker: pressure sensitive plastic tape backing material, which will not bond to sealant; 3M #226 or #481, or Valley Industries #40.

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

PART 3 - EXECUTION

3.1 LOCATIONS

.1 Seal all interior junctions and joints wherever required to close gap and wherever sealant is essential to maintain the continuity of air barrier, water barrier, or non-rated smoke separation of wall with Sealant Type B. Areas to be caulked include:

- .1 Concrete to metal, masonry, concrete and precast concrete.
- .2 Masonry to metal, concrete, precast concrete, and masonry.
- .3 Metal to metal, masonry, concrete, and precast concrete.
- .4 Around pipes and conduit through walls.
- .5 Between window, louvre, and skylight frames and sills and adjacent materials.
- .6 At all joints between millwork and gypsum board to provide neat junction.
- .7 At junction between all counters and/or splashbacks and adjacent substrate with neat 3mm bead.

.2 Seal with Sealant Type D at all interior non-moving joints to be painted.

.3 Seal at all other vertical and horizontal joint locations with Sealant Type E.

.4 Refer to Section 07 84 00, Firestopping and Smoke Seal, for location of fire stopping and fire resistant caulking.

.5 Refer to Section 09 29 00, Gypsum Board, for acoustic sealant work.

3.2 **SUPERVISION**

.1 Unless specified otherwise herein comply with the recommendations and directions of the manufacturer whose materials are being used on the work.

.2 Arrange for the sealant manufacturer's technical representatives to visit the site prior to the commencement of the sealing to meet with the Contractor and the Consultant.

.3 Sealant manufacturer to visit site periodically and to provide written reports to Consultant ensuring sealant is in accordance with good trade practice, the manufacturer's recommendations and the intent of this Specification.

3.3 **PREPARATION**

.1 Install sealants only when surfaces and ambient temperatures are suitable for the material used, as per manufacturer’s recommendations.

.2 Clean all joints and spaces to be sealed.

.3 Ensure that surfaces are structurally sound, free from grease, chalk or other contaminants which may adversely affect the adhesion of the sealing materials. Use dry oil free clean compressed air stream if necessary to clean out the joint.

.4 Clean surfaces with a solvent or cleaner recommended by the manufacturer of the sealant materials.

.5 Remove chalk lines completely. Do not place clear sealant over coloured chalk lines.

.6 Test materials for indications of staining or poor adhesion before any sealing is commenced.

.7 Submit colour chart to Consultant and obtain his written instructions for colours and locations of colours.

3.4 **PRIMING**

.1 If recommended by the manufacturer of the sealing materials, prime joints to prevent staining, or to assist the bond, or to stabilize porous surfaces.

.2 Apply primer with a brush which will permit the priming of all joint surfaces.

3.5 **MASKING**

.1 Where necessary to prevent contamination of adjacent surfaces, mask the areas adjacent to the joints with masking tape.

3.6 **INSTALLATION**

.1 Install joint backing materials at all locations as detailed or where required by sealant manufacturer's printed directions.

.2 Install a bondbreaker tape or packing over asphalt impregnated fibre board as recommended by sealant manufacturer.

.3 Ensure that the correct sealant depth is maintained.

.4 Finished joints shall be free of wrinkles, sags, air pockets, ridges and embedded impurities.

.5 Tool all sealant surfaces to produce a smooth surface.

.6 Remove droppings and excess sealant as work progresses and before material sets.

.7 Sealing materials shall be gun grade or tool grade consistency to suit the joint conditions.

.8 Commence sealing only after all adjacent surfaces have been painted under Painting Section.

3.7 **CLEANING**

.1 Clean adjacent surfaces immediately and leave work neat and clean. Remove excess sealant and droppings using recommended cleaners as work progresses. Remove masking after joint tooling.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK

.1	Joint Sealants	Section 07 92 00
.2	Door Hardware	Section 08 71 00
.3	Glazing	Section 08 81 00
.4	Gypsum Board	Section 09 29 00
.5	Painting	Section 09 90 00
.6	Electrical	Division 26

1.2 WORK INCLUDED

.1 Supply and install all hollow metal products including doors and frames with provision for glazed fire labelled and non-labelled, as scheduled or shown on the Drawings.

.2 Work shall including the following:

.1 Reinforcing for Finishing Hardware.

.2 Preparations for wiring for security and control systems and electronic hardware.

.3 Supply of all necessary fastening and anchoring devices for above items.

.4 Fire rated and labelled doors, frames, and screens, glazed and unglazed, where noted on schedule.

.5 Supply and install door silencers on metal frames.

1.3 REFERENCES

.1 ULC Standards:

.1	CAN/ULC-S104	Standard Method for Fire Tests of Door Assemblies
.2	CAN/ULC -S105	Standard Specification for Fire Door Frames Meeting the Performance Required by CAN/ULC-S104
.3	CANULC-S106	Standard Method for Fire Tests of Window and Glass Block Assemblies

.2 Canadian Steel Door Manufacturers Association (CSDMA):

.1 Recommended Specifications for Commercial Steel Doors and Frames
.2 Recommended Dimensional Standards for Commercial Steel Doors and Frames
.3 Recommended Specifications for Sound Retardant Steel Doors and Frames
.4 Canadian Fire Labelling Guide for Commercial Steel Door and Frame Products
.5 Guide Specification for Installation and Storage of Hollow Metal Doors and Frames

.3 CSA Group:

.1	CSA W59	Welded Steel Construction (Metal Arc Welding)

.4 ASTM International:

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

.2	ASTM C518	Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
.3	ASTM C553	Specification for Mineral Fiber Blanket Insulation for Commercial and Industrial Applications
.4	ASTM C578	Specification for Rigid, Cellular Polystyrene Thermal Insulation
.5	ASTM C591	Specification for Un-Faced Pre-formed Rigid Cellular Polyisocyanurate Thermal Insulation
.6	ASTM C592	Specification for Mineral Fiber Batt and Blanket Thermal Insulation for Light Frame Construction
.7	ASTM C1289	Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board

.5 American National Standards Institute:

.1	NFPA 80	Standard for Fire Doors and Fire Windows
.2	ANSI A250.4	Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors Frames and Frame Anchors
.3	ANSI/DHI A115.IG	Installation Guide for Doors and Hardware
.4	ANSI A250.11	Recommended Erection Instructions for Steel Frames

1.4 **PERFORMANCE**

.1 Doors and frames covered by this specification shall be certified as meeting Level "A" acceptance criteria when tested in strict conformance with ANSI-A250.4. Swing Test duration shall be 1,000,000 cycles. For door twist tests maximum deflection is not to exceed 32mm (1¼") when loaded to 136kg (300 lbs), and permanent deflection is not to exceed 3.2mm (1/8"). Tests shall be conducted by an independent nationally recognized accredited laboratory.

.2 Fire labelled product shall be provided for those openings requiring fire protection and temperature rise ratings, as determined and scheduled by the Consultant. Doors, frames, transom frames and sidelight assemblies shall be tested in strict accordance with CAN/ULC-S104. Product shall be listed by Underwriters Laboratories of Canada under an active Factory Inspection Program and shall be constructed as detailed in Follow-Up Service Procedures issued to the manufacturer.

.3 Should any door or frame specified by the Consultant to be fire rated, not qualify for labelling due to design, hardware, glazing or any other reason, advise the Consultant before manufacturing commences.

.4 Core materials for exterior doors shall attain a thermal resistance rating RSI 1.06 (R6.0) when tested in accordance with ASTM C518.

.5 Product quality shall meet, or exceed, standards set by the Canadian Steel Door Manufacturers Association.

1.5 **QUALITY ASSURANCE**

.1 Supply all steel door and frame product from one manufacturer member company of the CSDMA.

.2 Manufacturer must be capable of labelling the fire rated doors, frames, and screens, glazed with specified fire glass. Refer to Section 08 81 00 for fire glass specifications. No Georgian Wired Glass will be permitted on the job.

.3 CSDMA Specification 08 11 13 "Commercial Steel Doors and Frames" is the minimum fabrication standard for this section, as if printed in its entirety herein, except where specified otherwise.

.4 Handle and install product in strict compliance with CSDMA 08 11 13, DHI A115.IG and NFPA 60.

1.6 **SUBMITTALS**

.1 Submit confirmation that the manufacturer can label all fire rated doors, frames, and screens, glazed with the fire rated glass to be used on the project, for the fire separation required.

.2 Prepare and submit shop Drawings in accordance with Section 01 33 23, and show the following:

.1 Door and frame schedules, identifying each unit, with door numbers referencing the numbering in the contract documents.
.2 Provide columns for Stock Code Numbers for both doors and frames.

.3 Typical and special details; including mortises, reinforcements, anchorages, locations of exposed fasteners and arrangement of hardware.

.4 Materials and finishes; including steel, core, material thickness.

.5 Hardware preparation.

.6 Frame anchorage details.

.7 Submit manufacturer's standard catalogue data for specified products demonstrating compliance with referenced standards.

.8 Other pertinent information.

.3 Submit information on standard shop drawing sheets as approved by the Canadian Steel Door and Frame Manufacturers Association.

.4 Submit manufacturer's printed installation instructions.

.5 Operation and Maintenance Data: Include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance.

1.7 **PRODUCT HANDLING**

.1 Matchmark doors, panels, frames and windows with Stock Code Numbers as shown on the Door Schedule. If Stock Code Numbers are not shown on the Schedule, matchmark with Door Numbers.

.2 Deliver, store and handle components so as to prevent damage, distortion and corrosion.

.3 Store Steel Frames under cover, raised on wood skids at least 100mm above grade, and as required to prevent damage and rusting. Store assembled frames in an upright position. Stack frames to prevent twisting; maximum 5 units per stack. Provide minimum 6mm airspace between frames to permit air circulation. Covers must be vented so as to avoid a build-up of humidity within.

.4 Doors to be delivered to site immediately prior to installation. Store doors protected at corners to prevent damage or marring of finish. Store in upright position, in enclosed, dry space, in a manner to prevent rust and damage. Use vented covers.

1.8 **WARRANTY**

.1 Provide an extended warranty of **three (3) years** from date of Substantial Performance against defects of workmanship including failure of welded seams or of reinforced hinge anchorage plates. Work showing defects during this period shall be repaired or replaced without cost to the Owner.

PART 2 - MATERIALS

2.1 **MATERIALS**

.1 General: All materials shall be new and suitable for their various purposes and shall be free from flaws and imperfections.

.2 All doors, frames, and screens shall be from one manufacturer. Only the following manufacturers will be accepted:

.1 Manufacturers:
- .1 Fleming Baron Door Products (Assa Abloy)
- .2 Daybar Industries Ltd.
- .3 All Steel Doors
- .4 Gensteel Doors
- .5 Trillium Steel Doors
- .6 Vision Hollow Metal
- .7 Metal Door

.2 Manufacturers must be able to provide and label the fire rated doors, frames, and screens required for this project, using the fire glass specified. If the manufacturer carried in the tender is not capable of providing the fire labelled products, the contractor will be required to use one of the other listed manufacturers for the work, at no additional cost to the Owner.

.3 Sheet Steel:

.1 General: cold rolled, carbon steel, stretcher levelled. Steel to have hardness of Rockwell 'B' maximum 65 (ASTM E103) suitable for forming and bending without metal or coating fracture.

.2 ASTM A65 3/A653M commercial grade tension levelled hot-dipped galvannealed steel sheet, coating designation Z275

.3 Doors, over $3m^2$: commercial quality zinc coating, comply with ASTM A1008/A1008M.

.4 Steel Thicknesses:

.1	Doors:	1.6mm [16ga)
.2	Panels:	1.3mm (18 ga)
.3	Frames:	1.6mm (16 ga)
.4	Hinge Reinforcement:	3.5mm (10 ga)

.5 Door Materials:

.1 Interior doors and panels up to $3m^2$ and maximum width of 1200mm or maximum length of 3000mm:
- .1 Doors to be Fleming D-Series, 16 gauge, or equivalent.
- .2 Interior Doors to be Honeycomb Core, except high use doors which shall be as specified above.

.6 Fire rated doors: in accordance with fire test requirements.
- .1 locate U.L.C. label on inside of hinge jamb on frame.
- .2 locate U.L.C. label on the top hinged edge of door midway between top hinge and top of door. Doors to be as noted above.

.7 Sound Insulated Doors:
- .1 Where sound insulated doors are indicated in the door schedule, provide assemblies that have been tested in accordance with ASTM E90, certified to a minimum rating of STC 46. Locations include music classrooms, music practice rooms, and technical workshop classrooms.
- .2 Assembly includes manufacturer's proprietary door and frame construction, and acoustical gasketing system. Doors to be Fleming Whisper Core Series, 16 gauge.

.8 Honeycomb: Structural small cell (25.4 mm max) Kraft paper "Honeycomb"; weight: 36.3kg per ream minimum; density: 16.5kg/m3 minimum.

.9 Frame reinforcement:
- .1 Reinforce frames for high frequency hinge preparation.
- .2 Stiffen all mullions and hinge jambs with continuous 3.5mm channel where continuous hinges are required.
- .3 Reinforce and provide cut outs and boxes for security devices.
- .4 Reinforce for overhead stops.

.10 Zinc Rich Coating: ZRC 221 Cold Galvanizing Compound by ZRC Worldwide, low VOC coating, or equivalent approved by the Consultant.

.11 Metal Filler: Two component epoxy type.

.12 Primer: Rust inhibitive primer

.13 Door Silencers: Rubber - Ives SR64 or approved equal.

2.2 **FABRICATION**

.1 General

.1 Dissimilar metals in contact, or metals which will be in contact with concrete or masonry when installed, shall be insulated one from another by methods and materials required for such results, as approved by the Consultant.

.2 Components shall be the types and sizes shown on the Drawings.

.3 Reinforce components, where required, for the installation of Finishing Hardware. Drill and tap to suit templates.

.4 Prepare doors and frames for the installation of the security system. Confirm requirements with Consultant.

.5 Ensure adequacy of anchoring devices.

.6 No patching, plugging, skimming or other such means of overcoming defects, discrepancies or errors shall be resorted to without written permission of the Consultant.

.7 Fabricate components from clean steel, free of rust and scale, which has been thoroughly degreased.

.8 The dimensions shown on the Drawings are the full rebate size of the frame.

.9 In addition to specified requirements for hollow metal doors and frames, fire doors and frames shall comply with the Underwriters Laboratories requirements for the specified rating and be provided with the appropriate labels.

.2 Edge Clearances

.1 Unless otherwise specified, allow edge clearances in accordance with Canadian Manufacturing Specifications for Steel Door and Frame Manufacturers Association.

.2 Where hardware items are to be attached to, or mortised into, bottom edges of doors, provide proper clearance between door and floor or threshold to accommodate such hardware.

.3 Hardware Preparation

.1 Refer to Hardware Schedule, included in Section 08 71 00, and prepare doors for hardware listed.

.2 Templated hardware: prepare work in accordance with templates supplied in Section 08 71 00. Prepare doors for mortice locksets according to Hardware Schedule.

.3 Reinforce doors and frames for concealed, mortised and surface mounted hardware in accordance to "Thickness of Steel for Component Parts" in the "Canadian Manufacturing Standards for Steel Doors and Frames", published by the Canadian Steel Door and Frame Manufacturers' Association.

.4 Prepare doors and frames for security system where noted.

.5 At oversized door locations, provide minimum 4 butt hinge preparations.

.4 Hollow Metal Doors

.1 Doors shall be of seamless, continuously welded construction with no visible seams or joints on faces. Doors to be 44.4mm minimum thickness.

.2 Secure edge seams with suitable continuously welded seams to the approval of the Consultant.

.3 Interlocking seams for doors shall be fully seam welded, for full length of door. All welding to be ground smooth.

.4 Core construction:

.1 Interior Doors to be Honeycomb Core

.2 Temperature Rise Rated (TRR): Solid slab core of non-combustible, inorganic composite to limit temperature rise on the “unexposed” side of door to 250°C at 30 or 60 minutes, as required by governing building code requirements and determined and scheduled by the Consultant.

.5 Welds shall be ground, filled, and dressed smooth to provide an invisible joint and smooth flush surface.

.6 Fully reinforce doors as required for specified hardware.

.7 Close top and bottom edges of doors with a continuous, recessed, minimum 1.5mm thick steel channel, extending full width of door and welded to both faces.

.8 Surround openings in doors with minimum 1.5mm thick steel edge channels, welded to both face sheets.

.9 Vertical edge profile for single acting swing doors: bevelled 3mm in 50mm.

.10 Doors for installation in channel frames shall be double-depth mortised to accommodate both butt flanges.

.11 Construct fire rated doors to meet fire test requirements and provide U.L.C. labels.

.5 Steel Frames

.1 Frames shall be of sheet steel, formed profiles shown on the Drawings.

.2 Fabricate frames in sections as large as practicable to minimize field jointing. Internally reinforce all mullions and hinge jambs with 1.3mm channel.

.3 Steel thickness: 1.6mm (16 ga.) galvanized steel.

.4 Assemble components with accurately cut joints. Mitre outside corner joints of frames. Continuously weld joints on inside of profile; grind welds flush and sand to smooth uniform surface.

.5 Tack weld two (2) removable 1.2mm steel spreader channels to inside faces of door frames at base, for protection during shipping.

.6 Provide adjustable base clips at bottom of each door jamb for anchorage to floor.

.7 Provide button type rubber silencers; three per strike jamb of single doors: two per head member of double door frames.

.8 Prepare door frames for ANSI strike, where doors to be fitted with latchsets or lockets.

.9 Provide removable mullions where noted. Reinforce removable mullions with 3.5mm channel to prevent forcing of latching hardware.

2.3 **INTERIOR SCREENS**

.1 Supply and install interior steel screens/windows where indicated on drawings. Frames for screens shall be similar to door frames and as detailed on drawings.

.2 Provide rated frames at screens in fire rated walls. Frames to be labelled.

.3 Steel framed windows are to be glazed as specified in Section 08 81 00.

.4 Provide masonry anchors, as specified above, at interior screen frames; minimum 2 anchors per jamb.

PART 3 - EXECUTION

3.1 **GENERAL**

.1 Store doors and frames as specified under item 1.7, Product Handling, above.

.2 Silencers, gaskets, etc., are to be installed in holes in frames prior to installation of frames; so to avoid filling these holes with grout during installation.

.3 Keep steel surfaces free of grout, tar, other bonding materials, and sealers; clean surfaces immediately following installation.

3.2 INSTALLATION

.1 Frame Installation

.1 Remove all steel spreaders, which are provided to avoid damage during shipping. Provide wood spreaders at base and midpoint of frames. Wood spreaders to be min. 38 x 89mm lumber, notched to clear frame stops; width to be equal to opening between jambs at header level. Wood spreaders to remain in place until frames are set permanently in walls.

.2 Set frames and screens plumb, square, aligned, without twist and at correct elevation. Maximum allowable limits of distortion shall be as follows:

.1	Plumbness:	Not more than 1.6 mm out of plumb, measured using a line from the intersection of vertical members and the head to the floor.
.2	Squareness:	Not more than 1.6 mm difference between diagonal measurements between corners.
.3	Alignment:	Not more than 1.6 mm, measured on jambs, through a horizontal line parallel to the plane of the wall.
.4	Twist:	Not more than 1.6 mm, measured at face corners of jambs, on parallel lines perpendicular to the plane of the wall.

.3 After installation, fill countersunk screw heads flush with frame and sand smooth ready for painting.

.2 Door Installation

.1 Install hollow metal doors plumb and true.

.2 Co-ordinate installation of hardware.

.3 Adjust operable parts to ensure proper operation. Lubricate using a suitable lubricant compatible with door and frame coatings.

3.3 TOUCH UP

.1 Remove rust, clean and touch up any damaged galvanizing with "ZRC 221" coating.

.2 Remove rust, clean and touch up any damaged paint with approved rust inhibitive primer.

3.4 CLEANING AND PROTECTION

.1 Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged products. Clean installed products in accordance with manufacturer's instructions before Owner's acceptance.

.2 Remove construction debris associated with this work from project site, and dispose of in accordance with applicable laws.

.3 Protect installed products and finished surfaces from damage during construction.

END OF SECTION

PART 1 - GENERAL

1.1 WORK INCLUDED

.1 This specification includes complete supply and installation of all hardware included on the hardware list included after this Section. The division of work is the responsibility of the General Contractor.

.2 Supply and installation of door hardware for hollow metal doors.

.3 Supply and installation of automatic operators and accessories.

.4 Supply and installation of low voltage wiring for hardware. Coordination with Contractor for provision of conduit.

.5 Coordination with electrical Subcontractor to ensure all electrical requirements are met and all back boxes and conduit are placed to suit hardware requirements.

.6 Supervision and inspection of door hardware installation by hardware supplier.

.7 Final inspection and certification by hardware supplier's Architectural Hardware Consultant (AHC).

1.2 RELATED SECTIONS

.1 Hollow Metal Doors and Frames Section 08 11 13

1.3 RELATED WORK BY CONTRACTOR OR OTHER SUBCONTRACTORS

.1 Installation of power supplies, compressor/control boxes, junction boxes by a licenced electrician in the Contractor's employ.

.2 Supply and installation of conduit for all low voltage wiring, by electrician.

1.4 REFERENCES

.1 Canadian General Standards Board (CGSB)

.1	CAN/CGSB-69.17-M	Bored and Pre-assembled Locks and Latches
.2	CAN/CGSB-69.18-M/ANSI/BHMA-A156.1	Butts & Hinges
.3	CAN/CGSB-69.19-M/ANSI/BHMA-A156-3	Exit Devices
.4	CAN/CGSB-69.20-M/ANSI/BHMA-A156-4	Door Controls (Closers)
.5	CAN/CGSB-69.29/ANSI/BHMA-A156-13	Mortise Locks & Latches
.6	CAN/CGSB-69.34/ANSI/BHMA-A156.18	Materials & Finishes

.2 Canadian Steel Door & Frame Manufacturers Association (CSDFMA), Canadian Metric Guide for Steel Doors & Frames (Modular Construction

.3 NFPA 80-Standard for Fire Doors and Windows

.4 Door and Hardware Institute
- .1 Recommended locations for Architectural Hardware for Standard Steel Doors and Frames
- .2 Recommended locations for Architectural Hardware for Flush Wood Doors
- .3 Sequence Format for Hardware Schedule
- .4 Key Systems and Nomenclature
- .5 Abbreviations and Symbols used in Architectural Door and Hardware Schedules and Specifications,
- .6 Installation Guide for Doors and Hardware

1.5 **ALLOWANCES**

.1 A cash allowance is included in the contract to cover the cost of an independent inspection and is to be expended at the Owner's discretion. Provision of this allowance shall not infer the deletion of any requirements for inspection by the hardware supplier, as specified below.

.2 Expend allowance as directed by the Consultant.

1.6 **GENERAL REQUIREMENTS**

.1 Hardware shall comply with requirements of authorities having jurisdiction.

.2 Hardware for doors in fire separations and exit doors shall be certified by a Canadian Certification Organization accredited by the Standards Council of Canada.

.3 All door closers shall have back checking features and shall be of proper size to operate door efficiently.

.4 Confirm all kick plate and threshold sizes before ordering them.

.5 Use no wall stops on drywall.

.6 Exposed screws for installing hardware shall have Phillips or Robertson heads.

.7 Rim panic device strikes shall be mortise type application. Equip panic devices with six bolts.

.8 Confirm degree of swing for door holders, closers, etc.

1.7 **SUBMITTALS**

.1 Door and Hardware List

.1 Submit a detailed final door hardware list prepared by a qualified Architectural Hardware Consultant.

.2 List all items to be furnished and delivered under this section.

.3 Indicate door hardware proposed, identifying each item by manufacturer name, manufacturer's catalogue model number, material, function, finish, location, and other pertinent information.

.4 The list shall be in the same format as the door hardware list bound in this project manual.

.5 Review of the Final Door Hardware List by the Consultant and the Owner shall not relieve the Contractor from responsibility for providing all required door hardware.

.2 Product Data:

.1 Within ten (10) calendar days after award of hardware supply subcontract, submit:
In a three ring binder six (6) copies of product data sheets with the finish hardware schedule showing all items of hardware to be used on the project. Identify each hardware item supplied under this section by product number, function, hand & finish. Finish hardware schedule to be in conformance of door and Hardware Institute Standards. Six (6) copies of catalogue cuts and other data required to identify individual components listed and/or to demonstrate compliance with specified requirements for all items contained in the finish hardware set. Submission of manufacturer's full line brochure is not acceptable.

.3 Samples:

.1 When requested in writing, provide (to the Consultants Office) one sample of each hardware item complete with fasteners, within fifteen (15) calendar days of award of a purchase order. Samples to be clearly labelled with their hardware schedule designation, installation location, and manufacturers' name and model number. Samples will be returned; approved samples may be incorporated into the work.

.2 Substitute new samples for those rejected by the Consultant.

.3 Do not supply door hardware to the site until all samples are approved by the Consultant.

.4 Templates:

.1 Furnish templates within ten (10) calendar days of being requested by the Consultant and/or door & frame manufacturer, the Contractor must submit templates for door and frame preparations and/or mounting of finish hardware items, and identify each template by label indicating applicable specification paragraph number, brand name & number, door number & hardware package number.

.5 Keying Schedule:

.1 Provide three (3) copies of keying schedule for review prepared and detailed in Reference 1.5.5. Include all special keying notes and stamping instructions. Locks and cylinders are not to be ordered until the key schedule has been approved by the owner.

.6 Wiring Diagrams:

.1 Furnish a written description of the functional use of all electrical hardware. Include door and frame elevations showing the location of each item of electrical hardware to be installed, including a diagram showing number and size of all conductors. Include drawings showing all terminal connections

.7 Operations and Maintenance Data:

.1 Prior to Substantial Performance, provide the following information for inclusion in the Maintenance manuals, in accordance with Section 01 78 00, Closeout Submittals:

.1 Name of hardware distributor, address and contact name
.2 Copy of final "as-built" finish hardware schedule
.3 Wiring diagrams, elevations, risers, point to point
.4 Copy of final keying schedule
.5 Copy of floor plans with keying nomenclature assigned to door numbers as per the approved keying schedule
.6 Maintenance instructions for each product
.7 Catalogue cut sheets and product specifications for each product
.8 Parts list for each product
.9 Installation instructions for each product
.10 A copy of the certification letter from the AHC, confirming the correct supply and installation of hardware, as required by Subsection 3.3, below.

.8 Maintenance Materials:

.1 Provide maintenance materials, in accordance with Section 01 78 00, Closeout Submittals.

.2 Supply four sets of wrenches for door closers, locksets, latchsets, and exit devices.

.3 Supply five sets of other special parts or tools required for proper maintenance and adjustment of door hardware, including those used for locks/passage/privacy, all type of door closers, and all exit devices.

1.8 **QUALITY ASSURANCE**

.1 Contractor shall coordinate a hardware pre-installation meeting with hardware installer, hardware supplier and hardware sub-consultant (original hardware specifier). Payment for original hardware sub-consultant's time to attend meeting shall be paid for through the cash allowance included for inspections (except where hardware supplier is also the hardware sub-consultant). Review installation procedures with the hardware suppliers.

.2 Supplier and installer shall hold regular review meetings (at least every second week) during the installation period. Submit minutes of meetings to the Consultant.

.3 The Contract contains a cash allowance for independent inspection, as noted in subsection 1.5, above. Supplier and installer shall attend such inspections; costs associated with their attendance shall be included in the Contract.

.4 Substitutes:

.1 Only approved products specified will be accepted. Make substitution request in accordance with Division 01. Include product data and indicate benefit to the project.

.5 Supplier Qualifications:

.1 Successful hardware distributor to have a minimum of five (5) years experience in the door and hardware industry. The distributor to have on staff an Architectural Hardware Consultant (A.H.C.) who will be responsible for scheduling, detailing, ordering and co-ordination of the finishing hardware for this project. This individual shall be required for jobsite visits, as outlined below and when so requested by the Architect.

.6 Designated Installer:

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

1.9 PRODUCT DELIVERY, STORAGE AND HANDLING

.1 Marking and Packaging:

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

.2 Delivery:

.1 Deliver hardware to those who are to install it, complete with keys, templates and installation instructions together with all required screws, expansion shields, anchors, jigs and other related accessories for satisfactory attaching or installing hardware.

.3 Storage

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

1.10 WARRANTY

.1 Provide warranties by the accepted manufacturers:

Hardware Item	Length of Warranty
Mortise Hinges	Lifetime
Locks(ND-Series)	7 yrs.
Locks(All other Series)	2 yrs.
Exit Devices	3 yrs.
Door closers -mechanical	10 yrs.
Door Operators - Electro mechanical	2 yrs.
Door Hold open Devices - Electro mechanical	2 yrs.
Overhead stops/holders	2 yr.
Floor/Wall stops	2 yr.
Electric Strikes/Key Switches/Power Supplies	2 yr.

.2 **Where manufacturers standard warranty period exceeds these requirements, it shall prevail.**

.3 Door hardware warranties shall cover all defects in material and workmanship that become apparent during the warranty period and such defects shall be made good or the defective product shall be replaced, to the satisfaction of the Owner and at no cost to the Owner.

1.11 **MAINTENANCE**

.1 Maintenance Service:

.1 After the building is occupied arrange an appointment with the Owner's maintenance staff for instruction of proper use, servicing, adjusting and lubrication of hardware furnished. Submit to the consultant a list of attendees and meeting date.

.2 Extra Materials:

.1 Provide Owner with maintenance materials as specified above.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

.1 Products listed in the finishing hardware schedule are from the manufacturers listed below:

ITEM	MANUFACTURER NAME
Full Mortise Hinges	Ives
Continuous Hinges	Ives
Locksets, Latchsets/Deadbolts	Schlage
Exit Devices	Von Duprin
Cylinders	By Royal Locksmith
Flush Bolts/Constant Latching Flush Bolts	Ives
Door Closers	LCN
Overhead Door Holders/Stops	Glynn Johnson
Door Pulls/Flatware	Canadian Builders Hardware
Wall/Floor Stops	Ives
Weather/Smoke/Sound Seals	KN Crowder
Door Sweeps/Thresholds	KN Crowder
Automatic Door Operators/Actuators	LCN
Electric Strikes	Von Duprin
Power Supplies	Von Duprin

2.2 MATERIALS

.1 Screws and Fasteners:

.1 All screws shall be matching finish to their product and shall be manufacturer's standard. Door closers, door holders and exit devices installed on fire rated wood doors and hollow metal doors shall be attached with sex nuts and bolts.

.2 Materials shall be as listed on the Door Hardware List included in these specifications.

.3 Note: all low energy operators and low voltage wiring are to be supplied and installed by this section

2.3 **FINISHES**

.1 Unless other wise specified, all finishes to be brushed chrome (626).

.2 Finishes are specified as follows:

Item	BHMA#	Description	Base Materials
Hinges	630	satin,stainless steel	stainless steel
Hinges	652	satin chrome plated	steel
Continuous Hinges	689	anodized aluminum	aluminum
Lock Trim	626	satin chrome plated	brass/bronze
Exit Devices	626	satin chrome plated	brass/bronze
Door Closer	689	powder coat aluminum	steel
Magnetic Wall Holders	689	powder coat aluminum	steel
Door Pulls	630	satin stainless steel	stainless steel
Protective Plate	630	satin stainless steel	stainless steel
Door Stops/Holders			
Overhead	630	satin stainless steel	stainless steel
Wall/Floor	626	satin chrome plated	brass/bronze
Thresholds	628	anodized aluminum	aluminum
Weatherstrip	628	anodized aluminum	aluminum
Miscellaneous			
Mullions	689	powder coat aluminum	steel
Electric Strikes	630	satin stainless steel	stainless steel

2.4 **CYLINDERS, KEYING SYSTEMS AND KEY CONTROL**

.1 Meet with the Owner to finalize keying requirements and obtain keying instructions in writing as outlined in Division 01. All cylinders to be furnished to an existing Medeco keyway, key to the owner existing key system.

.2 Provide temporary construction keying system during construction period at all locks. Permanent keys to be furnished to the Owner's Representative prior as soon as they are available. The Owner or Owner's Security Agent will void the operation of the construction keys.

.3 Permanent cylinders to be keyed by factory, combinated in sets or subsets, master keyed or great grand master keyed, as directed by Owner, to conform to the existing master keying system. Permanent keys, keyblanks and cylinders shall be stamped with the applicable blind code for identification. These visual key control marks or codes will not include the actual key cuts. Stamp cylinders with concealed visual keying for added security. Permanent keys will also be stamped "Patented". Keys and cylinder identification stamping to be approved by Architect and Owner. Failure to properly comply with these requirements may be cause to require replacement of all or any part of the cylinders and keys involved as deemed necessary at no additional cost to the Owner.

.4 Equip locks and cylinders with patent protected, full size cylinders with nickel silver blocking pin to check for patented feature on keys. Provide a minimum of six pins with nickel silver bottom pins. Cylinders must allow for multiplex master keying, combinated to Owner's instructions.

.5 Provide complete cross-index system, place keys on markers and hooks in the cabinet as determined by the finial key schedule. Provide one each key cabinet and hinged panel type cabinet for wall mounting. See misc. hardware group for model number.

.6 Deliver all permanent key blanks and other security keys direct to Owner's representative from factory by secure courier, return receipt requested. Failure to properly comply with these requirements may be cause to require replacement of all or any part of the cylinders and keys involved as deemed necessary at no additional cost to the Owner.

.7 Furnish keys in following quantities, furnish a sum total of three (3) change keys per cylinder. This sum total of keys to be cut and furnished as directed by Owner. Any unused balance of cut change keys shall be furnished as key blanks directly to Owner with the cut Keys.

.8 **All keying requirements to be confirmed by Owner.**

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Ensure that doors and frames are properly prepared and reinforced to receive finish hardware prior to installation.

.2 Ensure that door frames and finished floor are sufficiently plumb and level to permit proper engagement and operation of hardware.

.3 Submit in writing a list of deficiencies to supervising consultant prior to installation of finished hardware. Do not proceed until deficiencies are corrected. Commencement of installation will indicate acceptance of existing conditions.

3.2 INSTALLATION

.1 Install hardware at mounting heights as specified in the manufacturers templates or specific references in approved hardware schedule or approved elevation drawings.

.2 Where mounting height is not otherwise specified, install hardware at mounting heights as per referenced standards.

.3 Install hardware using only manufacturer supplied and approved fasteners in strict adherence with manufacturers published installation instructions.

.4 Ensure that all locksets / latchsets / deadlocks are of the correct hand before installation to ensure that the cylinder is in the correct position. **Handing is part of installation procedure.**

.5 Ensure that all exit devices are of the correct hand and adjust device cam for proper outside trim function prior to installation. **Handing is part of installation procedure.**

.6 Follow all manufactures installation instructions. Adjustment is inclusive of spring power, closing speed, latching speed and back-check at the time of installation.

.7 Delayed action door closers are to be adjusted to forty (40) second delay for handicapped accessibility and movement of materials. Time period to be approved by Owner.

.8 Install head seal prior to installation of "PA"-parallel arm mounted door closers and push side mounted door stops/holders. Trim, cut and notch thresholds and saddles neatly to minimally fit the profile of the door frame. Install thresholds and saddles in a bed of caulking completely sealing the underside from water and air penetration.

.9 Counter sink through bolt of door pull under push plate during installation.

.10 Install blocking material of sufficient type and size in cavities of metal and wood stud walls and partitions. Located concave and convex type door bumpers at the appropriate height to properly contact protruding door trim.

3.3 FIELD QUALITY CONTROL

.1 Verify each door leaf opens closes and latches properly. Inspect fire rated openings to ensure they are installed in compliance with NFPA 80 requirements. Test access control system and electrified hardware devices for proper operation, owner to sign off on verification of operation. Verify electric door release hardware operates properly upon activation of the fire alarm system.

.2 Finishing Hardware supplier's Architectural Hardware Consultant shall perform on-site inspections during hardware installation and provide inspection reports listing progress of work, unacceptable work and corrective measures. Repair or replace as directed by the Consultant.

.3 Upon completion of finish hardware installation, the Architectural Hardware Consultant and the Contractor shall inspect work and provide a list of all hardware deficiencies. The Architectural Hardware Consultant shall re-inspect when notified by the Contractor as to the clearing of deficiencies. Final inspection must ensure all hardware items operate as per manufacture requirements. Coordinate inspections with manufacturer's representatives as required to establish warranties.

.4 Once any deficiencies have been corrected, the Architectural Hardware Consultant and the Contractor shall certify in writing that all hardware items and their installation are in accord with requirements of Contract Documents.

.5 At the discretion of the Owner, a third party inspection may be required. Contractor shall arrange for post installation review of hardware by an independent hardware sub-consultant appointed by, or acceptable to, the Owner (original hardware specifier or other independent hardware sub-consultant). The deficiency report shall be prepared by the independent hardware sub-consultant. The cost of the first inspection and one follow-up inspection only, shall be paid through cash allowance included for hardware inspection. The cost of any subsequent inspections, required for the correction of deficiencies, shall be borne by the Contractor.

3.4 ADJUSTING AND CLEANING

.1 Check and make final adjustments to each operating item of hardware on each door to ensure proper operation and function.

.2 All hardware to be left clean and free of disfigurements.

.3 Instruct owner personnel in the proper operation, adjustment and maintenance of hardware.

.4 Check all locked doors against approved keying schedule.

3.5 **PROTECTION**

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

END OF SECTION

Service Counter at Cassie Campbell Renovations

Hardware Group No. 01

For use on Door #(s):
N102

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
3	EA	HINGE	5BB1HW 5 X 4.5			652	IVE
1	EA	MORTISE CYLINDER	BY OWNER			626	UNK
1	EA	STOREROOM LOCK	L9080P 06B CMK			626	SCH
1	EA	ELECTRIC STRIKE	6211 FSE DS CON 12/16/24/28 VAC/VDC			630	VON
1	EA	OH STOP	100S ADJ			630	GLY
1	EA	MOUNTING PLATE	9530-18			689	LCN
1	EA	SURF. AUTO OPERATOR	9531 AS REQ (120/240 VAC)			ANCLR	LCN
2	EA	ACTUATOR, TOUCH	8310-836T			630	LCN
1	EA	KICK PLATE	8400 8" X LDW			630	IVE
1	EA	SMOKE SEAL	188SBK (1 X W, 2 X H)			BK	ZER
1	EA	ADVANCED LOGIC RELAY	CX-33				CAM
1	EA	CARD READER	BY DIV 28				UNK
1	EA	DOOR CONTACT	679-05 TO SUIT DR MATERIAL			BLK	SCE

MODE OF OPERATION

DOOR CLOSED AND LOCKED
PROPER CREDENTIAL WILL UNLATCH THE ELECTRIC STRIKE
PRESSING OUTSIDE ACTUATOR WILL BEGIN SEQUENCING OF THE AUTOMATIC OPERATOR
INSIDE ACTUATOR ALWAYS ALLOW SEQUENCING OF THE AUTOMATIC OPERATOR
FREE EGRESS AT ALL TIMES

Service Counter at Cassie Campbell Renovations

Hardware Group No. 02

For use on Door #(s):
C104
Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
3	EA	HINGE	5BB1HW 5 X 4.5 NRP			652	IVE
1	EA	MORTISE CYLINDER	BY OWNER			626	UNK
1	EA	PASSAGE SET	L9010 06B			626	SCH
1	EA	ELECTRIC STRIKE	6211 FSE DS CON 12/16/24/28 VAC/VDC			630	VON
1	EA	MAGNETIC LOCK	M420P ATS/LED 12/24 VDC			628	SCE
1	EA	OH STOP	100S ADJ			630	GLY
1	EA	MOUNTING PLATE	9530-18			689	LCN
1	EA	SURF. AUTO OPERATOR	9531 AS REQ (120/240 VAC)			ANCLR	LCN
2	EA	ACTUATOR, TOUCH	8310-836T			630	LCN
1	EA	KICK PLATE	8400 8" X LDW			630	IVE
1	EA	SMOKE SEAL	188SBK (1 X W, 2 X H)			BK	ZER
1	EA	ADVANCED LOGIC RELAY	CX-33				CAM
2	EA	CARD READER	BY DIV 28				UNK
1	EA	KEY SWITCH	653-04 L2 12/24 VDC			630	SCE
1	EA	DOOR CONTACT	679-05 TO SUIT DR MATERIAL			BLK	SCE
1	EA	POWER SUPPLY	PS902 FA900 120/240 VAC			LGR	SCE

MODE OF OPERATION

DOOR CLOSED AND LOCKED BY MAGLOCK
PROPER CREDENTIAL ON EITHER SIDE WILL UNLATCH THE ELECTRIC STRIKE AND DROP POWER TO THE MAGLOCK
PRESSING ACTUATOR WILL BEGIN SEQUENCING OF THE AUTOMATIC OPERATOR
ON LOSS OF POWER OF FIRE ALARM ACTIVATION
FREE EGRESS AT ALL TIMES
KEY SWITCH USED TO RESET MAGLOCK

Service Counter at Gore Meadows Renovations

Hardware Group No. 001

For use on Door #(s):
1007
Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
6	EA	HINGE	5BB1HW 5 X 4.5			652	IVE
2	EA	FIRE EXIT HARDWARE	9849-L-BE-F-4'-03			626	VON
2	EA	SURFACE CLOSER	4040XP EDA			689	LCN
2	EA	KICK PLATE	8400 8" X LDW			630	IVE
2	EA	FIRE/LIFE WALL MAG	SEM7850			689	LCN
1	EA	SMOKE SEAL	188SBK (1 X W, 2 X H)			BK	ZER
2	SET	MEETING STILE	328AA (2 X H)			AA	ZER

NOTE: HOLD OPEN TIED TO FIRE-ALARM

Hardware Group No. 002

For use on Door #(s):
1008
Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
3	EA	HINGE	5BB1HW 5 X 4.5			652	IVE
1	EA	MORTISE CYLINDER	BY OWNER			626	UNK
1	EA	STOREROOM LOCK	L9080P 03B CMK			626	SCH
1	EA	ELECTRIC STRIKE	6211 FSE DS CON 12/16/24/28 VAC/VDC			630	VON
1	EA	OH STOP	100S ADJ			630	GLY
1	EA	MOUNTING PLATE	9530-18			689	LCN
1	EA	SURF. AUTO OPERATOR	9531 AS REQ (120/240 VAC)			ANCL R	LCN
2	EA	ACTUATOR, TOUCH	8310-836T			630	LCN
1	EA	KICK PLATE	8400 8" X LDW			630	IVE
1	EA	SMOKE SEAL	188SBK (1 X W, 2 X H)			BK	ZER
1	EA	ADVANCED LOGIC RELAY	CX-33				CAM
1	EA	DOOR CONTACT	679-05 TO SUIT DR MATERIAL			BLK	SCE
1	EA	CARD READER	RE-USE EXISTING				UNK

MODE OF OPERATION

DOOR CLOSED AND LOCKED
PROPER CREDENTIAL WILL UNLATCH THE ELECTRIC STRIKE
PRESSING OUTSIDE ACTUATOR WILL BEGIN SEQUENCING OF THE AUTOMATIC OPERATOR
INSIDE ACTUATOR ALWAYS ALLOW SEQUENCING OF THE AUTOMATIC OPERATOR
FREE EGRESS AT ALL TIMES

PART 1 - GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

.1	Architectural Casework	Section 06 41 13
.2	Plastic Laminate	Section 06 41 19
.3	Joint Sealants	Section 07 92 00

1.2 REFERENCES

.1 Canadian General Standards Board (CGSB):

.1	CAN/CGSB-12.1	Tempered or Laminated Safety Glass
.2	CAN/CGSB-12.8	Insulating Glass Units
.3	CAN/CGSB-12.9	Spandrel Glass
.4	CAN/CGSB-12.10	Glass, Light and Heat Reflecting
.5	CAN/CGSB-12.20	Structural Design of Glass for Buildings

.2 Underwriter's Laboratory Canada (ULC)

.1	CAN4-S104	Standard Method for Fire Tests of Door Assemblies
.2	CAN4-S106	Standard Method for Fire Tests of Window and Glass Block Assemblies
.3	CAN/ULC-S101	Fire Endurance Tests of Building Construction and Materials

.3 American Society for Testing and Materials (ASTM):

.1	ASTM E2190	Insulating Glass Unit Performance and Evaluation

.4 Glass Association of North America.

.1 GANA Glazing Manual

.2 GANA Sealant Manual

1.3 QUALITY ASSURANCE

.1 Coordinate with manufacturer of cabinetry and plastic laminate work that the fire glass provided for the work is an acceptable component for the work, and can be included as part of their finished products.

.2 Inform Consultant of any discrepancies in drawings or details.

1.4 WARRANTY

.1 Warranty all glass to be free from defects in workmanship and materials of any kind for a period of **ten (10) years**.

.2 Warranty all fire rated glass to be free from defects in workmanship and materials of any kind for a period of **five (5) years**.

.3 Replace (including removal and installation) all glass found to be defective.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Protective Barrier:

.1 Glass: 10mm thick glass, with all edges smoothed and polished.

.2 Hardware: by C.R. Laurence Co. Inc.
.1 Partition Posts: Brushed Stainless 24 h x 1h HB55 Slimline Series Round Partition Posts with Concealed Lug Base, Flat Cap, Z-Series Clamps
.1 End Partition Post: model HB55EBS
.2 Centre Partition Post: model HB55CBS
.3 Corner Partition Post: model HB55LBS

.2 Standoff Mounts: Brushed Stainless Slot Mount Standoff for 10mm panels, model SM38SC (at accessible service window).

.3 Hinges: Brushed Stain Chrome, Vienna Series, soft close hinges
.1 Glass-to-Wall Mount, 037 Series, model V1E037BSC, 2 total
.2 Glass-to-Glass Mount, 092 Series, model V1E092SC, 1 total

.4 Door Pulls: model LP36BSC, Brushed Satin Chrome 36" Ladder Style Back-to-Back Pull Handles, 24" Centre-to-Centre mounts

.5 Richlieu product #701GHLR1091700z

.6 Setting blocks: neoprene, as specified in Section 08 81 00

.7 Provide rubber pads to prevent movement of glass within brackets and at door hardware.

.8 Provide all fasteners required for the complete installation

.3 Sealant: Spectrem 2 by Trenco, high-performance, single-component, neutralcure, medium-modulus silicone sealant.

.2 Glazing accessories:

.1 Setting Blocks: Neoprene, 80 durometer hardness, 102mm x 6mm width to suit glass, to extend from the fixed stop to the opposite face of the glazing.

.2 Spacer Blocks: Neoprene, thickness to provide a minimum glass to face clearance of 3mm.

.3 Glazing Compounds:
.1 Tapes: Pre-formed polyisobutylene- butyl glazing tape with integral shim strip, 10-15 durometer hardness, paper release, black; Tremco “Polyshim” or approved equal.

.2 Gasket: Black neoprene "U" cavity type with lock strip.
.3 Sealant: One component silicone; Spectrum 2 by Tremco.

.4 Acoustic Sealant: Tremco Acoustical Sealant

PART 3 - EXECUTION

3.1 PREPARATION

.1 Examine millwork, with glazier present, for compliance with the following:
.1 Manufacturing and installation tolerances, including size, squareness, offsets at corners.
.2 Minimum required face or edge clearances.
.3 Edge damage or face imperfections.

.2 Do not proceed with glazing until unsatisfactory conditions have been corrected. Provide a list of deficiencies prior to commencing installation of glazing.

.3 Remove any coatings not firmly bonded to substrates.

3.2 SITE CUTTING OF GLASS

.1 Site cutting of glass is prohibited except with the express permission of the Consultant after review of the Contractor's proposed methods.

3.3 INSTALLATION

.1 Conform to the recommendations of the Glass Association of North America (GANA) Glazing Manual, most recent edition.

.2 Inspect glass as installation proceeds. Discard any glass edge damage that could affect performance. Discard any glass with visible defects.

.3 Protect edges of glass from damage during handling and installation.

.4 Place glass on setting blocks placed at quarter points; install with glazing tape or dry gasket glazing system, channel shape to wrap completely around glass edge, or other approved means to prevent rattle.

3.4 CLEANING

.1 As work progresses clean all glass, including fittings. Remove all setting and glazing compounds from adjacent surfaces. Remove all finger and hand prints and other soil.

.2 Protect glass from contact with contaminating substances during construction.

.3 Clean and wash glass by methods recommended by glass manufacturers.

.4 All glass shall be cleaned immediately prior to the Consultant's review for Substantial Performance and again immediately prior to occupancy of the building by the Owner.

END OF SECTION

PART 1 - GENERAL

1.1 WORK INCLUDED

.1 Patching and repair of existing and new concrete slab, to prepare for flooring.

.2 Apply moisture reduction barrier over all new sections of concrete floor scheduled to receive any floor finish.

.3 Levelling of concrete floors.

1.2 RELATED WORK

.1	Resilient Flooring	Section 09 65 00
.2	Ceramic Tiling	Section 09 30 00
.3	Painting	Section 09 90 00

1.3 SUBMITTALS

.1 Submit product data sheets, MSDS, and installation instructions.

1.4 STORAGE

.1 Store materials in original containers in a dry area at normal room temperature (approximately 20°C).

PART 2 - MATERIALS

2.1 MATERIALS

.1 Patching Compound:
- .1 Ardifix by Ardex Americas; two-part polyurethane repair compound

.2 Moisture-Reduction Barrier:
- .1 MC Rapid Moisture Control System by Ardex, one-coat; 100% solids epoxy moisture management system, for suppressing moisture vapour emissions in new or existing concrete.

.3 Levelling Agent:
- .1 K60 Arditex Rapid Setting Latex Smoothing and Levelling Compound by Ardex; Portland cement based, self-smoothing, trowelable, latex levelling compound.

.4 Equivalent products as manufactured by Mapei or Laticrete will also be considered, subject to proof of equivalent properties and capabilities. Materials must be compatible with each other and with mortars and adhesives used for floor finishes.

PART 3 - EXECUTION

3.1 GENERAL

.1 Confirm environmental requirements with product manufacturer.

.2 All moving joints and moving cracks must be continuous through entire floor system; install flexible compound designed for this purpose.

.3 Flooring restoration and moisture barrier compounds to be "feathered" out at intersection with existing flooring to avoid raising floor level at junction between new and existing flooring.

.4 Flooring restoration and moisture control system must be in place prior to installation of partition walls. Moisture control barrier must be continuous under new partitions and furring.

3.2 EXISTING CONDITIONS

.1 Examine surfaces to receive the work of this Section and proceed only when conditions are satisfactory for a proper installation.

.2 Do not apply over gypsum-based substrates or gypsum-based patching compounds.

.3 Verify substrate is free of bond-inhibiting or bond-breaking materials such as curing compounds and dust.

.4 Test concrete substrate using a Calcium Chloride Test (ASTM F1869) and concrete moisture probes to measure the relative humidity. Concrete substrate shall be acclimated to to 23°C and 50% relative humidity prior to testing.

3.3 SURFACE PREPARATION

.1 Substrate must be structurally sound, dry, solid and stable. Clean surface of dust, dirt, oil, grease, paint, curing compounds, concrete sealers, loosely bonded toppings, old adhesive residues (including cutback adhesive residue) and any other substances that may prevent or reduce adhesion, by mechanical methods acceptable to the Consultant and the product manufacturer. No chemical etching is permitted.

.2 Mechanically prepare cracks as well as control, construction and expansion joints with a diamond crack-chasing/ concrete-cutting blade. Overcut the joint width to obtain a sound substrate. Use an industrial type of vacuum to completely remove the dust and contaminants. Use an appropriate attachment with a rubber seal around the suction end of the nozzle for maximum pickup of contaminates and dust.

.3 Patch existing concrete floors with patching compound in accordance with manufacturer’s printed instructions. Patch concrete before applying moisture reduction barrier.

3.4 INSTALLATION - MOISTURE REDUCTION BARRIER

.1 Apply moisture reduction barrier in accordance with manufacturers printed instructions. Apply to all new concrete, and to existing concrete to receive new floor finishes.

.2 Apply using application methods and tools prescribed by the manufacturer. Allow 24 hours before re-coating.

.3 Apply product at rate recommended by the manufacturer; assume median of application rate range is required for first application. Apply additional product as required to ensure complete coverage.

.4 Finished application shall cover concrete floors completely, without voids or pinholes.

.5 Allow moisture reduction barrier to cure as recommended by the manufacturer, generally for a minimum of 4 hours and a maximum of 8 hours, prior to installing smoothing and levelling compound.

.6 Expansion and other movement joints must continue through finished floor system.

3.5 **INSTALLATION - SMOOTHING / LEVELLING COMPOUND**

.1 Apply smoothing and levelling compound over moisture reduction barrier, to smooth and level floor prior to application of resilient flooring. Surface must be properly prepared, in accordance with manufacturers requirements.

.2 Protect from excessive heat or drafty conditions during curing period.

.3 Consult manufacturer to confirm when flooring materials may be installed. Do not apply adhesive or flooring before material is completely dry; for ARDEX K 60, cure 16-24 hours at 21°C (70°F) prior to installing finish flooring.

3.6 **CLEANUP**

.1 Fresh, wet materials can be cleaned off with soapy, warm water.

.2 Cured material must be mechanically removed from surfaces.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

.1	Rough Carpentry	Section 06 10 00
.2	Thermal and acoustic insulation	Section 07 21 00
.3	Hollow Metal Doors and Frames	Section 08 11 13
.4	Gypsum Board	Section 09 29 00
.5	Acoustic tile ceilings, suspension systems	Section 09 51 00

1.2 REFERENCES

.1 CSA S136 North American Specification for the Design of Cold-Formed Steel Structural Members

.2 CAN/ULC-S101 Standard Methods of Fire Endurance Tests of Building Construction and Materials

.3 ASTM International

.1	A641/A641M	Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire
.2	A653/A653M	Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
.3	A792/A792M	Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process
.4	A1003	Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic coated for Cold-Formed Framing Members
.5	C645	Standard Specification for Nonstructural Steel Framing Members
.6	C754	Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products
.7	C841	Standard Specification for Installation of Interior Lathing and Furring
.8	C1002	Standard Specification for Steel-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster bases to Wood Studs or Steel Studs
.9	E90	Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
.10	E413	Classification for Rating Sound Insulation
.11	E488	Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements
.12	E1190	Standard Test Methods for Strength of Power-Actuated Fasteners Installed in Structural Members

.4 Canadian Sheet Steel Building Institute (CSSBI) Technical Bulletins:

.1	Volume 7, Number 1:	Maximum Height Tables for Interior Non-Loadbearing Partitions
.2	Volume 7, Number 3:	Specification of Non-Load Bearing Steel Studs
.3	Volume 7, Number 4:	Applications of Non-Load Bearing Steel Studs
.4	Volume 7, Number 8:	Non-Loadbearing Steel Stud Composite Limiting Height Calculation for Canadian Applications

1.3 **QUALITY ASSURANCE**

.1 Fire-Test-Response Characteristics:

.1 For fire-resistance-rated assemblies that incorporate non-loadbearing interior steel framing, provide materials and construction identical to those tested in assembly indicated according to CAN/ULS-S101.

.2 STC-Rated Assemblies:

.1 For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E90 and classified according to ASTM E413.

1.4 **DELIVERY AND STORAGE**

.1 Handle and store materials carefully to prevent damage.

.2 Obtain approval of proposed locations for stockpiling material. Provide any necessary temporary covers, skids and the like.

.3 Do not install damaged or deteriorated material but remove from Site.

1.5 **RELATIONS WITH OTHER TRADES**

.1 Coordinate with other trades for the locations of items to be framed in and framed around, and locations of items to be wall mounted. Provide blocking at appropriate locations behind all wall mounted cabinetry, heavy millwork, washroom accessories, mirrors, equipment, service fittings, fixtures, and other surface mounted items indicated on the drawings.

.2 Co-ordinate with mechanical and electrical trades to accommodate installation of all services and fittings prior to application of wall board or sheathing.

.3 Co-ordinate with forces installing insulation and vapour barrier in exterior soffits.

PART 2 - PRODUCTS

2.1 **MATERIALS**

.1 Metal framing shall be as manufactured by Bailey Metal Products, as specified below. Equivalent products, where available, will be accepted from Steelform Group, Imperial Group, DCM Metal, or Trebor Building Products. Metal framing shall conform to ASTM C645.

.2 Metal framing shall be fabricated from sheet steel with minimum base thickness of 0.455mm (18 mils), galvanized, and specially designed for application of impact-resistant or abuse-resistant gypsum board. Do not use standard 25 gauge framing for impact-resistant or abuse-resistant gypsum panels; where specialty framing is not available, provide framing with a minimum base thickness of 0.836 mm, (33 mils).

.3 Metal Studs and Track:
- .1 Fabricated from sheet steel, galvanized; depths as indicated on drawings.
- .2 Typical studs and track shall be Bailey B18 Hard Board Stud, minimum 0.455mm (18mils) base metal thickness and 50 ksi (Grade 50) tensile strength, with min. 36.5mm (17/16") flange; required where abuse-resistant or impact-resistant panels, or cement board, are to be applied. Note that typical panels are abuse resistant for this project.
- .3 Where standard gypsum panels are permitted, Bailey Platinum Plus steel framing, minimum 0.455mm (25 ga), is the minimum required for framing.
- .4 Base thickness shall be 0.455mm and 0.836mm, as specified above.
- .5 Conform to manufacturer's maximum height tables for steel studs. For heights in excess of height limitations for 0.455mm steel studs, use studs with base metal thickness of 0.836mm (33 mils).
- .6 Track shall be of same base metal thickness as studs, with minimum 50mm deep flanges. Bottom track shall be single piece. Top track shall be single piece or double track, manufactured to prevent cracking of applied finishes resulting from deflection of structure above.

.4 Metal Furring Channels:
- .1 sheet galvanized steel channel and accessories as manufactured by Bailey Metal Products, or approved alternate; to ASTM C645.
- .2 minimum 0.836 mm, design thickness, (20 ga) steel furring channels required at walls, and where abuse resistant or impact-resistant panels are to be applied.
- .3 minimum 0.455mm (25 ga) required for all other furring channels.
- .4 Hat channels shall be minimum 22mm deep, with minimum 12.7mm flanges.
- .5 Resilient furring channels shall be designed to reduce sound transmission and shall have a minimum depth of 12.7 mm.

.5 Carrying Channels:
- .1 Channels shall conform to ASTM C754 and shall be cold-firmed from steel with minimum 228 MPa yield strength and 1.37 mm base steel thickness.
- .2 Channels shall have a minimum coating of Z120 galvanizing in accordance with ASTM A653/A653M.
- .3 Carrying channels shall have minimum 12.7mm wide flanges and minimum depth of 38mm.

.6 Bracing and Blocking:
- .1 Provide flat straps and backing plates of galvanized sheet steel for blocking and bracing; length and width as required.
- .2 Minimum base steel thickness shall match studs or furring in which it is installed.
- .3 Width of bracing shall match width of studs. Width of blocking shall be as required to sustain loading of wall mounted items.

.7 Channel Bridging:
- .1 Channel bridging shall have a minimum base steel thickness of 0.455mm with minimum 12.7 mm wide flanges and minimum depth of 19 mm.

.8 Fasteners for Metal Framing:
- .1 Fasteners to be of type, material, size, corrosion resistance, strength, and holding power, as required to fasten steel members to substrates in accordance with ASTM C1002.

.9 Hanger wire: minimum 3.77mm (9ga) galvanized steel wire.

.10 Tie Wire: minimum 1.5mm (16 ga) galvanized, soft annealed, steel wire.

.11 Screws: CGC Brand Screws (or approved equal) of type recommended by the board manufacturer.

.12 Ceiling Anchors: Self drilling tie wire anchors, Phillips "Red Head" T-32 or approved equal.

.13 Thermal Break: Permanent adhesive faced rubberized cork, 3 mm thick by width of stud on channel to be used between masonry in exterior wall and metal furring channels.

.14 Dampproofing: 6.3mm thick closed cell polyethylene foam strip, by width of bottom track.

.15 Acoustic sealant is specified in Section 09 29 00.

.16 Note that where fire rated assemblies are required, the materials shall be of the types used in the fire test and listed on the tested design documentation.

PART 3 - EXECUTION

3.1 GENERAL

.1 Provide plumb, straight, level, rigid, and secure installation. Failing to achieve this result shall be cause for rejection and reinstallation of this work.

.2 Where walls run parallel and under steel joists, the joists shall be framed both sides, for enclosing with gypsum board to provide sound barrier between rooms.

3.2 STEEL STUD SYSTEM (PARTITION) INSTALLATION

.1 Conform to the guidelines for metal framing contained in The Gypsum Construction Handbook, CSA A82.31, and these specifications. The most stringent requirements shall apply.

.2 Attach metal runners at floor and ceiling to structural elements with suitable fasteners located 50mm from each end and spaced 600 mm. o.c. with toggle or molly bolts spaced 400mm o.c.

.3 Position studs vertically, engaging floor and ceiling runners, and spaced 400mm o.c., unless otherwise noted on drawings. When necessary, splice studs with 200mm nested lap and one positive attachment per stud flange. Place studs in direct contact with door frame jambs, abutting partitions, partition corners and existing construction elements. Where studs are installed directly against exterior walls install rubberized cork stip between studs and wall surfaces to provide thermal break.

.4 Anchor studs for shelf-walls and those adjacent to door and window frames, partition intersections and corners to ceiling and floor runner flanges with an approved crimping tool. Securely anchor studs to jamb and head anchor clips of door or borrowed-light frames by bolt or screw attachment. Over metal door and borrowed-light frames, place horizontally a cut-to-length section of runner, with a web-flange bent at each end, and secure with one positive attachment per flange. Position a cut-to-length stud (extending to ceiling runner) at vertical panel joints over door frame header.

.5 Stiffen partitions exceeding 3m long or 2.7m high with 19mm. cold rolled channels. Fix horizontally and provide the number of rows necessary to ensure a rigid installation. Provide other partition reinforcing necessary to support wall hung components, cupboards, closets and the like. Use 2 studs at jambs of openings and corners.

.6 Where horizontal runs of service lines are to be installed within the partition, erect studs with web openings aligned.

.7 Provide reinforcing and necessary stiffeners to support hollow metal frames and screens. Reinforcing to be capable of supporting screens rigidly and solid without deflection.

.8 Provide double row of steel studs where thicker partition types are indicated.

3.3 **CHASE WALL INSTALLATION**

.1 Align two parallel rows of floor and ceiling runners spaced apart as indicated. Attach to concrete slabs with concrete stub nails or power driven anchors 600 mm o.c. Attach to suspended ceilings with toggle or molly bolts 400mm o.c. Attach to wood framing with suitable fasteners 600mm o.c.

.2 Align metal studs vertically in runners, 200mm o.c. with flanges in the same direction and with studs on opposite sides of chase directly across from each other. Anchor studs to floor and ceiling runner flanges with an approved metal crimping tool.

.3 Cut cross bracing to be placed between rows of studs from gypsum panels, 400mm high by chase wall width. Space braces at quarter points not to exceed 600mm o.c. vertically and attach to stud webs with six 25mm screws 200mm o.c. maximum on each side.

.4 Bracing with 64mm metal studs may be used in place of gypsum panels. Anchor web at each end of metal brace to stud web with two 10mm pan head screws. When chase wall studs are not opposite, install metal stud cross braces 400mm o.c. horizontally and securely anchor each end to a continuous horizontal 64mm runner screw-attached to chase wall studs with the cavity.

.5 Adapt cross bracing as necessary to avoid interference with service.

3.4 **WALL FURRING INSTALLATION**

.1 Direct Furring Channel Attachment
  .1 Attach metal furring channels, vertically or horizontally spaced 400mm o.c. to masonry or concrete surfaces with hammer-set ro power-driven fasteners or concrete stub nails staggered 600mm o.c. on opposite flanges.
  .2 Nest channels 200mm at splices and anchor with two fasteners in each wing.

.3 Where furring channel is installed directly to exterior wall, install thermal break strip between furring channel and wall.

.4 For horizontally placed channels attach maximum 100mm from floor and ceiling.

.2 Bracketed Furring Channel Attachment

.1 Attach adjustable wall furring brackets with serrated edges up, 900mm o.c. horizontally, 1200mm o.c. vertically, within 100mm of columns or other abutting construction, within 150mm of floor and ceiling, and as required above and below openings.

.2 Use 50mm cut nails in mortar joints of brick or clay tile or concrete block, or in field of lightweight aggregate blocks; use 16mm concrete stub nails or power driven nails or other suitable fasteners in monolithic concrete. Place fastener in top hole of bracket.

.3 Lay cold-rolled channels horizontally with flanges down, on furring brackets, plumb with other channels, and tie with double strand 16 ga. or triple strand 18 ga. wire at each junction with cold rolled channel.

.3 Free Standing Furring:

.1 In locations where wall furring is indicated as self-supporting, use steel studs and furring channels installed to provide a rigid frame to receive wall board.

3.5 CEILING SUSPENSION

.1 Do not regard grillage system indicated on drawings as exact or complete. The Specification for metal framing contained in CGC Gypsum Construction Handbook and ASTM C840 shall govern installation conditions not covered by this Specification. The more stringent specifications shall apply.

.2 Hangers

.1 Install hangers for suspended wallboard ceilings to support the grillage independent of walls, columns, pipes, ducts and the like. Erect plumb and securely anchor to the structure. Submit details of proposed method to the Consultant for approval. If so requested, test hangers to prove that anchorage is adequate to support the proposed loading. Erect hangers plumb and securely anchor to structural steel or support channels fastened to structural steel (DO NOT FASTEN TO STEEL DECK).

.2 Space hangers at 1200mm maximum o.c. along the carrying channels and not more than 150mm from ends (or as required to conform with fire tested assemblies where applicable).

.3 Carrying Channels

.1 Space channels at 1200mm maximum o.c. (or as required to conform with fire tested assemblies where applicable).

.2 Run channels transversely to structural framing members.

.3 Where splices are necessary, lap members at least 200mm and wire each end with two laps; avoid clustering or lining up splices.

.4 Attach to hangers by bending hanger under runner and securely wire in place with a saddle tie.

.5 Provide 25mm clearance between channels and abutting walls and partitions.

.4 Cross Furring

.1 Install drywall screw channels transversely across runner channels, joists or other supports.

.2 Space drywall screw channels at 600mm o.c. and not more than 150mm from perimeter walls. Provide 25mm clearance between channels and abutting walls and partitions. Use closer spacing if so noted on drawings.

.3 Secure drywall screw channels to each support with approved clip or attachment; splice joints by messing minimum 200mm and tying channels together with double strand 16 gauge tie wire.

.4 Level drywall screw channels to a maximum tolerance of 4mm over 3600mm.

.5 Drywall shall not be fixed directly to open web steel joists and the like. Provide cross furring as specified.

.5 Openings

.1 Frame openings with suitable channels; check clearances with respective Trades. Provide support for edges of boards at all cut-outs and openings in ceilings.

.2 Provide all additional hangers and supports for fixtures as required.

.3 Provide additional hangers and framing for enclosure of radiant heating panels.

.6 Bulkheads

.1 Furr out bulkheads in areas indicated and as required to conceal mechanical, electrical or other services in rooms where drywall finishes are scheduled, and elsewhere if called for on drawings.

.2 Use methods and materials as previously specified in this section.

3.6 CONSTRUCTION OF FIRE RATED PARTITIONS

.1 Where fire rated construction is required, the framing shall be governed by rating required and material used in approved assemblies.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

.1	Rough Carpentry	Section 06 10 00
.2	Thermal and Acoustic Insulation	Section 07 21 00
.3	Hollow Metal Doors and Frames	Section 08 11 13
.4	Acoustic Ceilings	Section 09 51 00
.5	Painting	Section 09 92 00

1.2 REFERENCES

.1 ASTM International

.1	ASTM C1396	Standard Specification for Gypsum Board
.2	ASTM C840	Standard Specification for Application and Finishing of Gypsum board
.3	ASTM C1629	Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fibre-Reinforced Cement Panels

.2 CAN/ULC-S101 Standard Methods of Fire Endurance Tests of Building Construction and Materials

.3 Gypsum Association

.1	GA-214	Recommended Levels of Gypsum Board Finish
.2	GA-216	Application and Finishing of Gypsum Panel Products

.4 The Gypsum Construction Handbook - CGC Inc.

1.3 DELIVERY AND STORAGE

.1 Handle and store materials carefully to prevent damage. Materials must be delivered to site in their original, unopened packages.

.2 Obtain approval of proposed locations for stockpiling material. Materials must be stored in an enclosed shelter providing protection from exposure to the elements. Provide any necessary temporary covers, skids and the like.

.3 Store all panels flat.

.4 Do not install damaged or deteriorated material but remove from Site.

.5 Materials as delivered shall bear manufacturer's name, brand name of material and where applicable, ULC designation.

1.4 ENVIRONMENTAL CONDITIONS

.1 Do not apply gypsum board or joint filler to surfaces that are damp or contain frost.

.2 During gypsum panel application and joint finishing, temperatures within work areas shall be within the range 12°C. to 25°C.

.3 Provide adequate ventilation to carry off excess moisture.

1.5 **RELATIONS WITH OTHER TRADES**

.1 Co-ordinate with mechanical and electrical Trades to ensure that all services are installed prior to application of wall board.

.2 Coordinate with mechanical and electrical trades for locations of access panels. Install access doors and panels supplied by those trades.

.3 Co-ordinate with forces installing insulation and vapour barrier in exterior soffits.

PART 2 - PRODUCTS

2.1 **MATERIALS**

.1 All materials to conform to ASTM C1396 unless specified otherwise. Except where noted otherwise, products listed herein are produced by Canadian Gypsum Company (CGC). Equivalent products from Georgia Pacific (GP) and Certainteed will be accepted, subject to acceptance of equivalency by the Consultant.

.2 Gypsum panels:
- .1 Typical panels to be 16mm thick abuse resistant and mould resistant, to ASTM C1629.
- .2 CGC Sheetrock Mold Tough Abuse Resistant Firecode Core gypsum panels or GP ToughRock Fireguard X Mold-Guard Abuse Resistant gypsum board.

.3 Rated Gypsum panels:
- .1 to ASTM C1629. Abuse resistant, mould resistant, Type X-Fire Rated
- .2 CGC Sheetrock Mold Tough Abuse Resistant Firecode Core gypsum panels or GP ToughRock Fireguard X Mold-Guard Abuse-Resistant gypsum board.
- .3 Minimum thickness to be 16mm.

.4 High Impact Panels:
- .1 to ASTM C1629. Impact resistant, mould resistant wallboard
- .2 CGC “Sheetrock Mold Tough VHI Firecode Core” gypsum board, or GP DensArmor Plus Impact-Resistant interior panels.
- .3 Minimum thickness to be 16mm.
- .4 All framed partition walls within 3m of a floor area shall be constructed using high impact wallboard.

.5 Shaft liner
- .1 Mould and moisture resistant panels
- .2 to ULC tested assembly
- .3 CGC Sheetrock Enhanced Gypsum Liner Panels; 25mm

.6 Tile Backer board: CGC Durock Cement Board Next Gen

.7 Cement board: CGC Durock Cement Board Next Gen

.8 Exterior soffit board: cement board, as specified above

.9 Exterior Sheathing: 16 mm, Type X, CGC "Securock" glass-mat exterior sheathing, DensGlass by Georgia Pacific, or GlasRoc Sheathing by CertainTeed Gypsum Canada Inc.

.10 Metal Studs and Channels:
- .1 galvanized steel, as manufactured by Bailey Metal Products or approved alternate; to ASTM C645.
- .2 minimum 0.836 mm (20 ga) steel framing required at all partitions, and where impact-resistant panels are to be applied.
- .3 minimum 0.455mm (25 ga) required for all other framing.

.11 Metal Furring Channels:
- .1 sheet galvanized steel channel and accessories as manufactured by Bailey Metal Products, or approved alternate; to ASTM C645.
- .2 minimum 0.836 mm, design thickness, (20 ga) steel framing required at walls, and where impact-resistant panels are to be applied.
- .3 minimum 0.455mm (25 ga) required for all other framing.

.12 Cold Rolled Carrying Channel: 38mm x 15mm zinc coated channel weighing min 0.707 kg per m.

.13 Corner Bead and Casing Bead: 28 ga. galvanized steel with perforated flanges; one piece per location.

.14 Control Joint: CGC No. 093.

.15 Hanger wire: minimum 3.77mm (9ga) galvanized steel wire.

.16 Tie Wire: minimum 1.5mm (16 ga) galvanized soft annealed steel.

.17 Screws: CGC Brand Screws (or approved equal) of type recommended by the board manufacturer.

.18 Thermal Break: Permanent adhesive faced rubberized cork, 3 mm thick by width of stud on channel to be used between masonry in exterior wall and metal furring channels.

.19 Joint Treatment Material:
- .1 Joint compound, topping compound, laminating compound; to ASTM C474 and C475.
- .2 Use material recommended by board and tape manufacturer for the proposed use.
- .3 CGC/Synko Setting-Type joint compound, for use with CGC joint tape.

.20 Reinforcing Tape:
- .1 Paper or fibreglass mesh tape, as recommended by the panel manufacturer for the panel type.

.21 Finish materials
- .1 use level 5 finisher; CGC Sheetrock Tuff-HideT Primer-Surfacer.

.22 Acoustic sealant: Quietseal Pro as manufactured by Quietrock, or equivaltent as manufactured by CGC, Tremco or Presstite Division of Interchemical Corporation for acoustic partitions.

.23 Acoustic Insulation: As specified in section 07 21 00.

.24 Ceiling Anchors: Self drilling tie wire anchors, Phillips "Red Head" T-32 or approved equal.

.25 Drywall Reveals: Fry Reglet reveal moulding DRM-625-75, giving 5/8" x 5/8" reveal, aluminum alloy 606 375 with chemical conversion coating.

PART 3 - EXECUTION

3.1 GENERAL

.1 Provide plumb, straight, level, rigid, and secure installation. Failing to achieve this result shall be cause for rejection and reinstallation of this work.

.2 Conform to The Gypsum Construction Handbook, ASTM C840, and these specifications. The most stringent requirements shall apply.

.3 Where walls run parallel and under steel joists, the joists shall be enclosed both sides with gypsum board to provide sound barrier between rooms. Fill with minimum 100 mm acoustic batt insulation.

3.2 CEILING SUSPENSION

.1 Do not regard grillage system indicated on drawings as exact or complete. The Specification for metal framing contained in CGC Gypsum Construction Handbook and ASTM C840 shall govern installation conditions not covered by this Specification. The more stringent specifications shall apply.

.2 Hangers

.1 Install hangers for suspended wallboard ceilings to support the grillage independent of walls, columns, pipes, ducts and the like. Erect plumb and securely anchor to the structure. Submit details of proposed method to the Consultant for approval. If so requested, test hangers to prove that anchorage is adequate to support the proposed loading. Erect hangers plumb and securely anchor to structural steel or support channels fastened to structural steel (DO NOT FASTEN TO STEEL DECK).

.2 Space hangers at 1200mm maximum o.c. along the carrying channels and not more than 150mm from ends (or as required to conform with fire tested assemblies where applicable).

.3 Carrying Channels

.1 Space channels at 1200mm maximum o.c. (or as required to conform with fire tested assemblies where applicable).

.2 Run channels transversely to structural framing members.

.3 Where splices are necessary, lap members at least 200mm and wire each end with two laps; avoid clustering or lining up splices.

.4 Attach to hangers by bending hanger under runner and securely wire in place with a saddle tie.

.5 Provide 25mm clearance between channels and abutting walls and partitions.

.4 Cross Furring

.1 Install drywall screw channels transversely across runner channels, joists or other supports.

.2 Space drywall screw channels at 600mm o.c. and not more than 150mm from perimeter walls. Provide 25mm clearance between channels and abutting walls and partitions. Use closer spacing if so noted on drawings.

.3 Secure drywall screw channels to each support with approved clip or attachment; splice joints by messing minimum 200mm and tying channels together with double strand 16 gauge tie wire.

.4 Level drywall screw channels to a maximum tolerance of 4mm over 3600mm.

.5 Drywall shall not be fixed directly to open web steel joists and the like. Provide cross furring as specified.

.5 Openings

.1 Frame openings with suitable channels; check clearances with respective Trades. Provide support for edges of boards at all cut-outs and openings in ceilings.

.2 Provide all additional hangers and supports for fixtures as required.

.3 Provide additional hangers and framing for enclosure of radiant heating panels.

.6 Bulkheads

.1 Furr out bulkheads in areas indicated and as required to conceal mechanical, electrical or other services in rooms where drywall finishes are scheduled, and elsewhere if called for on drawings.

.2 Use methods and materials as previously specified in this section. Drywall panels at bulkheads shall be as specified for walls.

3.3 **STEEL STUD SYSTEM (PARTITION) INSTALLATION**

.1 Conform to the guidelines for metal framing contained in The Gypsum Construction Handbook, CSA A.82.31, and these specifications. The most stringent requirements shall apply.

.2 Metal framing for partitions and wall furring shall be minimum 20 gauge.

.3 Attach metal runners at floor and ceiling to structural elements with suitable fasteners located 50mm from each end and spaced 600 mm. o.c. with toggle or molly bolts spaced 400mm o.c.

.4 Position studs vertically, engaging floor and ceiling runners, and spaced 400mm o.c., unless otherwise noted on drawings. When necessary, splice studs with 200mm nested lap and one positive attachment per stud flange. Place studs in direct contact with door frame jambs, abutting partitions, partition corners and existing construction elements. Where studs are installed directly against exterior walls install rubberized cork stip between studs and wall surfaces to provide thermal break.

.5 Anchor studs for shelf-walls and those adjacent to door and window frames, partition intersections and corners to ceiling and floor runner flanges with an approved crimping tool. Securely anchor studs to jamb and head anchor clips of door or borrowed-light frames by bolt or screw attachment. Over metal door and borrowed-light frames, place horizontally a cut-to-length section of runner, with a web-flange bent at each end, and secure with one positive attachment per flange. Position a cut-to-length stud (extending to ceiling runner) at vertical panel joints over door frame header.

.6 Stiffen partitions exceeding 3m long or 2.7m high with 19mm. cold rolled channels. Fix horizontally and provide the number of rows necessary to ensure a rigid installation. Provide other partition reinforcing necessary to support wall hung components, cupboards, closets and the like. Use 2 studs at jambs of openings and corners.

.7 Where horizontal runs of service lines are to be installed within the partition, erect studs with web openings aligned.

.8 Provide reinforcing and necessary stiffeners to support hollow metal frames and screens. Reinforcing to be capable of supporting screens rigidly and solid without deflection.

3.4 **CHASE WALL INSTALLATION**

.1 Align two parallel rows of floor and ceiling runners spaced apart as indicated. Attach to concrete slabs with concrete stub nails or power driven anchors 600 mm o.c. Attach to suspended ceilings with toggle or molly bolts 400mm o.c. Attach to wood framing with suitable fasteners 600mm o.c.

.2 Align metal studs vertically in runners, 200mm o.c. with flanges in the same direction and with studs on opposite sides of chase directly across from each other. Anchor studs to floor and ceiling runner flanges with an approved metal crimping tool.

.3 Cut cross bracing to be placed between rows of studs from gypsum panels, 400mm high by chase wall width. Space braces at quarter points not to exceed 600mm o.c. vertically and attach to stud webs with six 25mm screws 200mm o.c. maximum on each side.

.4 Bracing with 64mm metal studs may be used in place of gypsum panels. Anchor web at each end of metal brace to stud web with two 10mm pan head screws. When chase wall studs are not opposite, install metal stud cross braces 400mm o.c. horizontally and securely anchor each end to a continuous horizontal 64mm runner screw-attached to chase wall studs with the cavity.

.5 Adapt cross bracing as necessary to avoid interference with service.

3.5 **WALL FURRING INSTALLATION**

.1 Metal framing for wall furring shall be minimum 20 gauge.

.2 Direct Furring Channel Attachment - Attach metal furring channels, vertically or horizontally spaced 400mm o.c. to masonry or concrete surfaces with hammer-set ro power-driven fasteners or concrete stub nails staggered 600mm o.c. on opposite flanges. Nest channels 200mm at splices and anchor with two fasteners in each wing. Where furring channel is installed directly to exterior wall, install thermal break strip between furring channel and wall. For horizontally placed channels attach maximum 100mm from floor and ceiling.

.3 Bracketed Furring Channel Attachment

.1 Attach adjustable wall furring brackets with serrated edges up, 900mm o.c. horizontally, 1200mm o.c. vertically, within 100mm of columns or other abutting construction, within 150mm of floor and ceiling, and as required above and below openings. Use 50mm cut nails in mortar joints of brick or clay tile or concrete block, or in field of lightweight aggregate blocks; use 16mm concrete stub nails or power driven nails or other suitable fasteners in monolithic concrete. Place fastener in top hole of bracket.

.2 Lay cold-rolled channels horizontally with flanges down, on furring brackets, plumb with other channels, and tie with double strand 16 ga. or triple strand 18 ga. wire at each junction with cold rolled channel.

.4 Free Standing Furring - In locations where wall furring is indicated as self-supporting, use steel studs and furring channels installed to provide a rigid frame to receive wall board.

3.6 **APPLICATION OF GYPSUM BOARD**

.1 Do not apply gypsum board until bucks, anchors, blocking, electrical and mechanical work are approved.

.2 Apply all gypsum board parallel to framing. Position all ends over studs. Use maximum practical lengths to minimize end joints. Fit ends and edges closely, but not forced together.

.3 Stagger joints on opposite sides of partition.

.4 Apply single, double or triple layers of gypsum board to metal furring as indicated using screw fasteners.

.5 Maximum screw spacing for single-ply gypsum board and face ply of 2-ply gypsum board to be 300mm o.c.

.6 Maximum spacing of screws for base-ply of 2-ply gypsum board over steel framing to be 300mm o.c. along edges of the gypsum board and 600mm o.c. into stud or furring channel in the field of the gypsum board.

.7 Use cement board as backer board wherever tile is to be installed to walls of shower partitions.

3.7 **CONSTRUCTION OF SOUND ATTENUATED PARTITIONS**

.1 Where sound insulated drywall partitions are indicated on the drawings, provide double stud wall, offsetting studs and wrapping acoustic insulation between studs. Apply one layer of specified soundproof wallboard, on both faces of wall.

.2 Install sound attenuation batts to completely fill void between studs.

.3 A 6mm continuous bead of acoustical sealant around perimeter of wall at web of top and bottom tracks and end studs. Lay gypsum board into position forcing caulking bead to fill space between gypsum board and structure.

.4 Seal full perimeter for cut-outs around electrical boxes and ducts with acoustical sealant.

3.8 **CONSTRUCTION OF FIRE RATED PARTITIONS**

.1 Where fire rated construction is required, the thickness and number of layers of board shall be governed by rating required and material used in approved assemblies.

.2 Provide 1 hour rated beam enclosures, where required, to ULC design.

3.9 **CONSTRUCTION OF SUSPENDED AND FURRED CEILINGS**

.1 Apply gypsum panels of maximum practical length with long dimension at right angles to drywall furring channels. Position end joints over furring channel web and staggered in adjacent rows.

.2 Closely fit together, ends and edges but not forced together.

.3 Fasten panels to drywall furring channels with screws spaced a maximum of 300mm o.c. in field of panels and along abutting ends and edges.

.4 Provide control joints in ceilings as noted but maximum 7500 mm o.c. each way or at change in direction.

.5 Provide framing and drywall finish in stairwells, where required to enclose underside of stairs and landings.

.6 Where noted on plans, provide bulkheads with steel framing and drywall finish.

3.10 **WALL FURRING**

.1 Apply gypsum panels parallel to framing. Position all edges over drywall furring channels with joints staggered in successive courses.

.2 Use maximum practical lengths to minimize end joints. Fit ends and edges closely, but not forced together.

.3 Fasten panels to channels with screws spaced a maximum 300mm oc.

3.11 **APPLICATION OF ACCESSORIES**

.1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Joints shall be made tight, accurately aligned and rigidly secured.

.2 Reinforce all vertical and horizontal exterior corners with cornerbead fastened with screws 200mm O.C. on both flanges along entire length of bead.

.3 Where assembly terminates against masonry or other dissimilar material, apply ledge trim over panel edge and fasten with screws or staples spaced 300 mm. oc.

.4 Power drive screws at least 9mm. from edges or ends of panel to provide uniform dimple 0.8mm deep.

.5 Where recessed reglets are noted on drawings, built into drywall assembly to provide edges flush with drywall.

3.12 **TAPING AND FILLING**

.1 Finish in accordance with GA-214, as follows:

.1 Exposed gypsum board to Level 5 finish, suitable for finish painting with semi-glass and gloss coatings. Use full skim coat of joint compound over entire surface to achieve smooth and uniform appearance.

.2 Concealed gypsum board to minimum Level 1 finish. Where a fire-resistance rating is required, finishing level must conform to ULC rated assembly design.

.2 Finish face panel joints and internal angles with joint system consisting of self-adhering cross-fibre fibreglass joint tape and joint compound installed according to manufacturer's directions and feathered out into panel faces. Note: If self-adhering joint tape is not used, taping compound will be required.

.3 Be sure drywall surface is dry and clean.

.4 Centre and apply drywall tape directly over joint, pressing firmly to ensure even adherence to surface. Eliminate wrinkles by pressing entire length of tape with drywall knife. Avoid overlapping tape at intersections. Cut tape with drywall knife.

.5 Cover taped joint with a layer of setting-type joint compound, forcing compound through the tape with a drywall knife or trowel to completely fill and level the joint. Allow joint to dry, and sand lightly. Apply second coat of setting-type or drying-type joint compound, feathering approximately 50mm beyond first coat. Let dry and sand lightly as required.

.6 To finish inside corners, bend tape with to form a "U" shape. Apply tape along one side only. Press tape into corner for approximately 30mm, then apply the other side. Work downward, alternating sides in this manner until tape is pressed firmly in place. Apply setting-type joint compound as specified above, first on one side for the length of the corner and then repeating the process on the second side.

.7 Finish fastener heads, corner bead and trim as required with two to three coats of joint compound, feathered out onto panel faces and sanded to a smooth surface.

.8 Provide skim coat over entire face of boards to ensure smooth surface for painting.

.9 Fill screw head depressions to bring flush with adjacent surface of gypsum board so as to be invisible after painting is completed.

.10 Sand dried taping compound lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.

.11 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for painting.

.12 Painting shall be done in accordance with Section 09 90 00.

END OF SECTION

PART 1 - GENERAL

1.1 WORK INCLUDED

.1 Substrate preparation
.2 Grouting control joints in tiling substrate
.3 Cement mortar-bed, screed and levelling coats
.4 Thin-Set Mortar Bond Coat
.5 Porcelain Floor and Wall Tiling, including base, trims and fittings
.6 Installation Systems, adhesives, mortars and grouts
.7 Sealing tiling movement joints and accessory contours
.8 Sealing penetrations through walls, partitions, countertops and floors
.9 All tiling work indicated on drawings and schedules.

1.2 RELATED WORK SPECIFIED ELSEWHERE

.1	Gypsum Board	Section 09 29 00
.2	Resilient Flooring	Section 09 65 00

1.3 REFERENCES

.1 International Organization for Standardization

.1	ISO 13006	Ceramic tiles- Definitions, Classification, Characteristics and Marking
.2	ISO 23599	Assistive Products for Blind and Vision-Impaired Persons - Tactile Walking Surface Indicators

.2 American National Standards Institute

.1	ANSI A108/A118/A136.1	American National Specifications for the Installation of Ceramic Tile (Compilation)
.2	ANSI A137.1	Specifications for Ceramic Tile

.3 ASTM International

.1	ASTM C 50	Standard Specification for Portland Cement.
.2	ASTM C 847	Standard Specification for Metal Lath.

.4 Canadian General Standards Board

.1	CAN/CGSB-75.1M	Tile, Ceramic
.2	CGSB 71-GP-22M	Adhesive, Organic, for Installation of Ceramic Wall Tile
.3	CGSB 71-GP-30M	Adhesive, Epoxy and Modified Mortar Systems, for Installation of Quarry Tiles

.5 Canadian Standards Association

.1	CAN/CSA A-3000	Cementitious Materials Compendium

.6 Terrazzo, Tile and Marble Association of Canada (TTMAC):
.1 Specification Guide 09 30 00/ Tile Installation Manual 2012-2014
.2 TTMAC Hard Surface Maintenance Guide

1.4 **SUBMITTALS**

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

.2 Submit manufacturer's product data sheets on each product to be used, including:
- .1 Storage and handling instructions
- .2 Preparation instructions
- .3 Installation instructions and recommendations

.3 Submit 4 random samples of each colour of ceramic tile to be used on this project; clearly identify with manufacturer's name, colour number and project number. Do not proceed with work until samples have been approved by Consultant.

.4 Submit pattern of control and expansion joints to Consultant, for approval.

.5 Edging and Finishing profiles: Submit sample of each type and colour.

.6 Closeout Submittals:

.1 Submit three (3) copies of TTMAC Hard Surface Maintenance Guide, for inclusion in maintenance manuals.

.2 Provide document listing specific warnings of any maintenance products or practises that could possible damage the finished work.

.7 Spare Materials: Provide 2 boxes of each floor tile and base. Tiles shall be boxed, labelled, and stored where directed by the Owner.

1.5 **PROTECTION**

.1 Protect Work of this Section against damage by other trades for minimum 72 hours after application by prohibiting passage of traffic over tile.

1.6 **QUALIFICATIONS**

.1 Installer to have membership in good standing with the TTMAC; must have 10 years experience in the Work of this Section. Employ skilled mechanics trained and experienced in tile work. If requested, submit references detailing experience in at least three projects of similar scope.

1.7 **DELIVERY, STORAGE, AND HANDLING**

.1 Deliver materials in manufacturer's unopened containers, fully identified with name, brand, type, and grade.

.2 Protect materials from contamination, dampness, freezing, or overheating in accordance with manufacturer's instructions.

.3 Broken, cracked, chipped, stained, or damaged tile will be rejected, whether built-in or not.

.4 Protect mortar and grout materials against moisture, soiling, or staining.

.5 Handle tile that has temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.8 **PROJECT CONDITIONS**

.1 Comply with manufacturer's requirements for environmental conditions before, during, and after installation.

.2 Do not begin installation until building is completely enclosed and HVAC system is operating and maintaining temperature and humidity conditions consistent with "after occupancy" conditions for a minimum of 2 weeks.

.3 Maintain continuous and uniform building temperatures of not less than 12°C or more than 38°C during installation and for at least 7 days after completion of installation.

.4 Ventilate spaces receiving tile in accordance with material manufacturer's' instructions.

PART 2 - PRODUCTS

2.1 **TILE MATERIALS**

.1 Floor Tile:

.1 Porcelain ceramic floor tile to match existing.

.2 One colour required at each location (2): to be selected from the manufacturer's standard range.

.2 Ceramic Base:

.1 Wall base to match floor tile, with bullnose top, 100mm high. Cut tile will not be accepted as wall base.

.3 Each type of ceramic tile must all be from the same production batch to ensure consistent colour and texture quality. Any obvious change in tile quality will result in rejection of all tile of the affected type.

2.2 **INSTALLATION SYSTEM MATERIALS**

.1 Installation system materials and sealers to be the products of one manufacturer, who shall warrant the system against failure.

.2 Thin-set Mortar:

.1 At tile sizes over 305mm in any dimension:

.1 Non-slump, polymer-modified premium large format tile mortar, conforming to ANSI-A118.4 and A118.11, ISO 13077 class C2TES1P1; Ultraflex LFT by Mapei Canada Inc., Laticrete 4-XLT by Laticrete International Inc., Ardex X77 by Ardex

Engineered Cements, or TEC Ultimate Large Tile Mortar by H.B. Fuller Construction Products Inc.

.2 At tile sizes 305 x 305mm and smaller:

.1 single component, polymer-modified premium tile mortar, conforming to ANSI-A118.4 and A118.11, ISO 13077 class C2ES; Ultraflex 3 by Mapei Canada Inc., Laticrete 254 Platinum by Laticrete International Inc., Ardex X5 by Ardex Engineered Cements, or TEC 3N1 Performance Mortar by H.B. Fuller Construction Products Inc.

.3 Epoxy Grout:

.1 Industrial grade 100% solids epoxy grout, water cleanable, stain resistant. Mapei Kerapoxy IEG CQ or TEC AccuColor EFX Epoxy Special Effects Grout.

.2 Required at all floor tile in all washrooms, and at all wall tile in walls behind urinals.

.3 Colour to be selected by the Consultant.

.4 Cementitious Grout:

.1 Conforming to ANSI A118.6, polymer-modified grout, "Ultracolor Plus" with "BioBlock", by Mapei Canada Inc., or 1500 Sanded Grout with Microban, by Laticrete, or Ardex FL. Grout to be fast setting, polymer modified cementitious grout.

.2 With grout additives as specified below.

.3 Colour to be selected by the Consultant.

.4 Use epoxy grout at floor tile in washrooms and at walls behind urinals.

.5 Grout Additives: To be supplied by grout supplier, Plasti-joint by Mapei or 1776 Grout Enhancer by Laticrete, or approved equal, for cementitious grout.

.6 Wall Mastic: Conforming to ANSI-136.1 Type 1. Type 1 mastic by Mapei or Latamastic by Laticrete, or Ardex D 14.

.7 Levelling coat: Refer to Section 09 01 61 Self-curing liquid latex, Portland cement based floor levelling product by Mapei, Laticrete, Ardex, or H.B. Fuller. Levelling coat must be compatible with mortar being used, and approved by the manufacturer for the specific application.

.8 Sealants: Conform to Section 07 92 00.

2.3 **ACCESSORIES**

.1 Accessory products must be compatible with all other products used in tile installation system. Confirm compatibility with product manufacturers.

.2 Anti-Fracture Membrane:

.1 Laticrete two component anti-fracture membrane "Blue 92", or Mapei Mapeguard 2 with Mapei SM Primer , or Ardex 8 + 9.

.3 Joint Sealants: Conform to Section 07 92 00.

.4 Sealer: to CAN/CGSB-25-20, as recommended by tile manufacturer.

PART 3 - EXECUTION

3.1 PREPARATION AND EXAMINATION

.1 Coordinate locations and depths of any slab depressions required for the work of this section. If any discrepancies exist between the drawings and the recommended installation methods of the TTMAC, the manufacturers, or these specifications, notify the Consultant immediately, in writing.

.2 Examine surfaces prepared to receive installation of tiling. If conditions are not acceptable, report to Consultant, in writing. Commencement of installation of any part of the Work of this section will be construed as acceptance of existing conditions.

.3 Ensure concrete substrate is fully cured prior to commencing tile installation; wait a minimum of 60 days after placement of concrete floor slab.

.4 Substrate must be structurally sound, solid, stable, level, plumb and true to a tolerance in plane of 6 mm in 3000 mm.

.5 Substrate shall be dry, clean and free of dust, oil, grease, paint, tar, wax, curing agent, primer, sealer, form release agent or any deleterious substances which could inhibit adhesion.

.6 Prepare substrate surfaces for adhesive installation in accordance with adhesive manufacturer's instructions.

.7 Ensure compatibility of substrate materials with materials supplied under this Section.

.8 Mechanically sand or scarify the substrate as required to completely remove all paint, adhesives, sealers, loosely bonded topping, loose particles and contaminants. Surface etching or contaminant removal by chemical means is not permitted.

.9 Apply levelling coat to level floors and where required to build up concrete floors slabs to elevations as noted on the Drawings or as directed by the Consultant. Levelling coat to be used to correct substrate irregularities up to 8 mm thickness. Above 8 mm, use mortar bed method to correct irregularities.

.10 Review setting out point with consultant for each location; verify patterns and edge conditions.

.11 Verify that substrate expansion joints have been installed properly.

3.2 INSTALLATION

.1 Regard recommendations, installation methods and materials specified and illustrated in Terrazzo, Tile and Marble Association Manual, latest issue, and applicable manufacturer's instructions as minimum acceptable standards. Provide additional work and materials as required to meet the contract specifications and the drawing details.

.2 Install floor tile by thin-set method, to TTMAC Detail 311F;
- .1 use“detail A” with crack isolation membrane in corridors and elsewhere.
- .2 use detail C1” over cracked existing concrete

.3 use "detail D" over young concrete, except where waterproofing membrane is required, as noted above.

.3 Before commencing installation, wipe all dust from back of tile with a damp sponge.

.4 Use tile setting method specified hereinafter. All tile must be fully bedded using suitable notched trowels to ensure full, even bedding.

.5 Apply mortar using notched trowel, of type recommended by mortar manufacturer for specific installation. Do not spread more material than can be covered before it begins to skin over.

.6 Set tiles before skinning occurs. Back butter each tile immediately before laying, to achieve full mortar contact.

.7 Set tiles firmly over wet mortar; shifting tile in the direction of the mortar ridges to ensure full mortar contact. Beat in tile to flatten ridges into a continuous bed. Between 25% and 33% of the tile is to be imbedded in the mortar. Adjust tile for correct alignment.

.8 Make joints of tiles to match existing. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Do not use gauges, string or plastic spacers. Make joints watertight, without voids, cracks, excess mortar, or excess grout. Provide minimum 85% mortar coverage.

.9 Using a damp sponge, clean all joints and wipe all mortar smudges from the face of the tile before mortar hardens.

.10 Keep existing expansion joints free of adhesive or grout.

.11 Place tile snugly around conduit, fixtures and other items built in or passing through tile work. Form external angles with round edge tile extending over edge of square edge adjacent tile. Internal angles shall be formed square, carrying 1 flat tile past edge of other.

.12 Drill holes for fixing accessories of other trades.

.13 Finish surfaces flat and level or sloped and graded as required.

.14 Provide, caps, coves, corners, angles and other moulded pieces to suit requirements of job. Ensure that striping and joints are in alignment.

.15 Lay out borders and defined lines, wherever they occur, prior to setting of adjacent tile. Keep inner edges of borders against fields or wall panels straight.

.16 Cut tiles to conform to irregularities in wall lines and vertical planes along outer edges. Smooth cut edges with carborundum block or by other means to provide clean straight edges.

.17 Install wall base free of sharp corners or exposed edges. Form internal angles square and external angles bullnosed. Mitre edge trim at corners; grind point off mitred trim at outside corners for smooth, rounded finish.

.18 Wait at least 24 hours after tile installation before grouting. Grout joints, leave to set for 45 minutes, then rub with "scrubby" brush to break surface, make one pass with clean sponge to leave grout joint flush with tile.

.19 Install thresholds and edge trim at junctions with other floor finishes, at doorways, and where indicated on drawings.

.20 Repoint joints after cleaning to eliminate imperfections. Avoid scratching tile surfaces.

.21 Finished tile to be clean and free of tiles which are pitted, chipped, cracked or scratched.

3.3 **CLEANING AND PROTECTION**

.1 Clean tile work progressively as work proceeds. Do not allow mortar to stain absorbent tile. Do not use acids for cleaning.

.2 Seal tile in accordance with TTMAC recommendations using TTMAC certified products only.

.3 Conform to Section 07 92 00 for Joint Sealants.

.4 Protect finished areas from traffic until setting materials have cured. Protect grouted areas from foot traffic for72 hours after completion of grouting.

.5 Provide protective covering in traffic areas until area of work is ready for occupancy.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

.1	Gypsum Board	Section 09 29 00
.2	Mechanical Equipment	Divisions 21, 23
.3	Electrical Equipment	Divisions 26, 27

1.2 CEILING SYSTEMS

.1 This Specification includes all modifications, removal and replacement of existing ceiling tiles and replacement of damaged tile as required for the work. See additional requirements on Drawings.

.2 Ceiling systems shall be 610mm x 1220mm lay in exposed Tee system, rated and non- rated. Rated ceiling systems to conform to U.L.C. details.

1.3 REFERENCE STANDARDS

.1	ASTM C635	Specifications for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings
.2	ASTM C636	Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.
.3	ASTM E580/E580M	Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions
.4	CAN/CGSB 92.1	Sound Absorptive Prefabricated Acoustical Units

1.4 DESIGN

.1	N.R.C. Range:	Unless otherwise noted under description of ceiling system the N.R.C. Range shall be 60-65 (Table 1 of CAN/CGSB 92.1).
.2	Ceiling S.T.C.:	Unless otherwise noted under description of ceiling system the S.T.C. rating shall be 35 or better.
.3	Light Reflectance:	Unless otherwise noted under description of ceiling system, panels shall have a light reflectance co-efficient designation of L.R.1 (0.75 minimum). Table 3 of CAN/CGSB 92.1 refers.

.4 Support of HVAC and Electrical Equipment:

.1 Provide additional hangers as required for support of light fixtures and radiant panels, diffusers, etc.

.2 Provide wider tee and wall moulding where ceiling grid supports radiant ceiling panels. Note that radiant panels weight a minimum of 2.5 lb/sq. ft.

1.5 **SHOP DRAWINGS**

.1 Reflected ceiling plans indicate proposed layout but this shall not relieve Contractor of responsibility for co-ordination of the work and provision of Shop Drawings where field conditions call for variation from proposed layout.

.2 Submit shop drawings indicating seismic design requirements in accordance with ASTM E580, or manufactures equivalent tested system for Seismic Site Response "Class C".

.3 Accurately locate lighting fixtures, ventilating grilles, sprinkler heads, exit lights and other ceiling fittings.

.4 Conform to Section 01 33 23.

1.6 **SAMPLES**

.1 Upon award of the Contract submit full size sample panels proposed for installation in the project. All panels subsequently used on the job shall match the approved sample.

.2 Submit samples of suspension system members for approval prior to commencement of installation.

1.7 **DELIVERY AND STORAGE**

.1 Transport, handle and store material in manner to prevent warp, twist and damage to tile and board edges and surfaces in accordance with the manufacturer's recommendations.

.2 Any warped and/or damaged boards, tile and trim shall be rejected and be replaced by new, straight, undamaged and acceptable materials at no cost to the Owner.

.3 Store material in warm, dry place away from water and the elements. Protect against undue loading stresses and shock.

.4 All packaged material shall be delivered in original manufacturers' wrappers and containers with labels and seals intact.

1.8 **PROTECTION**

.1 Exercise care in the execution of work under this Section to prevent damage to finished surfaces and adjacent work, and mechanical and electrical installations.

1.9 **EXTRA PANELS**

.1 Provide 2% typical acoustic panels of each type specified for use in maintenance work. Obtain receipt from the Consultant or Owner's representative on site.

.2 Do not use panels supplied to Owner for maintenance work to make good any damaged or removed tile required by Contract.

.3 Contractor to include for replacement of damaged ceiling tile (up to 20% of total area).

1.10 **SPECIAL CLEANING**

.1 Clean, repair or replace dirty, discoloured or defective units or exposed suspension members to Consultant's satisfaction.

1.11 **ENVIRONMENT**

.1 Commence installation after building enclosed and dust- generating activities completed.

.2 Permit wet work to dry prior to commencement of installation.

.3 Maintain uniform minimum temperature of 15 deg. C. and humidity of 20% to 40% prior to, during and after installation.

1.12 **WARRANTY**

.1 The Warranty stipulated in the General Conditions of the Contract shall be deemed to include the following definition in reference to Work specified in this Section. The following will be considered defects without being limited thereto:

.1 Failure of the suspended ceiling to remain water level.
.2 Lifting or sagging of tile and board between supports.
.3 Staining and discolouration of factory finishes.
.4 Development of corrosion of galvanized ferrous metal.
.5 Development of cracks, splits and other surface deterioration in acoustic panels.
.6 Failure of hanging wire anchorage.

.2 The warranty period shall be two (2) years, commencing on the date of Substantial Performance of the Work.

PART 2 - MATERIALS

2.1 **MATERIALS - LAY-IN SYSTEM**

.1 Acoustic Ceiling Panels

.1 Refer to Finish Schedules for LAT numbers and locations as follows:
.1 LAT 1: Match existing.

.2 Suspension
.1 Suspension system to be "DX" 24mm wide faced T-bar by CGC. Equivalent grid by Chicago Metallic, or Armstrong will be accepted, contingent on its compatibility with the specified ceiling tiles.

.2 Provide rated grid where fire rated ceiling to floor or roof assembly is required.

.3 Exposed interlocking tee grid system, formed out of cold rolled zinc-bond steel 0.54mm thick. Provide fire rated grid where fire ratings noted.

.4 Main Tees: 38mm x 25.4mm double web rectangular bulb top with capping plate in precoat baked-on white paint finish and incorporating holes for hangers and slots for connecting pieces, and capable of supporting 12.5 kg per 1200mm. for continuous spans and 6.5 kg per 1200mm span for single span without exceeding a deflection fo 1/360 of the span.

.5 Standard Cross-Tees: 25.4 x 25.4mm double web, bulb top, capping plate in precoated white baked-on finish, capable of supporting 11.3 kg per 600mm span without exceeding a deflection of 1/360 of span, and with positive interlock with main tees.

.6 Structural Cross-Tees as main tees, but with crimped ends for lapping bottom flange of main tees and interlocking tack ends to engage slots in main tees.

.7 Suspension system at radiant panels shall be CGC wide face grid, Type "DXW", 38mm wide, or equivalent by one of the approved grid manufacturers listed above.

.8 Suspension system at Clean Room ceiling tiles shall be CGC aluminum grid, type "AX", 24mm wide, or equivalent by one of the approved grid manufacturers.

.9 Accessories:
- .1 Splice plate, clips, screws, etc. as required to complete the installation. All galvanized finish.
- .2 Seismic clips, separation joints, and other accessories as required to meet seismic design requirements.

.10 Concealed flat spline: 0.71mm flat steel spline.

.11 Edge Trim:
- .1 0.635mm zinc bonded, cold rolled steel mould.
- .2 Trim shall be minimum [22mm x 22mm angles] [50mm wide seismic trim].
- .3 Provide 50mm wide shadowline trim at perimeter of corridor ceilings.
- .4 Provide 50mm wide trim at radiant ceiling panels adjacent to walls.
- .5 Provide aluminum trim at ceilings with aluminum grid.

.12 Finish to tees and edge trim: flame resistant white baked enamel satin finish to match panel finish, 2 coats on exposed surfaces, 1 coat elsewhere.

.13 Carrying Channels: 38mm x 19mm cold rolled galv. weighing 1.042 kg per metre.

.14 Tie Wire: 1.6mm galvanized soft annealed steel or as required to meet seismic design requirements.

.15 Hangers: 2.6mm galvanized steel wire.

.16 Screws: Corrosion resistant, self-tapping Philips truss head, of length and gauge to suit installation.

.17 Ceiling Hanger Pins (for fixing to metal): capacitor discharge ceiling hanger pins, by Continental Studwelding Ltd., or approved equivalent, of type approved by Consultant.

PART 3 - EXECUTION

3.1 INSTALLATION - GENERAL

.1 Employ mechanics skilled in this Trade and install work in strict accordance with the system manufacturer's printed directions to produce a first class, true finish, free from dropping, warpage, soiled or damaged tile.

.2 Install hanger inserts in a manner approved by Consultant.

.3 Locate hangers directly over Main Tees and as close to intersections as possible. Secure hangers firmly to concrete inserts, steel joists and beams, bracing, etc. Do not install hangers to metal deck, provide separate grid off joists if required.

.4 Frame around recesses fixtures, diffusers, grilles, [radiant panels,] and the like and provide heavier section hangers and supports as necessary to support same. Provide hanger within 150mm. of each fixture corner.

.5 Consult with Electrical and Mechanical Trades for requirements and provide access to valves and switches.

.6 Ensure that all hangers and carrying members are designed and spaced to support entire ceiling system including recessed lighting fixtures. Note, weight of fixtures is approximately 9-13.5 kg.

.7 Install panels only after all mechanical and electrical equipment, conduits, piping, telephone distribution, etc. are in place.

3.2 LAY-IN PANEL INSTALLATION

.1 End panels shall not be less than half full size and installation in each area shall be symmetrical, with end tiles and abutting opposite vertical wall surface to be of the same width. Do all necessary cutting and fitting neatly and accurately to suit grid openings and accommodate fixtures, grilles, detectors, speakers and the like located on the ceiling panels.

.2 Lay directionally patterned acoustic panels in one direction, parallel to the longest direction of the grid concerned.

.3 Place panels between tees so that edges bear evenly on flanges.

.4 Conform with reflected ceiling plans.

.5 Provide fire rated enclosures as required around light fixtures and mechanical equipment in fire rated ceilings, according to applicable ULC Design Criteria.

.6 Where mechanical equipment is located above the ceiling, panels shall be suitably and inconspicuously marked by the use of small colour-coded stickers. Mechanical equipment to be located shall include valves, dampers, heat exchangers, heat pumps, VAV boxes, electrical disconnects, as applicable, and other such equipment not visible from below.

3.3 **CLEANING**

.1 Upon completion, clean acoustic tile of all finger marks and other defacements.

.2 Remove all accumulated rubbish and excess materials from the site.

.3 Clean acoustic tile and replace any damaged tiles immediately before occupation of building by Owner.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

.1	Architectural Casework	Section 06 41 13
.2	Gypsum Board	Section 09 29 00

1.2 REFERENCE STANDARDS

.1 **ASTM Standards**

.1	F 141	Resilient Floor Coverings
.2	F150	Standard Test Method for Electrical Resistance of Conductive and Static Dissipative Resilient Flooring
.3	F 386	Standard Test Method for Thickness of Resilient Flooring Materials Having Flat Surfaces
.4	F 511	Quality of Cut (Joint Tightness) of Resilient Floor Tile
.5	F 710	Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
.6	F 1066	Specification for Vinyl Composition Floor Tile.
.7	F 1304	Deflection of Resilient Floor Tile
.8	F 1344	Specification for Rubber Floor Tile
.9	F 1861	Specification for Resilient Wall Base
.10	F 2055	Size and Squareness of Resilient Floor Tile by Dial Gage Method
.11	F 2169	Specification for Resilient Stair Treads
.12	F 2195	Specification for Linoleum Floor Tile
.13	E 662	Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
.14	E 1907	Methods of Evaluating Moisture Conditions of Concrete Floors to Receive Resilient Floor Coverings
.15	F 970	Standard Test Method for Static Load Limit

.2 **ULC**

.1	CAN/ULC-S102.2	Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Covering and Miscellaneous Materials and Assemblies

.3 **Resilient Floor Covering Institute (RFCI)**

.1	IP #1	Recommended Installation Practice for Homogeneous Sheet Flooring, Fully-Adhered
.2	IP #2	Recommended Installation Practice for Vinyl Composition Tile (VCT)
.3	Recommended Work Practices for Removal of Resilient Floor Coverings	

.4 **EOS/ESD Association, Inc.**

.1	ANSI/ESD STM7.1	ESD Association Standard Test Method for the Protection of Electrostatic Discharge Susceptible Items - Floor Materials - Resistive Characterization of Materials - Floor Materials
.2	ANSI/ESD STM 97.1	ESD Association Standard Test Method for the Protection of Electrostatic Discharge Susceptible Items – Floor Materials and Footwear – Resistance Measurement in Combination with a Person

.3	ANSI/ESD STM 97.2	This document establishes test methods for the measurement of the voltage on a person in combination with floor materials and static control footwear, shoes or other devices
.4	ESD TR 7.0-01	ESD Association Technical Report for the Protection of Electrostatic Discharge Susceptible Items – Static Protective Floor Materials

.5 **International Organisation for Standardization (ISO)**

.1	ISO 23599	Assistive Products for Blind and Vision-Impaired Persons – Tactile Walking Surface Indicators.

1.3 **SUBMITTALS**

.1 Submit samples as per Section 01 33 23. Submit manufacturer's samples of actual sections of tile and accessories; include manufacturer's full range of colour and patterns available.

.2 Samples for Verification Prior to Installation: Submit full size samples of all types, colours, and patterns selected, indicating full range of patterning and colour variations.

.3 Submit manufacturer's printed installation instructions and maintenance manuals for each material specified.

1.4 **EXTRA MATERIALS**

.1 At completion of this Work hand over to Owner minimum 2% of each type and colour of flooring installed.

.2 Material to be in wrapped packages or fully labelled as to product and colour.

1.5 **WARRANTY**

.1 Submit manufacturer's warranty warranting material and performance for a period of **five (5) years** following the date of Substantial Performance of the Work.

PART 2 - PRODUCTS

2.1 **MATERIALS**

.1 Base:

.1 102mm x 3mm thick "Tightlock" rubber cove base by Tarkett / Johnsonite. Colour as per colour schedule - refer to drawings.

.2 Adhesives:

.1	Rubber base adhesive:	Mapei Ultrabond ECO 575 or equal. Adhesive must produce good and permanent waterproof bond between wall surfaces and cove base.

PART 3 - EXECUTION

3.1 EXAMINATION AND TESTING

.1 Check surfaces for evidence of carbonation, dusting, excessive moisture or other defects affecting bond of adhesive. Take all required remedial measures. Remove compounds if necessary to ensure that adhesive bonds to concrete.

.2 Perform bond testing to confirm compatibility between cabinets and adhesives.

.3 Take readings of room temperature and relative humidity (RH) before, during, and after installation. Environmental conditions shall conform to these specifications and the requirements of the material manufacturers.

.4 Provide test results to manufacturers of products proposed for use, and obtain approval of conditions before commencing installation.

3.2 INSTALLATION - GENERAL

.1 Do not start installation of resilient flooring until all other trades have completed their work and just prior to completion of building.

.2 The permanent HVAC system must be in operation before installing resilient base.

.3 Keep all tile and accessories at the job site at room temperature (min.18°C. and max. 29°C.) for at least 48 hours before installation, during the work, and for minimum 48 hours after completion of installation.

.4 Ensure that interior air relative humidity (RH) is within limits recommended by the product manufacturers, as excessively high or low RH will affect curing of floor patching and levelling materials.

.5 Obtain approval from manufacturers for all adhesives, caulking, patching and levelling agents, installation methods, and environmental conditions, before proceeding with the work of this section.

.6 Ensure flooring materials are clean of any contaminants which would interfere with proper bonding.

3.3 APPLICATION - RESILIENT FLOORING

.1 Apply rubber base in strict accordance with manufacturer's printed instructions.

.2 Apply adhesive uniformly with an approved notch-tooth spreader at the recommended rate. Do not spread more adhesive than can be covered before initial set takes place. Use waterproof adhesive throughout.

.3 Fit flooring around drains and mechanically fasten to drain outlet. Provide permanent waterproof installation.

.4 Install all seams using heat welded method in complete accordance with material manufacturers recommendations and materials.

.5 At wall ends and openings where ends of preformed corners come close together or touch or overlap, cut each corner unit equally so that a neat, inconspicuous joint is formed in middle of wall end or opening or so that filled gap, if gap is necessary, is not less than 38mm wide and located in middle of wall or end of opening.

3.4 **CLEANING**

.1 Remove surplus adhesive from face of wall and millwork as work progresses.

.2 Upon completion of work remove all markings and scuffs.

.3 Prior to occupation by Owner, broom clean all resilient base and remove all noticeable stains and marks.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

.1 Rough Carpentry Section 06 10 00
.2 Gypsum Board System Section 09 29 00
.3 Factory applied paint coatings unless otherwise specified.

1.2 SCOPE OF WORK

.1 With exceptions specified above or specifically called for in other Sections of the Specification, all paintwork is included in the scope of this Section of the Specification. Colours will be specified at a later date by the Consultant, allow for accent walls of primary colour to some areas.

.2 In locations where Drawings do not call for paint or similar finish on walls and/or ceilings, the intent of this Specification is that items, new work and existing surfaces in areas affected by the Work of this project, including miscellaneous metal work, shall be painted.

.3 Work includes moisture testing and surface preparation of substrates as required for acceptance of paint, including cleaning, small crack repair, patching, caulking, and making good surfaces, and specific pre-treatments, sealing, and priming of surfaces.

.4 Check conditions of all existing surfaces to be repainted before commencing new work, including assessing the level of degradation of the surface, the type of coating existing, and the thickness of the existing coating. Perform adhesion tests on all existing coatings to be repainted to ensure that surfaces are sound and well adhered before applying new coatings. It is expected that the Contractor will have visually assessed the existing conditions during the pre-tender site visit, and no contract extras will be considered for addressing conditions which were readily apparent at that time.

.5 Perform interior painting called for in Room Schedule and Door Schedule and noted on drawings. Paint all walls, ceilings, bulkheads, tectum, and all surfaces which normally receive a paint finish, whether noted on schedules, or not noted. Walls shall be completely painted before installation of millwork, etc.

.6 All heating units, recessed convectors, grilles, pipes, access panels, hangers and miscellaneous exposed metal work (other than stainless steel, anodized aluminum and baked enamel) to be painted to match the surfaces on which they occur, unless otherwise directed by Consultant.

.7 For special painted graphics, colour changes, accent stripes, etc. see drawings.

.8 In renovated areas, paint affected walls as specified for new construction. All other walls in the room are to be cleaned and painted with one coat. If more than one colour is used in the room, confirm colours with Consultant.

.9 Paint exposed drywall and the like in locations where finish is not otherwise specified or noted. Do not paint such surfaces in mechanical shafts, unless specifically noted.

.10 Paint all exposed structural steel and mechanical ducts in finished areas.

.11 Paint pipes, conduit, ducts and related thermal insulation and all prime painted mechanical and electrical equipment and supports located in mechanical and electrical rooms and in all locations where Drawings call for paint or similar finish on walls and/or ceilings. Paint all mechanical equipment exposed on the roof. Exposed pipes shall be painted to Owner's Colour Coding/Piping schedule to suit use (i.e. hot water, etc.), included below.

.12 Paint all gas piping, inside and out, whether exposed or concealed. Do not paint other pipe, conduit, ducts, insulation and the like where concealed above ceilings or in service shafts.

.13 Make good paint finish on shop coated work where damaged.

.14 Paint visible portions of steel shelf angles, lintels and structural steel.

.15 Paint edges and all faces of metal doors.

.16 Paint entirely, including all top and bottom edges, of all wood doors. Existing wood doors that have a natural wood grain finish are not being painted.

.17 Interior of ducts and diffusers visible from exterior on room side.

.18 Painting, as referred to herein shall include paint, enamel, stain, varnish and other finishes herein specified and normally applied to the various materials by the painting Subcontractor.

1.3 **REFERENCE STANDARDS**

.1 Do painting and finishing to CAN/CGSB-85-GP series standards including Appendix A and to material manufacturer's instructions and to The Master Painters Institute (MPI) Architectural Painting Specification Manual and Maintenance Repainting Manual, except where specifically specified otherwise. The most stringent standards shall apply.

.2 All coatings must conform to Regulation SOR/2009-264, Volatile Organic Compound (VOC) Concentration Limits for Architectural Coatings Regulations, and the VOC limits set therein.

.3 All paints and coatings used must conform to Green Seal Standard GS-11 for paints and coatings based on performance requirements and reduced use of hazardous substances and reduced volatile organic compounds:

1.4 **QUALIFICATIONS**

.1 The Painting Subcontractor must be a member in good standing of the Ontario Painting Contractors' Association.

1.5 **WORK ENVIRONMENT**

.1 Do not apply paint finish in areas where dust is being generated.

.2 Maintain environmental conditions within limits recommended by manufacturer, for optimum results. Do not apply coatings under environmental conditions outside manufacturer's absolute limits.

.3 Conform to requirements of MPI Architectural Specification Manual including recommendations for surface preparation.

1.6 **ACCEPTANCE OF WORK IN PLACE**

.1 Submit written confirmation of acceptance of existing conditions, to the Consultant, prior to commencing painting work. Painting may not commence without submission of this confirmation.

.2 Receipt of this confirmation will be considered a prerequisite for certification of payment for this work.

.3 Notify the Consultant, in writing, immediately if any existing condition is encountered that will prevent the attainment of satisfactory results in this work

1.7 **SUBMITTALS**

.1 Samples:
- .1 Submit triplicate samples consisting of 300mm x 200mm panels of each type of paint finish specified.
- .2 Panels shall be of same material as that on which sample coatings are to be applied in the field where possible.
- .3 Identify each sample as to job, name of paint manufacturer, finish, colour, name and number, sheen and gloss units and name of Contractor.
- .4 Retain one set of approved samples on site until completion of the Work.

.2 Submit manufacturer’s data sheets for each paint product, including:
- .1 Product characteristics
- .2 Surface preparation instructions and recommendations
- .3 Primer requirements and finish specifications
- .4 Storage and handling recommendations
- .5 Application methods
- .6 Cautions
- .7 VOC data

.3 Submit written confirmation of acceptance of existing conditions, as specified above.

1.8 **STORAGE AND HANDLING**

.1 Store paint and painter's materials in clean, dry locations approved by the Consultant. Store materials in an area that is within the acceptable temperature range, per manufacturer’s instructions. Protect from freezing.

.2 All paint shall be in unopened containers, labelled with:
- .1 manufacturer’s name,
- .2 product name, product type,

.3 instructions for surface preparation and product application,
.4 VOC content,
.5 environmental issues,
.6 batch date, and
.7 colour name and number.

.3 Provide CO_2 fire extinguisher minimum 9 kg capacity in paint storage area.

.4 Dispose of materials in accordance with the requirements of authorities having jurisdiction.

1.9 **SIGNS**

.1 Provide legible signs throughout the Work reading "WET PAINT" in prominent positions during painting and while paint is drying.

.2 Use 75mm high letters on white card or board.

1.10 **TEMPORARY COVERS AND PROTECTION**

.1 Protect floors and other surfaces with temporary covers such as dust sheets, polyethelene film or tarpaulins. All to Consultant's approval.

.2 Mask identification plates occurring on equipment, switch boxes, and fire rating labels, etc. which require painting.

.3 Protect, remove and replace hardware, accessories, lighting fixtures, and similar items as required except primed for paint door closers which shall be painted. Light switches and electrical communication outlet plates to be removed and reinstalled on completion of paint application.

.4 Keep oily rags, waste and other similar combustible materials in closed metal containers; take every precaution to avoid spontaneous combustion, remove waste and combustible materials daily.

.5 Clean surfaces soiled by spillage of paint, paint spattering and the like. If such cleaning operations damage the surface, repair and replace damaged work at no cost to the Owner.

1.11 **RETOUCHING**

.1 Do all retouching, etc. to ensure that the building may be handed over to the Owner in perfect condition, free of spatter, finger prints, rust, watermarks, scratches, blemishes of other disfiguration.

.2 After fully decorating and retouching a room or other area, notify Consultant. After inspection and final approval by Consultant post sign 'DECORATING COMPLETE - NO ADMITTANCE WITHOUT PERMISSION'.

1.12 **TEST AREAS**

.1 In areas to be repainted, test existing coatings for adhesion before applying new coatings, in accordance with the recommended practices in the MPI Repainting Specification Manual. Check for loose paint using a scraper and check for adhesion by cutting through the coatings and performing duct tape tests, or other acceptable means of testing adhesion. Once adequate adhesion is confirmed, apply a test section of the proposed new coating, allow to dry, and perform adhesion tests in area of new coating to confirm compatibility with existing coatings before proceeding with repainting work. Perform tests in all areas and on all surface types to ensure positive repainting results. Advise Consultant of any areas in which existing or new coatings fail adhesion tests. Do not proceed with the work until a recommended course of action is agreed upon by all parties. Commencement of work will signify acceptance of existing conditions.

.2 Prior to any painting being started, request a meeting on Site between Consultant, Contractor, and Subcontractor to review conditions, surfaces, anticipated problems and to clarify quality of workmanship acceptable to Consultant.

.3 Apply finishes to each type of surface within room with correct material, coats, colour, texture and degree of gloss in sample area and have same approved prior to providing Work of this Section.

.4 Failure to comply with the above will be cause for Consultant to request all Work previously painted to be repainted.

1.13 **MAINTENANCE MATERIALS**

.1 Provide one sealed can, one litre capacity, of each product in each colour used in the Work for Owner's use in maintenance Work.

.2 Container to be new fully labelled with manufacturer's name, type of paint, and colour.

PART 2 - PRODUCTS

2.1 **MATERIALS**

.1 Paint and finishing materials - highest grade, first line quality, low VOC products provided by Dulux Paints * Base bid Materials for Colour Selections as noted on Drawings

.2 Paints, enamels, fillers, primers, varnishes and stains - ready mixed products of one of the manufacturers listed. Substitutes will not be allowed.

.3 Thinners, cleaners - type and brand recommended by the paint manufacturer.

.4 Only products manufactured by paint manufacturer stated at time of submission of samples will be allowed on Site unless other materials specifically specified herein. No painting to be performed until paint manufacturer identified and acceptance received from the Consultant and Inspector.

.5 Deliver materials to Site in original unbroken containers bearing brand and maker's name. The presence of any unauthorized material or containers for such, on Site shall be of sufficient cause for rejection of ALL paint materials on Site at that time, and all previous painted work repainted with proper material.

2.2 **FINISHING SYSTEMS**

.1 Interior Work:

.1 Drywall:
- .1 INT 9.2M Institutional Low Odour/ Low VOC, semi-gloss finish
- .2 1 coat Primer; MPI #149
- .3 Walls: 2 coats MPI #147
- .4 Ceilings: 2 coats of one of the following:
  - .1 2 coat Dulux Lifemaster Interior Acrylic Ceiling Flat # 59170 Zero VOC
  - .2 or equal by one of the approved manufacturers.
- .5 All drywall, whether requiring finish painting or not, must receive prime coat.

.2 Concrete Block, paint:
- .1 INT 4.2E (modified), Institutional Low Odour/ Low VOC, semi-gloss finish, 4 coat system
- .2 2 coats latex blockfiller; MPI #4
- .3 2 coats finish; MPI #147
- .4 Provide gloss finish, MPI #148, where noted as “gloss” in Room Finish Schedule.

.3 Concrete Block, glaze:
- .1 INT 4.2J (modified), Epoxy-modified Latex Finish, 4 coat system
- .2 2 coats latex blockfiller; MPI #4
- .3 2 Coats epoxy-modified latex finish; MPI #115
- .4 Provide in all hallways and washrooms, and where noted as “glazed” in Room Finish Schedule.

.4 Concrete Block, wet areas:
- .1 INT 4.2G (modified), Epoxy “Tile like” Finish, 4 coat system
- .2 2 coats latex blockfiller; MPI #116
- .3 2 Coats epoxy-modified latex finish; MPI #77
- .4 Provide in all hallways and washrooms, and where noted as “glazed” in Room Finish Schedule.

.5 Cast in Place Concrete walls, ceilings:
- .1 INT 3.1M Institutional Low Odour/ Low VOC, semi-gloss finish
- .2 1 coat MPI #149
- .3 2 coats MPI #147

.6 Woodwork (Opaque Finish):
- .1 INT 6.4T Institutional Low Odour/ Low VOC, semi-gloss finish
- .2 1 coat latex primer MPI #39
- .3 2 coats institutional low VOC latex finish; MPI #147

.7 Stain Finish:
- .1 LEED Complaint Stain
- .2 Coats Varnish, Water Based, clear gloss; MPI #130

.8 Ferrous Metal:
- .1 INT 5.1S Institutional Low Odour/ Low VOC, semi-gloss finish
- .2 1 coat MPI #107
- .3 2 coats MPI #147

.9 Shop Primed Ferrous Metal:
- .1 INT 5.1S Institutional Low Odour/ Low VOC, semi-gloss finish
- .2 Confirm type of shop primer used with structural steel supplier.
- .3 Confirm compatibility of all coatings with manufacturers.
- .4 Touch up prime coat where damaged, with compatible primer, type MPI#107.
- .5 2 coats interior latex, MPI #147

.10 Galvanized Metal:
- .1 Includes all hollow metal doors, frames and screens.
- .2 INT 5.3N Institutional Low Odour/ Low VOC, semi-gloss finish
- .3 1 coat galvanized Primer MPI #134
- .4 2 coats Acrylic Semi-Gloss MPI #147

.11 Insulation on Pipes & Ducts:
- .1 INT 6.8F Institutional Low Odour/ Low VOC, semi-gloss finish
- .2 1 coat Primer MPI #17
- .3 2 coats Acrylic Semi-Gloss MPI #147

.12 Mechanical Equipment:
- .1 Institutional Low Odour/ Low VOC, semi-gloss finish
- .2 As specified for metal types.

.13 Piping, Conduit & Ductwork (uncoated):
- .1 INT 5.3N Institutional Low Odour/ Low VOC, semi-gloss finish
- .2 1 coat galvanized Primer MPI #134
- .3 2 coats Acrylic Semi-Gloss MPI #147

.14 Surfaces behind grilles, within 30mm of grille:
- .1 INT 5.3N Institutional Low Odour/ Low VOC, flat finish
- .2 1 coat galvanized Primer MPI #134
- .3 2 Coats Acrylic Flat, Black; MPI #143

.15 Concrete Floors:
- .1 1 Coat Water-Borne Epoxy (diluted 10-20% with water) MPI #115
- .2 2 Coats Water-Borne Epoxy MPI #115
- .3 VOC emissions of coating not to exceed 200 g/l.

.16 NOTE: Use heat resistant paint where required.

.17 NOTE: ALL OF THE ABOVE NOTED SYSTEMS MAY NOT BE APPLICABLE ON THIS PROJECT.

PART 3 - EXECUTION

3.1 PREPARATION OF SURFACES

.1 Prepare surfaces in accordance with the following standards and to MPI Architectural Specification Manual Chapters 2 and 3; the most stringent requirements shall apply. Preparation of surfaces must be reviewed with painting inspector. Prepared surfaces must be inspected before application of prime coat.

.1 Prepare wood surfaces to CGSB 85-GP-IM. Use CAN/CGSB 1.126 vinyl sealer over knots and resinous areas. Use CGSB 1-GP -103M wood paste filler for nail holes. Tint filler to match.

.2 Touch up damaged spots of shop paint primer on steel with CAN/CGSB 1.40M to CGSB 85-GP-14M.

.3 Prepare galvanized steel and zinc coated surfaces to CGSB 85-GP-16M. This includes wiped coated steel surfaces.

.4 Prepare masonry and concrete surfaces to CGSB 85-GP-31M.

.5 Prepare wallboard surfaces to CGSB 85-GP-33M. Fill minor cracks with plaster patching compound for stained woodwork.

.6 Apply prime coat on wood scheduled for paint finish before installation.

.7 Back prime wood scheduled for transparent finish. Do not prime surfaces scheduled for transparent finish.

.8 Remove all surface contamination such as oil, grease, loose paint, mill scale, dirt, foreign matter, rust, mould, mildew, mortar, efflorescence, and sealers from existing surfaces to assure sound bonding to tightly adhering old paint.

.9 Scape peeling paint off existing masonry surfaces and apply a compatible masonry sealer, approved for use by the paint manufacturer, before applying new coatings.

.10 Glossy surfaces must be clean and dull before repainting. Wash with abrasive cleanser, or, wash thoroughly and dull by sanding.

.11 Spot prime any existing bare areas with an appropriate primer.

.12 Check for compatibility between existing and new coatings by applying a test patch of the recommended coating system, covering at least 2 to 3 square feet. Allow surface to dry one week before testing adhesion per ASTM D3359. If the coating system is incompatible, complete removal is required.

.13 NOTE: ABOVE NOTED SURFACES MAY NOT ALL BE APPLICABLE TO THIS PROJECT.

3.2 **APPLICATION**

.1 Apply coatings in accordance with manufacturer's printed instructions.

.2 Use suitable, clean equipment in good condition.

.3 Maintain dust-free suitable conditions on the surfaces free from machine, tool or sandpaper marks, insects, grease, or any other condition liable to impair finished work to prevent production or good results.

.4 At all hollow metal doors and frames, prime coat must be inspected and signed off before painting work may proceed.

.5 Apply evenly, uniform in sheen, colour and texture, free from brush or roller marks, well brushed or rolled in and free of crawls, runs, join marks or other defects.

.6 Permit paint to dry between coats. Touch up uneven spots after applying first coat. Tint various coats of multiple coat work in light shades of the final colour selected, to distinguish between coats.

.7 Give Consultant and Inspector due notice and sufficient opportunity (minimum 48 hours) to inspect each coat. Do not proceed with subsequent coat until preceding coat approved. Consultant reserves the right to order complete retreatment if this condition is not observed.

.8 Painting coats are intended to cover surfaces perfectly; if in painter's opinion, formula specified is inadequate to provide a first class finished surface, report to the Consultant and have formulas rectified before commencing work. Surfaces imperfectly covered shall receive additional coats at no additional cost. Provide additional coat where ever dark colours are used.

.9 Use paint unadulterated. Use same brand of paint for primer, intermediate and finish coats. Factory mix all paints.

.10 Paint finish shall be applied by roller except in the case of wood trim, door frames, base board and similar work of small surface area which shall be painted by brush. Do not use roller for applying finish other than paint.

.11 Spray painting will <u>not</u> be permitted unless specifically approved in writing by the Consultant in each instance. Consultant may withdraw approval at any time and prohibit spray painting for reasons such as carelessness, poor masking or protection measures, drifting paint fog, disturbance to other Trades, or failure to obtain a dense, even, opaque finish. Spray painting shall be full double coat, i.e. at least two passes for each coat. Do not use spray or roller on wood or metal surfaces, brush only unless approved in writing by Consultant.

.12 Paint entire surfaces, including areas where millwork or other items are to be installed.

.13 Finish edges of doors with paint or stain treatment as required to match face of door. Seal hidden edges of wood doors with one coat of shellac and one coat gloss varnish or two coats paint. Repaint tops and edges of wood doors after fitting.

.14 Even up stained woodwork in colour as required by nature of wood and as directed by Consultant. Apply same finish on trim, fitments cupboards and other protecting ledges as on surrounding work, disregard sight lines.

.15 Carefully hand smooth and sandpaper wood between coats (including priming). Apply one coat sealer before applying first coat paint filler to knots or sap blemishes on wood surfaces to receive paint or stain finish.

.16 After first coat, fill nail holes, splits and scratches, using putty coloured to match finish.

.17 Remove rust, oil, grease and loose shop paint from metal work by brushing or with wire brushes and make good shop coat before proceeding with final finish. Feather out edges to make touch up patches inconspicuous.

.18 Clean castings with wire brush before application of first paint coat.

.19 Do not etch galvanized metal. Use zinc rich primer. This includes metal door frames and the like with wiped zinc coating.

.20 Note that primer is required on all hollow metal doors, frames and screens. Three coat system is required. Sand between all coats.

.21 Remove form oil or parting compounds from concrete surfaces. Use Xylol or approved compound.

.22 Paint interior of pipe spaces, ducts, etc. visible through grilles or through linear metal ceilings in black matt finish.

.23 Conform with Consultant's colour schedule and exactly match approved samples.

3.3 **REPAIRS**

.1 Cracks occurring in walls or ceilings requiring patching during "Warranty Period" shall be repainted in such a way that the patch is not visible at a distance of 1m.

.2 If patch painting is not acceptable, repaint entire wall, or ceiling.

END OF SECTION