SPECIFICATIONS

FOR

DENTAL CLINIC RENOVATION

J BUILDING

April 11, 2014

Bryden Martel Architects Incorporated
1066 Somerset Street West, Ottawa, Ontario K1Y 4T3
Voice: 613-724-9914
Facsimile: 613-724-9864
Electronic: bryden@brydenmartel.on.ca
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PART 1 - GENERAL

1. General

.1 Bids under seal will be received until **2:00 p.m. local time, April 24, 2014** addressed to Algonquin College (hereinafter called the Owner).

.2 The Owner reserves the right to waive any informalities and to accept or reject any or all bids. Delivery times for materials as instructed on the Tender Form will be a factor in the evaluation of the bids.

.3 Submit bids on the attached tender form. Complete the form in its entirety.

.4 Place complete tender form in a plain envelope and mark it:

**Bid for**
**Dental Clinic Renovation**
**J Building**
**Algonquin College**

and submit to:

The Board of Governors of Algonquin College
c/o Purchasing Department
Algonquin College
1385 Woodroffe Avenue
Ottawa, Ontario
K2G 1V8
Attention: Mrs. Solveig Z. Keshavjee

.5 Tenders shall be submitted to Algonquin College at Room C550 in Building C.

.6 No telephoned or telegraphed proposals or modifications will be considered.

.7 Tenders received by facsimile machine or electronic mail will not be accepted.

2. Harmonized Services Tax

.1 The Harmonized Services Tax (HST) is **NOT** to be considered an applicable tax for the purposes of this bid. The bidder shall therefore **NOT** include in his bid price the said HST.

3. List of Sub-Contractors

.1 A list of sub-contractors to be engaged by bidders shall be submitted by bidders with the Stipulated Sum Price bid.

.2 Complete the List of Subcontractors on the Tender Form and submit with Tender.

4. Cash Allowance

.1 The following cash allowance shall be included in the Contract Price and shall be handled in accordance with the General Conditions of the Contract.
5. **Bid Validity**
   - Bids shall be valid for a period of 60 days from the submission of tenders.

6. **Agreement to Bond**
   - The Contractor shall also include with his tender a written "Agreement to Bond" meaning a statement by letter from a Bonding Company indicating that the bidder, if successful in obtaining the Contract, will be covered by a 50% Performance Bond and a 50% Labour and Materials Payment Bond as required under General Conditions.

7. **Performance and Labour and Materials Payment Bond**
   - The Contractor shall be required to provide a 50% Performance Bond covering faithful performance of the Contract, and a 50% Labour and Materials Payment Bond guaranteeing that all claimants will be paid for labour and materials furnished to the Contractor or Subcontractor for use on the job.

   - The Performance Bond and the Labour and Materials Payment Bond shall be provided before signing of the Contract with the successful bidder. Cost of the bonds shall be included in the Stipulated Sum Price.

8. **Bid Bond**
   - Each tender shall be accompanied by a bid bond.

   - Regardless of some delays which may occur, the successful bidder shall execute a contract on forms in the form noted in the Contract Documents for the stipulated sum stated in the tender. Delays may be of any duration up to 60 days.

9. **Time of Completion**
   - The work shall be brought to a state of 100% completion including the rectification of construction deficiencies by **August 15, 2014**.

10. **Examination of Work Areas**
    - The work areas are located as shown on the drawings. Before tendering, bidders shall visit and examine the site and shall take note of all conditions affecting conduct and completion of work. Submission of a tender will be deemed to be proof that tenderer has complied with the foregoing requirements.

    - No claim for extras shall be entertained for difficulties encountered or expenses incurred by the contractor due to a failure to visit the site during the tender period to verify visible conditions or hidden conditions reasonably assumable as existing prior to the tender closing date.

11. **Job Showing**
    - A job showing has been arranged for bidders to gain access to the site. The meeting will commence on **April 17, 2014 at 2:00 p.m.** Bidders are to assemble in the main entrance to the Dental Clinic at the ground floor of J Building.

12. **Addenda**
    - Answers to questions directed to the Architect and any amendments to drawings and specifications during the tender period will be...
communicated in the form of Addenda to all bidders. Such Addenda will be considered as part of the specifications and thereby included in the Contract Documents.

13. Tender Sum Breakdown
   .1 After the close of Tenders, the low bidder will be requested to provide a detailed breakdown of the lump sum tender amount.
   .2 The breakdown shall be broken down by building trades and shall be provided to the Architect within 48 hours of the request.

   .1 Material and equipment specifically described are named in this Specification to establish a standard of materials and workmanship to which the Contractor shall ADHERE. Where the manufacturers' trade names are used, the Tender Price shall be based on the use of the materials, products or equipment, for any one of the names mentioned in these Specifications.
   .2 Contractors wishing to submit alternatives for materials, products or equipment specified but not confirmed as acceptable by Addenda issued by the Architect, shall include the following in an accompanying letter with their tender quotation:
     .1 Manufacturer's name and supplier's name.
     .2 Change in price (if any).
     .3 Reason for proposing alternative.
     .4 Statement assuming full responsibility that any equipment, material or products will not exceed the space requirements allocated on the drawings. The contractor shall be responsible for any additional installation cost resulting from the acceptance of an alternative piece equipment, material or product.

15. Environmental Protection Act
   .1 All contractors to conform with the latest Ontario Regulations 101/94 to 105/94 inclusively with respect to waste management.

16. Enquiries
   .1 All questions during the Tender Period should be directed to:

      Bryden Martel Architects Incorporated
      1066 Somerset Street West, Suite 200
      Ottawa, Ontario
      K1Y 4T3

      Attention: David Bryden
      Telephone: 613-724-9914 or 613-850-8798
      E-mail: bryden@brydenmartel.on.ca
FORM OF TENDER FOR STIPULATED SUM CONTRACT

FROM ________________________________ (NAME OF TENDERER)

FOR THE

DENTAL CLINIC RENOVATION
J BUILDING

FOR

ALGONQUIN COLLEGE

The undersigned has examined the conditions on the site, the architectural drawings, the structural drawings, the mechanical drawings, the electrical drawings, the architectural, the structural, the mechanical and the electrical specifications and all addenda thereto as acknowledged hereinafter:

FOR DENTAL CLINIC RENOVATION
J BUILDING
ALGONQUIN COLLEGE,
OTTAWA, ONTARIO

as prepared by Bryden Martel Architects Incorporated and Goodkey Weedmark & Associates Ltd., mechanical and electrical consultants, and hereby offer to furnish all materials, plant and labour for the proper completion of the scope of work as specified, and in accordance with the foregoing drawings and specifications and addenda and exclusive of H.S.T. for the sum of:

________________________________________________________________________

DOLLARS ($__________).

The undersigned acknowledges receipt of the following Addenda and has included for the requirements thereof in the Tender:

Addendum #1 dated: ________________________________

Addendum #2 dated: ________________________________

Addendum #3 dated: ________________________________

BRYDEN MARTEL ARCHITECTS INCORPORATED
The undersigned agrees to complete the work 100% including the rectification of construction deficiencies by **August 15, 2014.**

DATED

______________________________________________

SIGNATURE OF
AUTHORIZED
SIGNING OFFICER

______________________________________________

NAME OF COMPANY

______________________________________________

ADDRESS

______________________________________________

______________________________________________

SEAL

BRYDEN MARTEL ARCHITECTS INCORPORATED
The bids of the following Subcontractors have been used in the compilation of my/our tender. I/We acknowledge that the said Subcontractors are known to me/us as competent to furnish work, material and services of the kind and quality required by the Contract Documents and with such diligence as will eliminate delay in the completion of the General Contract. This list also indicated the trades, if any, that I/we propose to execute ourselves.

LIST OF SUBCONTRACTORS

Millwork
Door Frames
Sheet Flooring
Resilient Tile Flooring
Gypsum Board Systems
Lay-In-Tile Ceilings
Plumbing
HVAC
Electrical
1. **Standard**

   .1 The Standard Construction Document 2 (CCDC2), 2008, as amended, shall form a part of the Contract Documents. The Supplementary Conditions listed in this Section alter, amend, or delete as the case may be, the provisions of the Standard Construction Document 2 (CCDC2), 2008, or the General Conditions of the stipulated price contract, CCDC2 2008.

2. **GC 2.2 ROLE OF THE CONSULTANT**

   .1 DELETE the second sentence in paragraph 2.2.3.

3. **GC 3.1 CONTROL OF THE WORK**

   .1 ADD new paragraph 3.1.3:

   “3.1.3 Do not commence Work or procure any materials until both the Contractor and the Owner have either executed (signed) the Contract, or the Contractor has received a letter of acceptance of Bid from the Owner or its agent AND the Contractor has delivered the specified performance and labour and materials payment bonds, the required Workers Compensation Board Certificate of Clearance, proof of insurance coverage, AND the Owner or its agent has unconditionally accepted such submissions, in writing, as being in compliance with the requirements of the Contract Documents.”

4. **GC 3.6 SUPERVISION**

   .1 ADD new paragraphs 3.6.3:

   “3.6.3 For the purpose of interpreting the Ontario Occupational Health and Safety Act and Regulations thereunder as amended to the time of Bid Closing the Contractor is deemed to be, and shall accept the role of, the designated “Constructor.” A copy of the Contractor’s most recent Workplace Safety and Insurance Board report will be required for the presentation to the Owner as requested.”

5. **GC 5.1 FINANCING INFORMATION REQUIRED OF THE OWNER**

   .1 DELETE paragraphs 5.1.1 and 5.1.2 in their entirety.

6. **GC 5.2 APPLICATION FOR PROGRESS PAYMENT**

   .1 ADD new paragraph 5.2.8:

   “5.2.8 The Contractor shall submit with each application for payment, a fully completed and notarised Statutory Declaration in the form of CCDC documents 9A, 9B or 9C as appropriate to the stage of payment. This form states that all payments due to Subcontractors, for wages and salaries for work done and materials furnished in connection with the Work to the end of the month immediately preceding that covered by the current application, have been made.”
7. **GC 5.3 PROGRESS PAYMENT**

   .1 DELETE paragraph 5.3.1.3 and SUBSTITUTE:

   “5.3.1.3 the Owner shall make payment to the Contractor on account as provided in Article A-5 of the Agreement - PAYMENT on or before 40 calendar days after the later of:
   - receipt by the Consultant of the application for payment, or
   - the last day of the monthly payment period for which the application for payment is made.”

8. **GC 5.5 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF THE WORK**

   .1 ADD new sub-paragraph 5.5.1.3:

   “5.5.1.3 The Contractor shall, at the Contractor’s expense publish a copy of the Certificate of Substantial Performance of the Work in the Daily Commercial News within seven (7) days of receiving a copy of the Certificate.”

   .2 DELETE paragraph 5.5.3 in its entirety.

9. **GC 5.7 FINAL PAYMENT**

   .1 DELETE paragraph 5.7.4 and SUBSTITUTE:

   “5.7.4 Subject to the provision of paragraph 10.4.1 of GC 10.4 - WORKERS’ COMPENSATION, and any lien legislation applicable to the Place of Work, the Owner shall, no later than 30 calendar days after the issuance of the final certificate for payment, pay the Contractor as provided in Article A-5 of the Agreement - PAYMENT.”

10. **GC 5.8 WITHHOLDING OF PAYMENT**

    .1 ADD new paragraph 5.8.2:

    “5.8.2 The Owner may withhold, or, on account of subsequently discovered evidence, nullify the whole or part of any Certificate for Payment to such extent as may be necessary to protect the Owner from loss on account of:

    .1 Defective work not remedied.

    .2 Claims filed, or reasonable evidence indicating probable filing of a claim by any worker, Supplier or Subcontractor.

    .3 Failure of the Contractor to make timely or proper payments to the Subcontractors or for materials or labour.

    .4 A reasonable doubt that the Contract can be completed for the balance then unpaid.

    .5 Damage to other contractors.”
11. **GC 6.2 CHANGE ORDER**

.1 ADD to end of paragraph 6.2.1:

6.2.1 “The Contractor's proposed amount of adjustment in the Contract Price, if any, shall include any proposed compensation for costs as a result of delay in performance of the Work.”

.2 ADD to end of paragraph 6.2.2:

6.2.2 “The adjustment in the Contract Price, if any, recorded in a Change Order shall be all inclusive of the costs of the agreed change in the Work and shall include, among other things, compensation for all of the work costs as a result of delay in performance.”

.3 ADD new paragraphs 6.2.3, 6.2.4 and 6.2.5:

“6.2.3 For extras or credits with a net value exceeding $10,000 the amount of overhead and profit will be negotiated.

6.2.4 On Work additional to the Contract in which the value of the change is less than $10,000 the cost to the Owner shall be:

.1 For work performed by Contractor:
The actual cost of the work plus 15% for overhead and profit.

.2 For work performed by a Sub-Contractor:
Cost of Sub-contractor's work plus 10% for Contractor's overhead and profit
Sub-contractor's mark-up shall consist of the actual cost of work plus 15% for overhead and profit.

6.2.5 If a change in the Work results in a net decrease in the Contract Price, the amount of the credit shall be the net cost, without deduction for overhead or profit. When both additions and deletions covering related work or substitutions are involved in a change in the Work, the allowance for overhead and profit shall be calculated on the basis of the net increase, if any, with respect to that change in the Work.”

12. **GC 6.3 CHANGE DIRECTIVE**

.1 ADD to paragraph 6.3.2, sub-paragraph:

“6.3.2.1 The allowance for overhead and profit shall be in accordance with GC 6.2 and relevant supplementary conditions.”

13. **GC 7.2 CONTRACTOR’S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT**

.1 DELETE paragraph 7.2.3.1 in its entirety.
14. **GC 8.2 NEGOTIATION, MEDIATION AND ARBITRATION**

Add:

“8.2.9 Within five days of receipt of the notice of arbitration by the responding party under paragraph 8.2.6, the Owner and the Contractor shall give the Consultant a written notice containing:

a) a copy of the notice of arbitration
b) a copy of supplementary conditions 8.2.9 to 8.2.15 of this Contract
c) any claims or issues which the Contractor or the Owner, as the case may be, wishes to raise in relation to the Consultant arising out of the issues in dispute in the arbitration.

8.2.10 The Owner and the Contractor agree that the Consultant may elect, within ten days of receipt of the notice under paragraph 8.2.9, to become a full party to the arbitration under 8.2.6 if the Consultant:

a) has a vested or contingent financial interest in the outcome of the arbitration
b) gives the notice of election to the Owner and the Contractor before the arbitration is appointed
c) agrees to be a party to the arbitration within the meaning of the rules referred to in paragraph 8.2.6, and,
d) agrees to be bound by the arbitral award made in the arbitration.

8.2.11 If the Consultant is not given the written notice required under paragraph 8.2.9, both the Owner and the Contractor are stopped from pursuing an action, counter claim or other proceeding or making an application against the Consultant arising out of the issues in dispute in the arbitration between the Owner and the Contractor under paragraph 8.2.6.

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

8.2.13 The arbitrator in the arbitration in which the Consultant has elected under paragraph 8.2.10 to become a full party may:

a) on application of the Owner or the Contractor, determine whether the Consultant has satisfied the requirements of paragraph 8.2.10, and;
b) make any procedural order considered necessary to facilitate the addition of the Consultant as a party to the arbitration.

8.2.14 The provisions of paragraph 8.2.9 shall apply mutatis mutandis to written notice to be given by the Consultant to any sub-consultant;

8.2.15 In the event of notice of arbitration given by the Consultant to a sub-consultant, the sub-consultant is not entitled to any election with respect to the proceeding as outlined in 8.2.10, and is deemed to be bound by the arbitration proceeding.”
15. **GC 8.3 RETENTION OF RIGHTS**
   .1 DELETE paragraph 8.3.1 in its entirety, SUBSTITUTE the following new paragraph 8.3.1
   
   “8.3.1 It is agreed that no act by either party shall be construed as a renunciation or waiver of any rights or recourses.”

16. **GC 9.2 TOXIC AND HAZARDOUS SUBSTANCES AND MATERIALS**
   .1 ADD new sub-paragraph 9.2.5.5:
   
   “9.2.5.5 The reporting requirements set out in 9.3.5 do not relieve the Contractor from any other obligations arising from any municipal, provincial, or federal legislation.”

   .2 ADD new paragraph 9.2.10:
   
   9.2.8 “The costs which the Contractor may, from time to time, be entitled to under the provisions of paragraph 9.2.6 shall not include loss of profits or consequential damages.”

   .3 ADD new paragraph 9.2.11:
   

17. **GC 10.1 TAXES AND DUTIES**
   .1 ADD new paragraphs 10.1.3 and 10.1.4:
   
   “10.1.3 Accounting procedures relating to applicable sales tax shall be established to the satisfaction of all authorities having jurisdiction at the commencement of the Work on the project, and such accounting procedures shall be carried out with no extra cost to the Owner.

   10.1.4 Non-resident contractors who are awarded a construction contract in Ontario are required to comply with the requirements of the Retail Sales Tax Act and pay the appropriate retail sales tax on the goods and services they purchase for the contract. Refer the Retail Sales Tax act and its guide “Retail Sales Tax Guide 804”.”
1. **Permits, Fees and Certificates**
   .1 Provide the authorities with such plans and information as may be required for the issue of acceptance certificates.
   .2 The Owner has applied and paid for the Municipal Building Permit.
   .3 Obtain all inspection certificates from authorities having jurisdiction. Hand over copies of all certificates to the Architect.
   .4 Arrange all necessary inspections by the authorities related to occupancy permits.

2. **Building Access**
   .1 Access for construction materials to the site is only permitted outside normal business hours unless specific permission is obtained from the Owner.
   .2 The access route into and out of the building for construction materials will be as designated by the Owner.
   .3 The location for a garbage bin will be designated by the Owner.

3. **Scheduling of Work**
   .1 The contractor shall submit to the Architect a complete work schedule within 2 days after contract award for the Owner's approval prior to commencement of work.
   .2 Work on site can and shall commence on **May 26, 2014**.

4. **Existing Building**
   .1 The existing building shall be kept fully operational during the entire construction period.
   .2 All existing building services shall be maintained during the entire construction period.
   .3 All existing building spaces outside the construction work areas are required to be kept operational and the access to those spaces shall be kept free from all hazards associated with the adjacent construction that is taking place.
   .4 All existing building fire exits and exit corridors shall be kept fully clear at all times.

5. **Use of Elevator**
   .1 An elevator as designated by the Owner may be used by the Contractor to move materials. Appropriate protection of the elevator shall be installed and the Contractor is responsible for all damage caused to the elevator resulting from the use of it.
   .2 The designated elevator shall **NOT** be used during the normal operating hours of the building which are 8:00 a.m. until 6:00 p.m. on weekdays.
6. Occupancy of Existing Building During Construction
   .1 All areas of the existing building outside the construction work areas will be occupied for the duration of the construction during normal business hours.
   .2 Where required the construction work shall be phased and/or carried out at times falling outside normal business hours to permit the continual and uninterrupted use of the adjacent spaces.
   .3 All building systems that support the adjacent spaces shall be kept in operation during normal business hours. Adjustments to existing systems to allow this to occur are the responsibility of the Contractor.

7. Required Precautions During Business Hours
   .1 Existing spaces adjacent to the work areas will be occupied and functioning during normal business hours of 8:00 a.m. to 5:30 p.m. on weekdays during the construction period.
   .2 Maintain access for staff and visitors to the existing adjacent spaces outside the construction work areas.

8. Construction Noise
   .1 All construction activities that create excessive noise shall be carried out in other than normal business hours.
   .2 The decision as to what constitutes excessive noise shall be at the discretion of Algonquin College.

9. Delivery of Materials
   .1 Arrange for the early delivery of materials necessary for the execution of the work. Obtain materials in advance of the time they are needed for the work.

10. Parking
    .1 The Algonquin College parking regulations will apply to all personnel.
    .2 It is the responsibility of the Contractor to make arrangements for parking.

11. Construction Safety Measures
    .1 Observe and enforce construction safety measures required by the Ontario Building Code, Provincial Government, Workers' Compensation Board, and municipal statutes and authorities.
    .2 The Contractor shall comply with the latest edition or amendment of the following documents.
       .2 Occupational Health and Safety Act, R.S.O. 1990, Chap. 0.1.
.4 Occupational Health and Safety Regulation for Construction Projects Ontario, Regulation 213/91.

.5 Workplace Safety and Insurance Board Act, 1997, S.O. 1997, Chapter 16, Schedule A.


.7 Regulation 347 (General - Waste Management) under the Environmental Protection Act; February 28, 2006.

.8 Workplace Safety and Insurance Board Act, 1997, R.R.O. 1990, Regulation 1101, (First Aid Requirements)

.3 In event of conflict between any provisions of above-noted authorities, the most stringent provision governs.

12. Overloading

.1 Ensure no part of Work is subjected to a load which will endanger its safety or will cause permanent deformation.

13. Falsework

.1 Design and construct false work in accordance with CSA S269.1-1975.

14. Scaffolding

.1 Design and construction scaffolding in accordance with CSA S269.2-M1987.

15. Toilets

.1 Designated existing toilets will be made available to the Contractor.

.2 No construction related cleaning or preparation of materials shall occur in these washrooms.

16. Temporary Enclosures

.1 The Contractor shall provide, erect and maintain all necessary hoardings, guardrails, barriers, night and morality lights and other protection around the building site to comply with ordinances and bylaws of the Authorities having jurisdiction. The Owner shall not be responsible for any damage or expense arising from failure to comply with the bylaws or ordinances of the Authorities having jurisdiction.

.2 Provide and install temporary enclosures for the building or parts of the building, as required for protection against the elements and to maintain the temperatures required and specified.

17. Security and Dust Screens

.1 Immediately the Contractor commences work within the existing building the Contractor shall be responsible for the security of the existing building space and the contents for the duration of the construction period for work within that building.

.2 Provide floor to ceiling gypsum board on steel stud hoarding around the work area. Any access door in the hoarding shall be capable of being locked and shall be dust tight. Maintain this enclosure for the full duration of the construction work.
.3 Dust migration to areas where work is not required or is not currently being carried out shall be controlled. Provide temporary air tight dust screens and barriers in all locations where renovation and alteration work is adjacent to finished and/or occupied areas.

.4 Ensure that the existing HVAC system is adequately modified to ensure that construction dust and odours do not migrate into adjacent occupied areas of the building.

.5 All construction work areas in the existing occupied building shall be protected by secure barriers with signage applied to them warning of the hazards related to the construction work and designating the area as a no trespassing area.

.6 Dust screens and barriers shall be continuously kept in an air tight and sound secure condition.

.7 Immediately repair and make tight dust screens at the direction of the Owner.

18. **Signs and Advertisements**

.1 No signs or advertisements of any description other than notices regarding safety, caution and instruction, shall be put up on the work or site without the approval of the Architect.

.2 The Contractor shall remove at his own expense any signs erected without such written approval and permission.

.3 Upon completion of the Work the Contractor shall remove all signs.

19. **Examination of Drawings And Specifications**

.1 The Contractor shall examine all drawings, all sections of the specifications and site information affecting the work.

.2 Defects in work prepared by the Contractor or Subcontractor affecting the work of another Subcontractor shall be reported to the Architect. Failure to report or commencement of further work over the defect shall mean acceptance of the condition. The Contractor shall hold the Owner harmless from costs arising from these defects and their remedies.

20. **Cooperation**

.1 The Contractor and his Sub-Contractors shall be familiar with each other's work wherein it affects their own work.

.2 The Contractor shall be responsible for the scheduling of materials and the exchange of information between himself and his Sub-Contractors for the execution and completion of the work, i.e. shop drawings, progress schedules, articles to be built-in, location of openings.

.3 By custom or precedent, the Contractor and the Sub-Contractors shall make allowances in their work to accommodate each other's work, i.e. cutting, patching, and building-in.
4. The Contractor shall hold the Owner harmless from costs or damages resulting from failure to co-operate as outlined herein.

21. Details and Measurements

1. All dimensions when pertaining to the work of other trades shall be verified with the Sub-Contractor concerned. Dimensions and the actual material to be used on the work shall be checked with the various drawings and details before the work commences, and the Contractor shall report any variations to the Architect for adjustment if necessary.

22. Manufacturer's Directions

1. Use, install and handle all manufactured materials, equipment and appliances in strict accordance with the manufacturer's directions and instructions, except where specified otherwise.

23. Temporary Lighting and Power

1. The contractor shall arrange for the appropriate temporary power connections during construction.

2. The contractor shall provide temporary wiring, lighting system and adequate power for all trades throughout the entire construction of the project. Ascertain on site, voltage, location and characteristics of power and allow for any deficiencies for the purpose of this contract.

3. Abide by the rules of the Canadian Electrical Code.

24. Job Meetings

1. Job progress meetings shall be attended by the Owner, Architect, Consultants and Contractor.

2. At sub-trade meetings the Architect and/or Consultants shall be present only when specifically requested.

3. Job meetings will be held periodically throughout the duration of the project from the time the work starts to its final completion.

4. The Contractor shall be responsible for having sub-contractors attend the job progress meetings as requested by the Architect.

5. The Contractor will take minutes at job progress meetings and the contractor shall be responsible for circulating these minutes to the sub-contractors within three days.

25. As-Built Drawings

1. Upon completion of the work and prior to the issuance of a Certificate of Substantial Performance the Contractor shall supply to the Architect, two (2) sets of "as-built" drawings showing complete architectural, electrical, mechanical, plumbing, heating, air conditioning, ventilation, refrigeration and other piping duct and conduit systems as actually installed.

2. The Contractor shall maintain on the site one complete set of drawings for the exclusive purpose of recording all changes made during progress of the work. This marked up set will serve as a master from which the Contractor will transfer the information to the "As-Built Drawings".
.3 The Contractor will make certain that all changes are promptly and accurately recorded by his representative or his Sub-Contractor as the work progresses.

.4 All “As-built” drawings shall be submitted before Substantial Performance.

26. Operation and Maintenance Manuals

.1 See Mechanical Specifications for requirements relating to mechanical operation and maintenance manuals.

.2 See Electrical Specifications for requirements relating to electrical operation and maintenance manuals.

.3 Submit four (4) copies of maintenance and operation manuals.

.4 Operation and maintenance manuals shall be submitted at or before Substantial Performance.

.5 The submission of the manuals is a mandatory requirement for the achievement of Substantial Performance.

27. Cleaning Up

.1 The Contractor shall at all times keep the premises free from the accumulation of waste material or rubbish caused by his employees, sub-trades or work and at the completion of the work he shall remove all rubbish and tools, equipment and surplus materials from and about the site.

.2 All rubbish, dirt, debris, waste material, wrapping, containers, etc., shall be periodically removed from the site.

.3 When finishing trades are ready to begin the Contractor shall clean all areas, finished surfaces and shall clean and polish all glass, mirrors, hardware, tile, chrome, aluminum, stainless steel, plastic laminate and plumbing, mechanical and electrical fixtures and equipment. All final cleaning shall be done by an approved qualified cleaning company.

28. Guarantee

.1 The guarantee period(s) for the project Periods shall commence on the date of Substantial Performance of the Contract.

.2 The Owner shall give prompt written notice to the Architect of any defects noted during the guarantee period(s) and the Architect will notify the Contractor promptly requesting him to remedy such defects.

.3 During the month prior to the end of the guarantee period(s), the Owner, the Architect, and the Contractor shall conduct a review of the project. The Contractor shall promptly remedy any defects which are due to faulty materials or workmanship.

29. Documents Required At Site

.1 Maintain at the job site, as a minimum, one copy of the following:

.1 Contract drawings
Specifications
Addenda
Reviewed shop drawings
Change orders
Written site instructions
Other modifications to the contract
Copy of approved work schedule
Manufacturer's installation and application instructions
All consultant and inspection agency site review reports
One set of drawings for marking up "as-built conditions".

30. Minimum Standards

Materials shall be new and work conform to or exceed the minimum applicable standards of the Canadian Standards Association or the Ontario Building Code. Latest edition at Tender closing date and the most stringent conditions apply.
PART 1 - GENERAL

1.1 Examination of the Work Areas .1 Comply with the requirements of the Instructions to Bidders.

1.2 Existing .1 Take over structures to be demolished based on their condition on date that bid is submitted.

.2 Carefully remove all material intended for reuse and store in a protected area.

1.3 Demolition Drawings .1 If required by local authorities, submit for approval drawings, diagrams or details clearly showing sequence of disassembly work and supporting structures and underpinning as needed.

.2 Drawings for structural aspects shall bear the signature and stamp of a structural engineer registered in the Province of Ontario.

1.4 Designated Substances .1 A Designated Substance Survey has been prepared for the areas in the buildings in which construction work is required.

.2 The relevant Designated Substance Survey accompanies this specification as a separate document.

.3 Disturbance of materials in the work areas that are covered by lead based paint shall be removed in accordance with the Ontario Ministry of Labour guideline titled “Lead on Construction Projects”.

1.5 Protection .1 Take precautions to support the structure. If safety of building being demolished or adjacent structures or services appears to be endangered, cease operations and notify Architect. Prevent movement, settlement or damage of existing building to remain.

.2 If the Architect’s engineering consultant considers additional bracing necessary to safeguard and prevent movement or settlement, install bracing on Engineer’s orders. If such bracing is not placed by Contractor promptly, bracing may be placed by Engineer or Owner at Contractor’s expense.

.3 Damage to any Owner’s property, public or private property shall be the responsibility of the Contractor.

1.6 Drilling and Coring of Floors .1 In any location where coring or drilling of existing structural slabs is required the concrete slab shall be scanned and approval for the drilling obtained from the Owner before work starts.

.2 Scanning shall consist of ground penetrating radar used in combination with radio detection where the latter is practical.

.3 The results of the scanning of the slab shall be provided to the Architect before drilling or coring of the slab commences.
.4 The Owner will arrange for consultation with a structural engineer as part of the approval process.

.5 Obtain Architect acceptance of proposed locations for cutting or drilling of concrete slabs before coring or drilling commences.

.6 No reinforcing steel shall be cut. If reinforcement is cut, structural analysis of the existing slab by the Architect will be required and new reinforcement may be required. All costs associated with the consulting work and new reinforcement shall be borne by the Contractor.

.7 Spacing between cores shall be a minimum of 3 times the core diameter. The largest core diameter shall be used to determine spacing.

.8 The Contractor shall retain all cores for Architect review. Label all cores with plan location and top and bottom orientation.

1.7 Dumping Fees

.1 All currently known dumping fees shall be included in the lump sum tender.

1.8 Waste Management

.1 Conform to and follow the more stringent requirements of all current Province of Ontario recycling regulations.

.2 Develop a Construction Waste Management Plan that recycles and/or salvages 75% of construction, demolition and packaging debris. The calculation may be done by either volume or weight but shall be consistent.

.3 The Construction Waste Management Plan shall be submitted to the Owner and Architect prior to the commencement of demolition.

.4 Create, maintain and submit records indicating actual waste management volumes or weights.

PART 2 - PRODUCTS

2.1 Materials

.1 Dispose of demolished materials, except as indicated otherwise, off the site.

.2 Carefully remove all items designated to be handed over to the Owner. Store appropriately for later moving by Owner.

.3 Any removed items that the Owner does not wish to retain shall be disposed of by the Contractor off the site.
PART 3 - EXECUTION

3.1 Work

.1 Dispose of demolished materials away from the site except where noted otherwise. Selling, burning or burying materials on site is not permitted.

.2 Provide garbage containers and locate on site in a location agreed to by Owner.

3.2 Safety Code

.1 Unless otherwise specified, carry out demolition work in accordance with Canadian Construction Safety Code, current edition.

3.3 Demolition

.1 Remove existing equipment, services, and obstacles where required for refinishing or making good of existing surfaces, and replace same as work progresses.

.2 Disconnect electrical and telephone service lines entering the part of the building to be renovated. Post warning signs on electrical lines and equipment which must remain energized to serve the remainder of the building during the period of demolition.

.3 Disconnect and cap mechanical services in accordance with requirements of local authority having jurisdiction.

.4 Demolish parts of existing building to accommodate construction of renovation work as indicated.

.5 Carry out demolition in an orderly and careful manner. At the end of each day’s work leave work in safe condition so that no part is in danger of toppling or falling.

.6 Protect interiors of parts not to be demolished from exterior elements at all times.

.7 Use demolition methods to minimize dusting. Keep materials wetted.

.8 Install dust screens as needed to prevent migration of dust and dirt into adjacent finished spaces and also as needed to prevent ingress of dust and dirt into the existing air handling system.

.9 Protect adjacent finishes from damage resulting from demolition work. Make good any damages at no cost to Owner. Take particular care to keep floor from being damaged as a result of heavy objects falling.

.10 Demolish load-bearing walls in small sections. Carefully remove and lower structural framing and other heavy or large objects. Provide temporary shoring thru all floors to support the structure above.

.11 Remove contaminated or dangerous materials from the site and dispose of in a safe manner to minimize danger involved at site or at any time
during disposal. Conform to requirements of authorities having jurisdiction.

.12 All work damaged by demolition or construction shall be restored to its original conditions by the end of the work and restoration work must be acceptable to the Owner.
PART 1 - GENERAL

1.1 Related Work
   .1 Millwork Drawings  Section 06 40 00
   .2 Painting  Section 09 91 23

1.2 Examination
   .1 Commencement of work shall imply acceptance of all underlying work.

1.3 Shop Drawings
   .1 Submit drawings of all miscellaneous metalwork items for review. Clearly show assembly and installation details including location and type of all exposed fastenings.

1.4 References
   .1 Do welding work in accordance with CSA W59-M989.
   .2 CAN/CGSB-1.40-M89, Primer, Structural Steel, Oil Alkyd Type.
   .3 CAN/CGSB-1.108-M89, Bituminous Solvent Type Paint.
   .4 CAN/CSA-G40.21-M92, Structural Quality Steels.
   .5 CSA W59-1989, Welded Steel Construction (Metal Arc Welding).

1.5 Design Criteria

1.6 Qualification Standards
   .1 Welding shall be undertaken by a fabricator fully approved by the Canadian Welding Bureau to the requirements of CSA Standard W47 Welding Qualification Code for application to fabricating and contracting firms; CSA Standard W55.3 Resistance Welding Qualification Code for Fabricators of Structural Members used in Buildings, and/or CSA Standard W47.2, Aluminum Welding Qualification Code, as applicable.

PART 2 - PRODUCTS

2.1 Materials
   .1 Structural Steel Shapes: medium open hearth steel conforming CAN3-G40.21-M92, Grade 300W.
   .2 Steel pipe: conform to ASTM A53-84a, standard weight, type 40, seamless, black and galvanized finish for exterior use.
   .3 Small Shapes: low carbon mild steel CSA Specification G40.5
   .4 Aluminum: conform to CSA HA Series of Standards.
.5 Bolts and Anchor bolts: to ASTM A307-84a.

.6 Galvanizing: hot dipped galvanizing with zinc coating 600 g/m² to CAN/CSA G164, for all exterior work, except where otherwise indicated.

.7 Grout: Non-shrink, non-metallic, flowable, 24 hr., 20 MPa, pull-out strength 7.9 MPa.


.9 Shop Primer: Conform to CAN/CGSB-1.40-M89 for interior work except where otherwise indicated.

.10 Zinc Primer: Zinc rich, ready mix, conform to CAN/CGSB-1.181-92.

.11 Bituminous Paint: to CAN/CGSB-1.108.

PART 3 - EXECUTION

3.1 Protection

.1 Prevent contact between different metals and between metal and concrete or mortar by a heavy coating of bituminous paint.

.2 Repair damaged galvanized surfaces with zinc rich paint where damaged by welding, cutting, or handling.

3.2 Fabrication

.1 Weld connections where possible, otherwise bolt connections. Countersink exposed fastenings, cut off bolts flush with nuts. Exposed connections to be same material, colour and finish as base material on which they occur.

.2 Accurately form connections with exposed faces flush: mitres and joints tight.

.3 Use self-tapping shake-proof flat headed screws on items requiring assembly by screws or as indicated.

.4 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.

.5 Take measurements at the site before proceeding with fabrication. Variations in job dimensions and dimensions on the drawings shall be reported to the Architect who shall determine the adjustment to be made.

.6 All exposed welds shall be continuous for length of each joint. File or grind exposed welds smooth and flush.
3.3 **Finishing**

.1 After fabrication, clean, scrape, and remove rust, grease or extraneous matter.

.2 Apply an adequate number of coats of zinc chromate primer to all steel members, except stainless steel and galvanized or concrete encased items prior to delivery to site.

.3 Use a brush not a roller. Do not spray paint.

.4 If this application is not satisfactory to the Architect, apply additional coats of primer on site, at no cost to the Owner.

.5 Surfaces to be field welded shall be cleaned but not painted.

.6 Galvanize items to be installed in exterior or highly humid areas after fabrication. Prepare work and hot dip galvanize in accordance with current ASTM Specifications 123, 153, and 386.

3.4 **Installation**

.1 Build and erect work plumb, true, square, straight, level, accurate to sizes detailed, free from distortion or defects detrimental to appearance and performance, rigid, and secure.

.2 Supply all fastenings, hangers, anchors, and accessories required for fabrication and erection of work of this Section.

.3 Supply exposed metal fastenings and accessories of the same texture, colour, and finish as the base metal with which they occur.

.4 Use metal fastenings of the same material as the metal component they are anchoring or of a metal which will not set up an electrolysis action which would cause damage to the fastenings or metal component under moist conditions.

.5 Use fastenings of such a type and size and install in such a manner so as to provide positive permanent anchorage of the related unit. Install anchors at required spacing to provide required load bearing or shear capacity.

.6 Keep exposed fastenings to a minimum, evenly spaced, and neatly laid out.

.7 Supply adequate instructions and/or templates and, if necessary, supervise installation where fastenings or accessories are required to be built into work of other trades.

.8 All exposed screws shall be countersunk unless otherwise noted.
Backpaint, where necessary, to prevent electrolysis due to metal-to-metal contact or metal-to-masonry or concrete contact.

Adequately protect finished surfaces and moving mechanisms of work provided. Remove and replace with approved work all damaged, scratched, discoloured, distorted or malfunctioning items.

Use fastenings which will not cause spalling or cracking of materials to which anchorage is being made.

Touch up shop primer to bolts, welds, and burned or scratched surfaces at completion of erection with primer.

Touch up galvanized surfaces with zinc primer where burned by field welding.

Make field connections with bolts to CSA S16.1-M84 or weld.

Supply and install all angles, brackets, supports for benches, steel lintels, cleats, plates, beams, channels, etc., not specifically referred to in this section or elsewhere in the Specification provided that such items are indicated on the drawings.
PART 1 - GENERAL

1.1 Related Work
Specified Elsewhere

1.2 Quality Assurance

Lumber shall bear the grading stamp of an agency certified by the Canadian Lumber Standards Administration Board.

PART 2 - PRODUCTS

2.1 Materials

Dimension lumber: to CSA 0141-1970 specified group to CSA 086-M80 as listed and to National Lumber Grades Authority Standard Grading Rules for Canadian Lumber, 1987 edition - grade category as follows:

1. Light framing: spruce or pine construction grade.
2. Structural light framing: spruce No. 1 grade.

Plywood: Exterior grade Douglas Fir plywood to CSA 0121-M1978 of thickness indicated, good one side. Use veneer core with Type I bond.

Nails, spikes and staples: to CSA B111-1974; galvanized for exterior work, interior highly humid areas and for treated lumber; plain finish elsewhere. Use spiral thread nails except where specified otherwise.

Fasteners: to hollow masonry use toggle bolts; to solid masonry or concrete use expansion shields and lag bolts; to steel use bolts or power activated fasteners. Use lead or inorganic fibre plugs where screws specified into concrete or masonry.

Proprietary Fasteners: toggle bolts, expansion shields and lag bolts, screws and lead or inorganic fibre plugs, recommended for purpose by manufacture.

Bolt, nut, washer, screw and pin type fasteners: 9 mm diameter unless indicated otherwise with hot dip galvanized finish.

Joist Hangers: minimum 1 mm thick sheet steel, galvanized, 6672 N bearing strength.

Galvanizing: to CSA G164-M1981, use galvanized fasteners for exterior work.

Wood preservative: copper naphthenate or pentachlorophenol base, water repellant wood preservative to CSA 080-M1983 coloured.
2.2 Joint Sealant

Joint Sealant: pre-compressed bitumen, impregnated, open celled, foam strip.

Standard of Acceptance: Emseal PC by Emseal Corporation. Size as recommended by manufacturer for joint to be sealed.

2.3 Wood Preservative

Surface-applied Wood Preservative: copper napthene or 5% pentachlorophenol solution, water repellant preservative, coloured.

PART 3 - EXECUTION

3.1 Erection of Members

.1 Erect to CSA 086-M80.

.2 Make adequate provision for possible erection stresses.

.3 Construct continuous members from pieces of longest practical length.

.4 Install spanning members with "Crown Edge" up.

3.2 Furring and Strapping

.1 Provide wood furring and strapping, for applied facings, cupboards, case-works, valences etc.

.2 Erect plumb and level with shimming as required.

3.3 Roof Blocking, Curbs

.1 Provide wood blocking, sleepers and curbs for roofing and sheet metal work, and roof mounted equipment as indicated.

.2 All wood shall be pressure preservative treated.

.3 Secure to roof deck with galvanized 12.5 mm diameter bolts at 600 mm centres.

.4 Leave 6 mm between lengths.

.5 Install maximum practical lengths.

3.4 Rough Bucks, Nailers

.1 Install wood bucks and nailers as indicated for doors, windows other openings and wall mounted accessories or equipment.

.2 Anchor nailers securely at 400 mm centres. Use maximum lengths practicable. Leave 6 mm spacing between lengths.

.3 All wood that is concealed within the wall system or roof system, shall be pressure preservative treated with a full brush coat of wood preservative.

.4 Backpaint all woodwork in contact with masonry, precast, and cured concrete. Apply preservative to all wood in contact with the ground, mortar and concrete not completely dry and cured.
.5 As required, provide and set rough wood bucks to openings. These shall be anchored to the walls with approved type metal anchors.

.6 Provide wood inserts in the walls where necessary for securing other work where metal plugs have not been provided by other trades, and provide all necessary nailing strips or blocks required.

3.5 **Fasteners**

.1 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.

.2 Countersink bolts where necessary to provide clearance for other work.

3.6 **Wood Preservative Treated Elements**

.1 Pressure preservative treated wood shall be used in the following locations:
   .1 Wood cants, fascia backing, curbs, nailers, sleepers on roof deck.
   .2 Wood furring on outside surface of exterior walls.

.2 Treat surfaces exposed by cutting, trimming or boring with liberal brush application of preservative before installation.

3.7 **Electrical Equipment Backboard**

.1 Provide backboards for mounting electrical, telephone, cable and data equipment as indicated. Use 19 mm thick plywood on 19 x 38 mm furring around perimeter and at maximum 300 mm intermediate spacing.

.2 Plywood shall be fire rated pressure treated.

3.8 **Hardware Installation**

.1 Install all door hardware.

.2 All door hardware shall be supplied under the Cash Allowance for door hardware.

.3 Hardware will include fully mortised locksets for all doors.

.4 Make all necessary visits to the site to ensure proper installation of all hardware.

.5 Coordinate installation work with other trades retained by the Owner for security and data requirements.
PART 1 - GENERAL

1.1 Related Work
.1 Metal Fabrication  Section 05 50 00
.2 Rough Carpentry  Section 06 10 00
.3 Glazing  Section 08 80 50
.4 Painting  Section 09 91 23
.5 Manufactured Specialties  Section 10 10 00

1.2 Reference Standard
.1 Construct millwork to Quality Standards for Architectural Woodwork of the Architectural Woodwork Manufacturers Association of Canada (AWMAC) 1991 in accordance with the Custom Grade Standards Category.

1.3 Examination and Coordination
.1 Examine all drawings and specifications to determine the extent of the work.
.2 Coordinate with other trades for incorporation of mechanical, electrical, or other items into millwork.

1.4 Shop Drawings
.1 Before any millwork work is fabricated, submit to the Architect, for review, shop drawings fully illustrating the millwork.
.2 Indicate details of construction, profiles, jointing, fastening and other related details.
.3 Indicate all materials, thicknesses, finishes and hardware.
.4 Reproduction of the millwork drawings from the contract documents is not acceptable.

1.5 Samples
.1 Submit samples of all millwork hardware for approval by the Architect prior to ordering millwork hardware.
.2 Submit duplicate 300 x 300 mm samples of each type of solid wood or plywood to receive stain or natural finish.

1.6 Protection
.1 Protect all materials from the elements, dampness and damage. All materials stored outside must be raised off the ground and covered.
.2 Millwork fabricated off-site shall be suitably braced and protected so that no damage occurs in transportation.

1.7 Warranty
.1 Casework doors shall be guaranteed against warping, twisting, delamination, sag or manufacturing defects for a period of three (3) years from the date of issue of a Certificate of Substantial Performance. Where warping or twisting occurs in excess of 3mm from true to plane, the contractor shall be responsible for all costs associated with replacing the defective doors including finishing, hanging and installing hardware.
PART 2 - PRODUCTS

2.1 Materials

.1 Softwood lumber: to CSA 0141-1970 and National Lumber Grades Authority requirements, with maximum moisture content of 7% for interior work, yard lumber selected for paint finish Ponderosa Pine species, to AWMAC custom grade.

.2 Hardwood lumber: to National Hardwood Lumber Association (NHLA) requirements, moisture content of maximum 7% for interior, birch species, to AWMAC custom grade for paint finish and select birch as indicated for varnish finish.

.3 Hardwood plywood: to CSA 0115 of thickness indicated, veneer good two sides. Use veneer core with Type 1 bond.

.4 Particle board: to CAN3-0188.1-M78 minimum 20 kg (45 lb) density:

.1 with white coloured 120 g melamine facing both sides where indicated.

.5 Plastic Laminate for Countertops: to CAN3-A172-M79, Laboratory grade solid colour, suede finish. Colours to Architect’s later selection from manufacturers full range of colours. Allow for a total of four different colours. Acceptable manufacturers: Wilsonart, Formica, Arborite, Nevamar.

.6 Plastic Laminate for all surfaces other than countertops: to CAN3-A172-M79, Commercial grade solid colour, suede finish. Colours to Architect’s later selection from manufacturers full range of colours. Allow for a total of four different colours. Acceptable manufacturers: Wilsonart, Formica, Arborite, Nevamar.

.7 Plastic Laminate backing sheet: to CSA A172, .508 mm thick, sanded one face.

.8 Glues: CSA 0112.5-M1977.

.9 Counter Top Cores: Core material shall be 19 mm or 25 mm thick particle board as indicated. Use moisture resistant particle board in counter tops with sinks. Standard of acceptance: “Medex” by Sierra Pine.

.10 Nails and staples: to CSA B111-1974; galvanized for exterior work, interior highly humid areas and for treated lumber; plain finish elsewhere.

2.2 Millwork Hardware

.1 Quantity and sizes shall be determined from the drawings by the Contractor.

.2 All cupboards and drawers shall be locked where shown as locked on the drawings.
.3 All hinges for cabinet doors shall be self-closing Blum Model 95M155-180 for 170 Deg. opening with appropriate finishing accessories.

.4 Pulls for all upper and lower cabinet doors and for all drawers shall be full width pulls Richelieu Model 319912, 10, aluminum.

.5 All drawer slides shall be full extension Accuride #3832 or equivalent in a length to suit.

.6 All adjustable shelf pilasters shall be fully recessed KV255 in a length to suit complete with #256 shelf supports at the rate of four per shelf.

.7 Cabinet locks where called for shall be KV986NP suitable for the thickness of the door or drawer being provided with a lock. Provide two locks where double doors are indicated to be locking.

.8 Closet rods shall be KV 770-5 one piece chrome rods complete with KV-766 end supports. Provide mid-span supports for rods exceeding 1800mm.

.9 Castors for movable counter units for the autoclaves in the Sterilization Laboratory shall be Darcor Castors, Model 31-74B-XD ball-bearing sheaths, full-swivel action, neoprene wheel treads with metal rims, flat plate mounting and foot activated locking.

.10 Coat and towel hooks shall be CBH 75 in satin nickel finish except as specified otherwise. Provide coat hooks in locations shown on drawings.

PART 3 - EXECUTION

3.1 Millwork

.1 Supply and install built-in and unit cabinetwork as shown on drawings.

.2 Mortise, dowel, block, and glue all joints.

.3 Ensure that the work is finished solid, square, and with all drawers and doors operating properly.

.4 Wood for millwork shall be without defects in any exposed parts.

.5 Face materials for stained, varnished, or natural finishes shall be closely matched for grain and colour.

.6 Prior to manufacture of cabinetwork, determine from the millwork hardware section items specified for use by this trade. Supply and installation of hardware shall be by the millwork manufacturer.

3.2 Preparation

.1 Provide all rough hardware required for the proper execution of the work and provide and use all requisite screws, nails, bolts, holdfasts, and accessories not otherwise specified.
.2 Back paint all woodwork in contact with masonry, precast, and cured concrete. Apply preservative to all wood in contact with the ground, mortar, and concrete not completely dry and cured.

.3 Where required, provide and set rough wood bucks to openings. These shall be anchored to the walls with approved type metal anchors.

.4 Carefully plug the walls where necessary for securing other work where metal plugs have not been provided by other trades, and provide all necessary nailing strips or blocks required.

3.3 Millwork

General Workmanship

.1 Millwork shall be pre-assembled in the shop as far as practicable and delivered to the building ready to be set in place. Finished items shall be carefully worked to details, sanded free of surface defects and machine marks. Conceal nails and screws and include blocking and gluing, all as commensurate with first class durable work. Trim shall be cleanly cut with all miters accurately made and fitted.

.2 Frames and finish of every sort shall not be set until moisture contributing finishes are dry and relative humidity in the building approximates normal conditions. Work shall be fitted and scribed to other finished work in a careful manner with all necessary precautions taken to avoid defacing adjacent surfaces. Finish nails shall be properly set ready to receive putty.

.3 Use solid polyvinyl chloride (pvc) edge banding on exposed or semi-exposed edges of particle board with plastic laminate and melamine finishes.

.4 Members shall be erected in pieces as long as possible with inconspicuous joints.

.5 Site dimensions and conditions shall be the responsibility of the Contractor and no extra will be allowed for material which does not fit the required conditions.

.6 All nails shall be long enough so that at least half their length penetrates the second member. Minimize splitting of wood by staggering the nails in the direction of the grain and keep nails as far away from edges as possible.

3.4 Cabinet and Counter Construction

.1 Doors:

.1 Plastic laminate finish - 19 mm particle board with plastic laminate at all edges.

.2 Shelves, Interior and End Gables, Tops and Bottoms of Upper Cabinets:

.1 For exposed locations and as otherwise noted on the drawings - 19 mm plastic laminate faced particle board with plastic laminate at semi-exposed or exposed edges.
.2 For semi-exposed locations and as otherwise noted on the drawings - 19 mm particle board with plastic laminate facing and 3 mm solid plastic edges.

.3 Fixed shelves shall be blind housed into gables. Adjustable shelves shall rest on clips on fully recessed pilaster strips.

.3 Drawsers:

.1 Sides, bottoms and backs: 12.7 mm thick melamine faced particle board.

.2 Fronts: 19 mm particle board with plastic laminate facing and plastic laminate edging.

.3 Drawers shall slide on roller tracks specified in this section. House backs into sides, sides into fronts, and bottoms into sides and fronts. Drawer boxes shall be as high and as deep as possible.

.4 Backs:

.1 For semi-exposed locations: 6 mm particle board with melamine finish. Backs shall be rabbeted into sides, tops and bottoms.

.5 Supports and Framing:

.1 Cabinets set on floor shall have wood bases and shall be secured to floor and walls.

.2 Wall mounted cabinets shall be hung on steel angle clips (inside cabinet) or continuous 19 mm x 19 mm Pine strips at top and bottom (inside cabinet) as required for secure support.

.3 Support framing of counter units using 19 mm x 63 mm Pine or as detailed.

.6 Counter Tops:

.1 Plastic laminate faced 19 mm particle board where shown on the drawings.

.7 Plastic Laminate:

.1 Supply and install plastic laminate work using skilled operatives.

.2 Obtain governing dimensions before fabricating items which are to accommodate or abut appliances, equipment and other materials.
.3 Ensure adjacent parts of continuous laminate work match in colour and pattern.

.4 Bond plastic laminate to base ply using urea formaldehyde glue or a glue as recommended by the manufacturer of the plastic laminate. Ensure complete adhesion and allow no bubbles, waves or hollows in the finished surface.

.5 Permit no joints in less than 3000 mm. Keep joints 600 mm from sink cutouts.

.6 Form shaped profiles and bends as indicated, using post-forming grade laminate to laminate manufacturer’s instructions. All counter tops shall be post formed except where otherwise shown on the drawings.

.7 Use straight self-edging laminate strip for flatwork to cover exposed edge of core material. Chamfer exposed edges uniformly at approximately 20 degrees. Do not mitre laminate edges.

.8 Provide side splashes where counters abut side walls and at change in level of counter tops.

.9 Protect finished work with heavy kraft paper. Do not remove paper until the final cleaning stage.

.10 At junction of laminated plastic counter backsplash and adjacent wall finish, apply a small bead of anti-fungicidal silicone sealant.

3.5 Millwork Hardware Installation

.1 Millwork hardware is specified under this Section. Obtain information as to type, size, etc., and ensure that proper provisions are made in all work to receive same.

.2 Supply and install all millwork hardware.

.3 After installation, fit and adjust operating hardware for wood and laminated plastic cabinet doors, drawers and shelves.

.4 Provide minimum four hinges per door for doors over 1500 mm in height.

3.6 Electrical and Mechanical Requirements

.1 Coordinate location of electrical and mechanical outlets, which are incorporated into cabinet work, with Architect prior to installation.

.2 Grommets at counter tops called for on detail drawings shall be plastic sleeves complete with covers.
PART 1 - GENERAL

1.1 Related Work
   .1 Masonry Division 4
   .2 Carpentry Section 06 10 00
   .3 Modified Bituminous Roofing Section 07 52 00

1.2 Samples
   .1 Provide two 2400 mm minimum lengths of flashing installed and joined
together on the building and obtain the Architect's approval prior to
fabrication of any further metal roof flashings.

1.3 Product Delivery,
   Storage and Handling
   .1 Deliver sheet metal flashing materials to site and store in safe,
   protected storage area to prevent damage.
   .2 Stack flashings to prevent twisting or bending out of shape.
   .3 Prevent contact of flashing materials with corrosive substances.
   .4 Damaged materials shall be replaced with new materials.
   .5 Handle and store metal flashings so that marring and scratching of the
   coatings do not occur.

1.4 Guarantee
   .1 Guarantee flashing assembly free of following defects: splitting seams,
lifting, loosening, and undue expansion for two (2) years from date of
substantial performance.

PART 2 - PRODUCTS

2.1 Materials
   .1 Metal Flashings:
      .1 Galvanized steel, 26 ga. core nominal thickness, Z275 zinc
      coating designation, to ASTM A525M-80, prefinished to
      C.G.S.B. 93-GP-3M, Class FIS, 8000 series.
      .2 The specified gauge of pre-finished metal sheet refers to base
      sheet thickness.
      .3 Colours shall be chosen by Architect from the Series 8000
      colours. Allow two (2) colours.
      .2 Cleats and Fasteners: cleats and fasteners shall be of the same material
      as the metal they are designed to secure. Size shall be to suit
      components to be secured. Gauge shall be sufficient to retain the
      flashings in place.
      .3 Nails: galvanized steel, spiral thread, of sufficient length to provide a
      minimum 25 mm penetration into substrate.
      .4 Plastic Cement: plastic cement for caulking and bedding flashings
      shall conform to CGSB 37-GP-5Ma.
.5 Sealant: sealant shall be a two part polysulphide, colour to match flashing.

.6 Bituminous Paint: bituminous Paint shall conform to CGSB 1-GP-108, Type II.

.7 Underlay: underlay for flashings shall be No. 15 plain asphalt felt conforming to CSA A123.3-M1979.

PART 3 - EXECUTION

3.1 Workmanship

.1 Metal flashing shall be as detailed, supplemented by recommendations of Canadian Roofing Contractors' Association Specifications.

.2 Provide an underlay under flashings consisting of No. 15 plain asphalt felt. Nail in place and lap joints 100 mm.

.3 End joints where adjacent lengths of metal flashing meet shall be made using an "S-lock" joint. This shall be executed by inserting the end of one coping length in a 25 mm deep "S-lock" formed in the end of the adjacent length in a full bed of caulking compound. Concealed portion of the "S-lock" shall extend 25 mm outwards and be nailed to the substrate. Face nailing of the joints will not be permitted.

.4 All free edges of metal flashing shall be strengthened by a fold at least 13 mm wide set out slightly and presenting a straight line and a neat finish. Form flashings in minimum 2400 mm lengths whenever possible.

.5 The metal shall be formed on a bending brake. Shaping, trimming and hand seaming shall be done on the bench as far as is practicable with the proper sheet metal working tools. The angle of the bends and the folds for interlocking the metal shall be made with full regard to expansion and contraction to avoid buckling or fullness in the metal after it is in service and to avoid damaging the surface of the metal.

.6 Dry joints shall be tight but not dented, so as to permit slight adjustments of the sheets and yet to remain watertight. Provide necessary expansion joints in all metal flashings. Caulk using the specified sealant as required to make watertight.

.7 Install continuous starter strips where indicated or required to present a true, non-waving, leading edge. Anchor to back-up to provide rigid, secure installation.

3.2 Counter Flashings

.1 Install counter flashings as soon as possible after membrane flashings are in place.
.2 Counter flashings shall have folded bottom edge, stiffening break where indicated and shall extend up vertical face of wall or curb to height shown, then be turned into reglets or interlocked with cap flashings.

.3 Wedge flashings into reglets and caulk neatly using specified sealant.

3.3 Cap Flashings

.1 Tops of walls, parapets, counter flashings and the like shall be cap flashed as detailed, after membrane and metal counter flashings are in place.

3.4 Openings

Through Roof

.1 Provide and install metal flashings - counter and cap flashings to all equipment on roof and where any object passes through roof. Refer to mechanical and electrical drawings as well as architectural drawings to determine extent of this work.
PART 1 - GENERAL

1.1 Related Work
.1 Mechanical Work Divisions 21, 22 and 23
.2 Electrical Work Divisions 26, 27 and 28

1.2 System Description
.1 Work of this Section shall include, but shall not be limited to, fire stopping to prevent spread of fire, gases and smoke through fire rated assemblies as required by jurisdictional authorities at:
   .1 Installations that penetrate walls and floors which are fire rated separations or non-rated fire separations.
   .2 Joints and voids within and at junctions of fire rated separations and non-rated fire separations.
   .2 Fire stopping within mechanical and electrical assemblies, such as ducts, fire dampers and electric cable trays, are included in the work of Divisions 21, 22, 23, 26, 27 and 28 respectively.

1.3 Quality Assurance
.1 Install only fire stopping with an inherent fire hazard classification in all its parts that is within limits established by jurisdictional authorities.
.2 Validate fire hazard classification only by testing laboratories acceptable to jurisdictional authorities.
.3 Ensure Underwriter's Laboratories labels are attached to package of fire rated materials.

1.4 Reference Standard
.1 CAN4-S115-M85, Standard Method of Fire Tests of fire stop Systems.

1.5 Samples
.1 Submit samples of fire stopping and accessories for Architect’s review.

1.6 Delivery, Storage and Handling
.1 Package fire stopping materials and label them to designate manufacturer and type.
.2 Store fire stopping materials in dry areas, protected from wetting and traffic.

PART 2 - PRODUCTS

2.1 Materials
.1 Fire stopping assemblies, materials and sealants shall meet specified requirements of CAN4-S115-M85, and be listed in ULC Guide Nos. U19, U19.13 and U19.15 under label service of ULC as applicable.
.2 Fire stopping materials shall be selected so that in compliance with requirements of CAN4-S115, the installation does not exceed opening sizes for which they are intended.
.3 Fire Stopping at Penetrations of Fire Rated Construction and Non-Rated Fire Separations:

.1 Provide only asbestos-free fire stopping materials that are suitable for each required fire rating, construction type, and void dimensions for each location.

.2 Incorporate fire stopping materials in assemblies to provide fire resistance rating not less than the fire resistance rating of the construction in which it is installed.

.3 Do not use cementitious or rigid materials, for fire stopping at penetrating components which may require ease of removal and/or replacement.

.4 Use only resilient fire stopping seals at penetrating components subject to sound and vibration control.

.5 Provide primers for surfaces in contact with fireproofing materials which will ensure complete bonding as recommended by the manufacturer of the fireproofing material.

.6 Provide anchorage, supports, and damming and backup materials only as recommended by the fireproofing manufacturer and in conformance with test report specification validating conformance of fireproofing to specified requirements.

.7 Identify fire stopping materials by distinctive colour except at locations where exposed to view.

.8 Provide all materials and accessories required for installation of complete fire stopping system.

.4 Joint Sealant Fire Stopping:

.1 Single component neutral curing silicone, or single component or multi-component urethane.

.2 Colour: Selected by Architect.

.3 Sealant Backing and Bond Breaker: Round rod backing and tape bond breaker approved for use in fire rated joints.

.4 Masking Tape; Self-adhesive, easily removable with no remaining residue, non-staining, and providing complete protection from stains or deposits of sealant.

.5 Preformed Fire Stopping:
.1 Preformed Insulation: Firebarrier by Double A/D Distributors Ltd., of width suitable for proper compression and of depth required to maintain fire stop.

.2 Clip Anchors: Zee-shape impaling clips, 25 mm wide, 0.8 mm thick, galvanized steel to suit each location.

PART 3 - EXECUTION

3.1 Examination

.1 Before commencing work ensure that void and joint configurations and other conditions are suitable for installation of fire stopping at each location to meet specified requirements.

.2 Determine fire stopping materials and methods required to provide fire stopping of each penetration at each location.

.3 Defective fire stopping resulting from installation at unsatisfactory conditions will be considered the responsibility of this Section.

3.2 Preparation

.1 Prepare surfaces in contact with fireproofing as recommended by manufacturer of fire stopping materials to ensure complete bonding.

.2 Remove loose mortar, dust, oil, grease, water, frost, oxidation, mill scale, coatings and all other foreign materials affecting bond of fire stopping to substrate, except for finish coated surfaces, by brushing, scrubbing, scraping or grinding.

.3 Clean down caulked metal and coated surfaces with clean cellulose sponges or rags soaked in solvent compatible with sealant and that is recommended by sealant manufacturer, and wipe dry with clean cloths. Ensure that solvent is compatible with sealant and that it is not injurious to painted surfaces.

.4 Use methods of preparation suitable for substrate as recommended by fire stopping manufacturer, and that does not damage adjacent surfaces.

.5 Ensure that releasing agents, coatings or other treatments have either not been applied to substrates for fire stopping, or that they are entirely removed.

.6 Protection at joint sealants:

.1 Provide protection to prevent soiling or staining of adjacent surfaces by fire stopping.

.2 Use masking tape protection to prevent coating at joints in surfaces exposed to view.
3.3 Installation

.1 Fire stopping at Penetrations of Fire Rated Construction and Non-Rated Fire Separations:

.1 Provide fire stopping in fire separations for through penetrations, poke-through termination devices, and non-penetrated openings or joints to maintain the integrity of the fire separation.

.2 Install each fire stopping system to meet applicable ULC test design specification that validates acceptability of the system, and to ensure that flame and hose stream ratings meet requirements of jurisdictional authorities in order that an effective barrier is provided against passage of flame, smoke and gases.

.3 Install service penetration assemblies as certified by ULC and listed under ULC Guide No. 40 U19.

.4 Install service penetration fire stop components as certified by ULC and listed in ULC Guide No. 40 U19.13 under label service of ULC.

.5 Use gun grade sealant materials at masonry and gypsum board joints.

.6 Use self-levelling sealant materials at floor seals.

.7 Use non-sagging materials at wall seals.

.8 Seal electrical outlet boxes in fire rated stud partitions with intumescent permanently pliable pads.

.9 Provide temporary forming and support of fire stopping until the materials have cured.

.10 Finish exposed surfaces of fireproofing smooth and level with adjacent surfaces.

.11 Remove excess fireproofing from adjacent surfaces immediately following the soiling of the surfaces.

.2 Joint Sealing:

.1 Install fire stopping sealant to provide a complete seal of through joints of fire separations and of joints at junctions between dissimilar fire separations.

.2 Prime surfaces to receive sealants as required by substrate and manufacturer's specifications to ensure positive and permanent adhesion, and to prevent staining.
.3 Pack joints tightly with sealant backing set at depth specified for sealant. Fill other voids with filler.

.4 Install bond breaker tape in bottom of joints in lieu of sealant backing where suitable depth cannot be obtained when backing is installed.

.5 Fill joints with sealant compound to specified or indicated depths as indicated. Perform joint sealing in accordance with compound manufacturer’s specifications, and using pressure guns and other equipment as approved by him. Finish joints with a full bead so that they are smooth; and free from ridges, wrinkles, air pockets and embedded foreign materials.

.6 Tool surface of joints to a slight concave profile.

.7 Make compounds workable only as manufacturer specifies.

.8 Do not allow sealants to cover or spot surfaces outside of joints. Use masking tape protection to prevent coating of adjacent surfaces if necessary.

.3 Refer to specification Section 04 22 00 for fire stopping at top of masonry walls.

.4 Preformed Fire Stopping:

.1 Install preformed fire stopping at junctions of slab edges and exterior walls. Ensure that seal is compatible with hot through penetrating metal items and that the hose stream rating is maintained at interface of metal to fire stopping without delamination at temperatures up to 900 deg. C.

.2 Install fire stopping with minimum 25% compression as recommended by manufacturer and to meet requirements of ULC Test Specification that validates system performance.

.3 Butt joints between lengths of fire stopping tightly.

.4 Provide two clip anchors for each 1200 mm length of fire stopping. Ensure that shorter lengths are also supported by two clip anchors.

.5 Fill all voids in fire rated separations with fire stopping to within 12 mm of separation to allow for application of fire stopping sealant.

.5 Fire Stopping at the Perimeter of Fire Separations:
.1 Appropriate fire stopping shall be installed at the full perimeter of all fire separations taking into account the specified fire rating for the fire separation.

.2 Install each fire stopping system to meet applicable ULC test design specification that validates acceptability of the system, and to ensure that flame and hose stream ratings meet requirements of jurisdictional authorities in order that an effective barrier is provided against passage of flame, smoke and gases.

3.4 Adjustment and Cleaning

.1 Ensure that all voids in each system are effectively sealed.

.2 Remove temporary forming and support after fireproofing has cured.

.3 Remove protections provided.

.4 Clean adjacent surfaces to remove soil and residue from fire stopping installations.
PART 1 - GENERAL

1.1 Guarantee
.1 Provide a written guarantee, signed and issued in the name of the Owner stating that caulking work of this section is guaranteed against leakage, cracking, crumbling, melting, shrinkage, running, loss of adhesion, or other failure, staining adjacent surfaces, for a period of three (3) years from the date of Certificate of Substantial Performance.

1.2 Delivery
.1 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture and water.

1.3 Environmental and Safety Requirements
.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of material safety data sheets acceptable to Labour Canada.

.2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

PART 2 - PRODUCTS

2.1 Materials
.1 Primer: where required shall be as recommended by manufacturer of sealant.

.2 Back-Up Materials and Preformed Joint Fillers: shall be non-staining, compatible with sealant and primer, and of a resilient nature, such as closed cell resilient foam, sponge rubber; or of a supporting type, such as closed cell rigid foam, cork or non-impregnated fibreboard. Materials impregnated with oil, bitumen or similar materials shall not be used. Size and shape shall be dictated by joint details in drawings. Sealant shall not adhere to back-up material.

.3 Bond Breakers: where required shall be pressure sensitive polyethylene tape which will not bond to sealants.

.4 Cleaning Solvent: shall be coal tar naptha equal to "Xylol", methylethylketon or non corrosive type as recommended by sealant manufacturer and compatible with joint forming materials.

.5 Sealants: shall conform to CGSB Specifications as listed below; colour to Architect's selection.

.1 CGSB 19-GP-17M Siliconized Acrylic Latex Sealant for: caulking around interior door frames and at window perimeters against concrete block or gypsum wallboard walls.
.2 CGSB-19.13-M87 high-performance, medium modulus one-part silicone or CAN/CGSB-19.24 Type 2, Class B multi-component chemical curing for:
   .1 Caulking around exterior louvres and exhaust caps
   .2 Interior seal around exhaust ducts at concrete and masonry surfaces.
   .3 Caulking pressed steel door frames at reinforced resilient floor tile.

.3 CGSB-19.13-M87 general construction grade one-part acetoxy silicone sealant, white or clear fungal resistant:
   .1 At countertop perimeters
   .2 In other humid or wet areas

PART 3 - EXECUTION

3.1 Extent of Work
   .1 Install caulking in all locations shown on drawings.
   .2 Install caulking at the perimeter of all interior steel door frames and screens.
   .3 Install caulking where countertops and countertop splashbacks butt against vertical surfaces.
   .4 Install caulking where interior steel door frames abut reinforced vinyl tile floors.

3.2 Installation
   .1 Thoroughly clean area to be caulked, ensure dryness and absence of frost, or matters likely to impair adhesion. Metal surfaces should be free of rust and grease. No compound shall be applied at temperatures of less than 5 degrees C. Do not apply sealants to materials treated with sealer, curing compound, water repellent or other coating unless tests have been carried out to ensure the compatibility of materials. Remove coatings as required.
   .2 Pack deep joints with a joint filler which shall be 30 - 50% wider than the joint, as construction progresses.
   .3 As recommended by the caulking manufacturer, prime surfaces to receive caulking and apply caulking compound while primer is still tacky. Where necessary to prevent staining, mask adjacent surfaces before priming.
   .4 Apply caulking compound using a hand gun designed for the purpose fitted with a nozzle sized and shaped to suit the joint. Apply sealants in continuous beads.
   .5 Depth of caulking compound shall equal joint width for joints less than 13 mm wide. The caulking depth shall not exceed half the joint width for joints 13 mm wide or more.
.6 Use sufficient pressure to fill voids and joints solid. Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities. Tool the finished joint to a shallow, concave shape to give a smooth, neat appearance.

.7 Cure sealants in accordance with manufacturer's instructions. Do not cover sealants until proper curing has taken place.

.8 Clean adjacent surfaces immediately and leave work neat and clean. Remove excess and droppings, using recommended cleaners as work progresses. Remove masking tape after initial set of sealant.
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SPC: solid particle core  
HM: hollow metal  
PT: painted  
PS: pressed steel  
ST: stained and varnish
NOTES FOR SECTION 08000:

1. PRESSURED STEEL FRAME.
2. DOOR, REFER TO DOOR AND SCREEN SCHEDULE FROM MATERIAL AND FINISHES.
3. GLAZING, GLAZING STOP TO BE LOCATED ON SECURE SIDE.
4. SOLID CORE PARTIAL BOARD DOOR.
5. 19 mm THICK SOLID WOOD, FINISH GRADE STAINED TO MATCH DOOR.
6. WOOD BLOCKING TO SUITE.
7. GABLE CONSTRUCTED OF 19 mm SOLID WOOD, FINISH GRADE STAINED TO MATCH DOOR.
Dutch Door Section

SCALE: 1:6
PART 1 - GENERAL

1.1 Related Work .1 Sealants  
Specified .2 Door & Screen Schedule 
Elsewhere .3 Solid Particle Core Doors 
.4 Miscellaneous Glazing

1.2 Shop Drawings .1 Submit shop drawings for the Architect's approval.
.2 Indicate each type of door and frame material supplied, cutouts and reinforcements for hardware, anchors and location of exposed fastenings.

1.3 Protection .1 Protect surfaces of doors and frames from damage before and after installation.

1.4 Welding Standards .1 Welding shall conform to requirements of CSA Specification W-59 and be done by a fabricator fully approved by the Canadian Welding Bureau to requirements of CSA Specification W-47.1-90. Fill or grind exposed welds, smooth and flush. Exposed welds shall be continuous.

1.5 Fabrication Standards .1 Conform to Canadian Steel Door and Frame Manufacturers' Association (CSDFMA) standards for door and frame fabrication.
.2 Conform to clause 3.1.8.5 of Ontario Building Code.

PART 2 - PRODUCTS

2.1 Materials - General .1 Hot dipped galvanized steel sheet: to ASTM A653, CS, Type B, coated with Z275 zinc finish for exterior locations and coated with ZF75 zinc-iron alloy finish for other interior locations to ASTM A653M.
.2 Structural and other shapes as reinforcement: to CSAG40.20/G40.21, Type 44W, coating designation to ASTM A653M to match face sheet.
.3 Core Materials: stiffened, face sheets laminated, insulated core:
.1 Semi-rigid glass fibre core to CAN/ULC-S702, density 24 kg/m3 for interior doors.
.2 Expanded polystyrene core to CAN/ULC-S701 for exterior doors.
.4 Touch-up prime: CAN/CGSB-1.181.

2.2 Materials - Frames & Screens .1 Frame members: 16 gauge thickness steel.
.2 Hardware reinforcements: minimum 8 gauge thickness steel.
2.3 Fabrication

.1 Fit and assemble work in shop where possible. Execute according to details and approved shop drawings, ULC requirements and to Hollow Metal Trades Association "Canadian Manufacturing Specifications for Steel Doors and Frames" for hollow steel construction except where specified otherwise. Where shop fabrication is not possible make trial assembly in shop.

.2 Joints and intersecting members shall be accurately fitted, made in true planes with adequate fastenings.

.3 Insulate to prevent contact between different metals and metal to masonry or concrete to prevent chemical or electrolytic corrosion.

.4 Construct thermally broken frames using steel core, separating interior portion of frame from exterior portion of frame using polyvinyl chloride thermal breaks.

.5 Fabricate work square, plumb, straight, true and accurately fitted. Provide adequate reinforcing and anchorage.

.6 Bond treat and apply one coat rust inhibitive zinc chromate primer, oven baked in shop, on all parts not specified to have zinc coating.

.7 Obtain hardware templates: Cut, blank-out, reinforce and drill all members accurately to receive hardware. Provide locating clips for mortise locks.

.8 Touch up doors and frames where galvanized finish is damaged during fabrication.

2.4 Fabrication of Frames & Screens

.1 Prior to fabrication take critical measurement at site to facilitate installation and fitting.

.2 Fabricate steel frames to the profiles shown on the drawings and specifications.

.3 Provide continuous thermal breaks in frames installed within the exterior wall of the building.

.4 Blank, drill, reinforce and tap frames to receive templated strikes, door closers and hinges. Hardware reinforcing minimum 8 gauge thickness steel.
.5 Reinforce frames for application of surface closers.

.6 Reinforce head of frames wider than 1200 mm.

.7 Supply removable portion of stop and frame where required for overhead concealed door closures.

.8 Cut frames, mitre accurately and form continuous invisible welds.

.9 Grind welded corners, fill exposed surface depressions and butted joints with metallic paste filler and sand to a smooth uniform finish.

.10 Protect strikes, cut outs and reinforcement plates with guard boxes welded in place.

.11 Fabricate work square, plumb, straight, true and accurately fitted. Provide adequate reinforcing and anchorage.

.12 Provide two channel or angle spreaders readily removable, or concealed in floor. Where frame terminates at finished floor, provide floor plate for anchorage to slab.

.13 Provide adjustable "Tee" anchors with heads of No. 16 gauge steel and body of 18-gauge corrugated steel, for frames in masonry construction and in steel stud wall construction. Supply three anchors for jambs between 1200 mm and 2100 mm and four for jambs exceeding 2100 mm high.

.14 Provide each door frame with two (2) neoprene door bumpers at the head of each door and three (3) at the strike side for single doors and at the hinge side for double doors.

.15 Screens shall be anchored to the floor at 600 mm on centres where they sit on the floor. Anchor screen reinforcing firmly to structure.

.16 Provide removable glazing stops of formed steel complete with countersunk oval-head cadmium plated Phillips head machine screws, 200 o.c. minimum 2 screws per stop.

.17 Provide “Z” anchors of 18-gauge steel for frames in steel stud construction. Supply three anchors for jambs between 1200mm and 2100mm and four for jambs exceeding 2100mm high.

.18 Screens shall be anchored to the floor at 600mm on centres where they sit on the floor. Anchor screen reinforcing firmly to structure.

PART 3 - EXECUTION

3.1 Frame Installation

.1 Set frames plumb, square, level and at correct elevation.
.2 Secure anchorages and connections to adjacent construction.

.3 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreaders at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 1200 mm wide. Remove temporary spreaders after frames are built-in.

.4 Make allowance for deflection to ensure structural loads are not transmitted to frames.

.5 Install frames in walls with the frames positioned according to the door and screen schedule.
PART 1 - GENERAL

1.1 Related Work

Steel Doors, Frames & Screens Section 08 11 00
Painting Section 09 91 23

1.2 Reference Standards

All doors shall conform to CSA Standard 0132.2M 1990 and AWMAC Institutional grade.

1.3 Shop Drawings

Submit shop drawings indicating door types and construction.

1.4 Delivery and Storage

Deliver and store doors in accordance with CSA Standard 0132.2 Appendix A.

1.5 Guarantee

Doors shall be guaranteed against warping, twisting, delamination, sag or manufacturing defects for a period of three (3) years from the date of issue of a Certificate of Substantial Performance. Where warping or twisting occurs in excess of 3mm from true to plane, the contractor shall be responsible for all costs associated with replacing the defective doors including painting, hanging and installing hardware.

The manufacturer shall submit to the general contractor written instructions at the time of delivery of material to the site pertaining to the care, handling, installation and painting of doors.

PART 2 - PRODUCTS

2.1 Materials


2.2 Door Construction

Wood doors shall be solid particle core or non-combustible mineral fire door core 45 mm thick with reinforced frame.

Refer to Door Schedule for door sizes.

Faces shall be stain grade birch veneer. Match existing. Refer to Door Schedule.

Edge material shall be solid birch and be of one piece.

Top rails shall be 115 mm high and bottom rails shall be 70 mm high, of laminated low density wood of the same species.

Stiles shall be 115 mm in combined width and of laminated low density wood of the same species as the rails plus 12 mm hardwood edging matching the face veneer.

The core shall be fabricated of mat formed solid particle core density of 28 pounds P.C.F. conforming to CAN/CSA-0325.0-92 (R1998). Core for 45 minutes labelled doors to be non-combustible mineral core.
.8 Water resistant, Type II synthetic resin adhesive shall be used throughout.

.9 Hot press bonding shall be employed both in fabrication of plywood faces and in bonding of the faces to the core.

.10 Openings shall be provided for grilles and glazing where required. All associated trim shall be in species to match the face. All wood stops shall have mitred corners.

.11 The maximum free clearance below doors in the closed position shall be 16 mm.

PART 3 - EXECUTION

3.1 Installation .1 Install doors in accordance with manufacturer's printed instructions.
PART 1 - GENERAL

1.1 Description .1 Supply all materials as listed, complete with all fastenings necessary to complete the work to the intent of this section.

.2 The hardware supplier shall satisfy himself as to the suitability of all hardware and advise the Architect of any discrepancies.

.3 Ensure proper templating and/or brackets are supplied where closer and overhead stop/holder is used.

1.2 Hardware List .1 Supply a hardware list for the Architect’s approval prior to shipment of hardware to the site. Clearly indicate hardware proposed including make, model, material, function, finish, and all other pertinent information.

.2 Upon receipt of approved schedule, issue a copy to General Contractor for various sub-trades.

1.3 Quality Assurance .1 Only tradesmen competent in the installation of finishing hardware shall be used for this purpose. The installer shall adjust, clean and make good all installations of finishing hardware to the satisfaction of the Architect.

1.4 Maintenance Data .1 Supply two sets of wrenches for door closers and locksets.

.2 Brief maintenance staff regarding proper care of hardware such as lubricating of locksets, adjustments of door closers, cleaning and general maintenance.

1.5 Delivery and Storage .1 Store finishing hardware in locked, clean and dry area provided by the General Contractor with sufficient shelving to permit the itemizing and orderly sequential set-up of hardware.

.2 Package each item of hardware separately or in like groups of hardware, label each package as to item definition and location.

.3 Deliver all finished hardware to the installer in a timely manner to ensure orderly progress of the total work.

1.6 Guarantee .1 Furnish a written guarantee warranting all door closers installed under this contract for a period of 10 years from date of the Certificate of Substantial Performance.

PART 2 - PRODUCTS

2.1 Materials .1 All hardware shall be exactly as specified with no substitutes accept as follows:

BRYDEN MARTEL ARCHITECTS INCORPORATED
<table>
<thead>
<tr>
<th>Specified</th>
<th>Alternates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hinges</td>
<td>McKinney</td>
</tr>
<tr>
<td>Locksets</td>
<td>Best Locks</td>
</tr>
<tr>
<td>Panic Sets and Removable Mullions</td>
<td>Von Duprin</td>
</tr>
<tr>
<td>Panic Sets and Removable Mullions</td>
<td>None</td>
</tr>
<tr>
<td>Door Pulls</td>
<td>Standard Metal Hardware</td>
</tr>
<tr>
<td>Flush Bolts</td>
<td>Ives</td>
</tr>
<tr>
<td>Door Closers</td>
<td>LCN</td>
</tr>
<tr>
<td>Push &amp; Kick Plates</td>
<td>Standard Metal Hardware</td>
</tr>
<tr>
<td>Floor/Wall Stops</td>
<td>Standard Metal Hardware</td>
</tr>
<tr>
<td>O.H. Stops &amp; Holders, Auto Bolts and Co-ordinators</td>
<td>Glynn-Johnson</td>
</tr>
</tbody>
</table>

.2 When using the alternate products, supplier to ensure all brackets, plates and special templating are included to operate doors as listed in the Finishing Hardware Schedule and supplied products will operate together without interference.

2.2 Fastenings

.1 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation.

.2 Exposed fastening devices to match finish of hardware.

.3 Where a pull is scheduled on one side of door and push-plate on other side, supply fastening devices, and install so pull can be secured through door from reverse side. Install push-plate to cover fasteners.

.4 Manufacturers screws shall be used in all cases. “TEK” type screws are not acceptable.

PART 3 - EXECUTION

3.1 Hardware

Location

.1 Establish a schedule of mounting heights for all items of hardware and include in hardware list.

.2 Establish degree of opening for doors with closers, and include in hardware schedule.

3.2 Installation

Instructions

.1 Furnish metal door and frame manufacturers with complete instruction and templates for preparation of their work to receive hardware.
.2 Furnish manufacturer’s instructions for proper installation of each hardware component.

.3 Lockset cores are to be shipped directly to the Owner care of:

Jonathan Barnett
E-mail address: barnetj@algonquincollege.com

.4 Make all necessary visits to the site to ensure proper installation of all hardware.

3.3 Inspection of Installation .1 Upon completion of the installation and as a condition of its acceptance, deliver to the Architect a report signed by the manufacturers agent that his inspection was made, that all adjustments recommended by him have been completed and that all finish hardware furnished under this section has been installed and is in optimum working condition.

3.4 Hardware Groups .1 Refer to Hardware Groups that follow. Determine quantities from Door Schedule.

HARDWARE GROUP 1

<table>
<thead>
<tr>
<th>ITEM 1</th>
<th>1 SGL. DR. 1811.1</th>
<th>Room 210D to Room 210A</th>
</tr>
</thead>
<tbody>
<tr>
<td>915 X 2134 X 45 SPC/HM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 EA HINGE</td>
<td>BB1279 114 X 101</td>
<td>626</td>
</tr>
<tr>
<td>1 EA CLOSER</td>
<td>4040 Series</td>
<td></td>
</tr>
<tr>
<td>2 EA WALL STOP</td>
<td>626</td>
<td></td>
</tr>
</tbody>
</table>

HARDWARE GROUP 2

<table>
<thead>
<tr>
<th>ITEM 1</th>
<th>1 SGL. DR. 1811A.1</th>
<th>Room 200 to Room 207A</th>
</tr>
</thead>
<tbody>
<tr>
<td>915 X 2134 X 45 SPC/HM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 EA HINGE</td>
<td>FBB179 114 X 101NRP C26D</td>
<td></td>
</tr>
<tr>
<td>1 EA LOCKSET 93K-7-D-15-C-S3</td>
<td>With 7 Pin Uncombinated core/TB Keyway</td>
<td></td>
</tr>
<tr>
<td>1 EA CLOSER</td>
<td>4040 Series</td>
<td></td>
</tr>
<tr>
<td>1 EA DOOR SWEEP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 ELECTRIC DOOR STRIKE HES 1006 (4 7/8&quot;)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 EA WALL STOP</td>
<td>626</td>
<td></td>
</tr>
</tbody>
</table>
PART 1 - GENERAL

1.1 Related Work
   .1 Millwork  Section 06 40 10
   .2 Door Schedule  Section 08 00 00
   .3 Steel Doors, Frames and Screens  Section 08 11 00
   .4 Finishing Hardware  Section 08 71 00

1.2 Examination
   .1 Examine all locations where glazing and miscellaneous glass are to be installed. Notify the Architect of any defects likely to affect the work of this Section.

1.3 Quality Assurance
   .1 Each piece of glass shall have a label showing manufacturer's name or trademark, glass or mirror quality, draw directions, and country of origin.
   .2 Unlabeled glass will be rejected. Do not remove labels until Architect authorizes such removal.

1.4 Samples
   .1 Before proceeding, submit to the Architect for review samples of glazing gaskets to be used.

1.5 Guarantee
   .1 Replace at no cost to the Owner mirrors showing failure of silvering occurring within two years from date of the Certificate of Substantial Performance.

PART 2 - PRODUCTS

2.1 Materials
   .1 Glass shall be tempered and shall conform to CAN2-12.1-M90, Type 2, minimum 6 mm thick.

2.2 Glazing and Sealing Compound Materials
   .1 Sealant compound: one component silicone rubber, to CAN/CGSB-19.13-M82, gun grade, clear colour.
   .2 Glazing tape: preformed butyl tape, 10-15 durometer hardness, paper release, grey colour.
   .3 Setting blocks: neoprene, Shore "A" durometer hardness 80, size and shape to glazing manufacturer's recommendation.
   .4 Glazing Compound: Modified oil type to CGSB19-GP-2M, knife grade, grey colour.
   .5 Spacer shims: neoprene, Shore "A" durometer hardness 50.
   .6 Glazing splines: neoprene manufacturer's standard dry glazing splines to suit aluminum extrusions.
   .7 Glazing points and wire spring clips: corrosion resistant, manufacturer's standard.
PART 3 - EXECUTION

3.1 Delivery, Storage and Handling

.1 Deliver, store, and handle glass and glazing products to prevent damage. Replace damaged products with new material conforming to Specification.

3.2 Job Conditions

.1 Protect glass from construction stains during the course of the work. Remove such stains immediately.

.2 Painting, plastering, drywall, and other wet work likely to damage glass shall be complete before installation of glass and mirrors is undertaken.

3.3 Installation of Glass

.1 Use tempered glass for all door, door screens and sidelights glazing unless shown otherwise.

.2 Cut glass accurately to fit openings with allowances recommended by glass manufacturer.

.3 Clean glass surfaces, wood and metal stops, and rebate surfaces before installing glass.

.4 Install approved neoprene setting blocks and spacer shims to conform to manufacturer’s recommendations.

.5 Support glass, in lights of over 2540 mm perimeter, by two setting blocks, one at each quarter point of each light.

.6 Centre glass in rebates. Use spacer shims in lights of over 2540 mm perimeter. Set shims on all four sides of lights at a maximum of 300 mm from the ends and 600 mm o.c. in between.

.7 Set shims to allow a space of no less than 6 mm between shim edges and sight lines.

.8 Spacer shims are not required where glazing tape or gaskets are used.

.9 Glaze doors and screens with glazing channels. Solidly back bed corner joints with sealant. Compress sections to glass without creep-out at corners.

.10 After glass installation, mark each light with an easily removable whitening material.

.11 Remove stops and install glass in the specified gaskets to provide straight sight lines flush with or slightly above stops.

.12 Replace stops; fasten securely; do not damage stops or screws.
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>.13</td>
<td>Trim off any glazing material showing above sight line of glazing stops, and provide neat, uniform appearance.</td>
<td></td>
</tr>
<tr>
<td>.14</td>
<td>Use only approved chemicals, solvents, tools and methods to leave surrounding surfaces unaffected.</td>
<td></td>
</tr>
<tr>
<td>3.4 Cleaning</td>
<td>.1</td>
<td>Clean glass just prior to and immediately after installation. Remove glazers’ dirt and stains, then wash and polish all surfaces and leave thoroughly clean.</td>
</tr>
<tr>
<td>NO.</td>
<td>ROOM NAME</td>
<td>FLOORS</td>
</tr>
<tr>
<td>-------</td>
<td>-------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BASE</td>
</tr>
<tr>
<td>WJ100</td>
<td>Corridor</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>WJ113</td>
<td>Existing Sterilization</td>
<td>X</td>
</tr>
<tr>
<td>WJ114</td>
<td>Dental Operatories</td>
<td>X</td>
</tr>
<tr>
<td>WJ115</td>
<td>Existing Dental Lab</td>
<td>X</td>
</tr>
<tr>
<td>WJ116A</td>
<td>Meeting Room</td>
<td>X</td>
</tr>
<tr>
<td>WJ116B</td>
<td>Dental Technicians</td>
<td>X</td>
</tr>
<tr>
<td>WJ116C</td>
<td>Storage</td>
<td>X</td>
</tr>
<tr>
<td>WJ124</td>
<td>Corridor</td>
<td>X</td>
</tr>
<tr>
<td>WJ126A</td>
<td>Sterilization</td>
<td>X</td>
</tr>
<tr>
<td>WJ126B</td>
<td>Sterilization</td>
<td>X</td>
</tr>
<tr>
<td>WJ127</td>
<td>Meeting Room</td>
<td>X</td>
</tr>
</tbody>
</table>

Notes
1. Repair and make good existing terrazzo base at corridor wall alteration. Transition terrazzo base to new rubber base at recess.
2. Patch existing resilient tile floor with new full tiles to create a rectangular new insert.
3. New rubber base to match existing on new walls and at alteration locations.
4. Paint areas where alteration work has created a disturbance.
5. Paint gypsum board ceiling and bulkhead.
## 1.1 Related Work

- Lay-In-Tile Ceilings Section 09 51 13
- Access Doors Divisions 21, 22, 23 26, 27 and 28

## 1.2 Reference Standards

- Do work to CSA A82.31-M1980 except where specified otherwise.

## 1.3 Examination

- Work is not to commence or continue unless a temperature of 13°C minimum is maintained within the building.

## 1.4 Protection

- Before commencing work protect all adjacent finished surfaces to save them from damage.

## 1.5 Seismic Bracing

- Retain a registered Ontario Structural Engineer to provide stamped drawings for the design of bracing and/or ties for all gypsum board walls and bulkheads as required to conform to the Ontario Building Code requirements for seismic restraint.

  - Submit structural engineer stamped drawings for seismic bracing to the Architect prior to commencing gypsum board work on the site.
  - Supply and install bracing and/or ties as required by the seismic restraint design.
  - The specifications described below are to be considered as minimum requirements.
  - Written site review reports from the Structural Engineer retained to design the seismic bracing shall be provided to the Architect at the completion of the lat-in-tile ceiling work.

## 1.6 Delivery, Storage and Handling

- Deliver finish material in unopened packaging provided by manufacturer.

  - Store materials in protected dry areas. Store board flat in piles with edges protected.
  - Ensure that finish metal members are not bent, dented, or otherwise deformed.
  - Deliver products supplied only by this Section to those who are responsible for installation, to the place they direct, and to meet installation schedules.

## 1.7 Site Conditions

- Install interior gypsum board systems only in areas closed and protected against weather, and maintained between 10°C and 21°C. In cold weather, ensure that heat is introduced in sufficient time, before installation commences, to bring surrounding materials up to these temperatures and that it is maintained until materials installed by this Section have cured.
2. Do not install gypsum board systems in any area unless satisfied that construction in place has dried out, and that no further installation of damp materials is contemplated.

1.8 Protection

.1 Before commencing work protect all adjacent finished surfaces to save them from damage.

PART 2 - PRODUCTS

2.1 Materials

.1 Gypsum board: standard and fire resistant type, 16 mm and 13 mm thicknesses eased edge gypsum core with manila finished paper faces and shall comply with CSA A82.27-M1977.

.2 Reinforced tape shall be strong, cross laminated fibre tape, perforated and lightly creased for corner application.

.3 Prefill joint compound shall be a polyindurate material that hardens in 2 hours time.

.4 Joint filling compound shall be ready mixed compatible embedding, filling and finishing compounds of a vinyl base formulation.

.5 Acoustical sealant shall be a non-hardening water base caulking as recommended by the gypsum board manufacturer to CGSB 19-GP-21M.

.6 Steel studs shall be 0.46 mm thick roll formed zinc bonderized steel with a depth as shown on the drawings for all interior locations. At the exterior of the building at locations such as parapets and canopies steel studs shall be 0.91 mm thick roll formed steel with a Z180 galvanized coating with the depths as shown on the drawings.

.7 Sound attenuation batts: 76 mm, friction fit, fibrous rock blanket insulation with minimum density of 40 kg/m³ and with fire hazard classification of: flame spread 0 and smoke developed 0, “AFB” as manufactured by Roxul Inc. or approved alternative.

.8 Metal furring runners carrying channels, hangers, tie wires, inserts, anchors: to CSA A82.30-M1980, galvanized.

.9 Drywall furring channels: 0.5 mm core thickness galvanized steel channels for screw attachment of gypsum board.

.10 Nails, screws and staples: to CSA A82.31-M1980.

.11 Casing beads, corner beads: 0.5 mm base thickness commercial grade sheet steel with Z275 zinc finish to ASTM A525M-80, perforated flanges; one piece length per location.
.12 Cement board: glass mesh reinforced mortar unit 16 mm and 13 mm thick, squared edges. Acceptable material: “Duracrete Exterior” as manufactured by C.G.C. Inc.

PART 3 - EXECUTION

3.1 Installation of Gypsum Board on Steel Studs

.1 Apply gypsum board to both sides of steel studs in all locations except as shown otherwise on the drawings.

.2 Runner tracks shall be securely attached at 400 mm on centres to the structure.

.3 Provide nested top runner tracks or other approved deflection head detail at the top of all partitions.

.4 Gypsum board shall be applied with the long dimension parallel to the studs and all abutting ends and edges shall occur over stud flanges.

.5 Joints on opposite sides of the partition shall occur on different studs.

.6 Cut board neatly to fit around all interruptions.

.7 Install acoustic sealant at the top and bottom and on both sides of all walls and at all interruptions. Seal full perimeter of cut-outs around electrical boxes, ducts, and other penetrations.

.8 Steel studs shall be at a maximum spacing of 400 mm on centres. Steel studs shall run from floor to under-side of the structure in all locations except where shown on the drawings.

.9 Provide double studs at each side of all openings.

.10 Single layer gypsum board shall be screwed with 30 mm screws and double layer gypsum board shall be screwed with 50 mm screws at 300 mm on centres at a maximum in the field of the board and 200 mm on centres along the vertical abutting edges.

.11 Where cabinets, fixtures or any other items are shown on the drawings as being hung or supported off gypsum board walls, install additional steel studs, bracing and wood blocking to adequately support such items.

.12 Provide wood blocking in all required locations for attachment of items to walls. Refer to Section 06 10 00 - Rough Carpentry and to drawings.

.13 At partitions shown as fire separations with a “0” hour fire rating on the drawings gypsum board joints shall be taped in all concealed locations. Install firestop filler at the top of partitions and at all gaps between partition and adjacent surface.
<table>
<thead>
<tr>
<th>Paragraph</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>.14</td>
<td>Install sound attenuation batts in interior steel stud walls as shown on the drawings. Press in tightly and staple to the backside of one face of the partitions. Sound attenuation batts shall extend from floor to underside of roof deck or as shown on the drawings.</td>
</tr>
<tr>
<td>.15</td>
<td>Apply cement board at details as indicated on the drawings. Do not apply joint treatment.</td>
</tr>
<tr>
<td>3.2</td>
<td>Installation of Fire Rated Partitions</td>
</tr>
<tr>
<td>.1</td>
<td>Where partitions are shown as fire rated fire separations the partition shall be constructed in strict conformance with test assembly indicated on the drawings.</td>
</tr>
<tr>
<td>.2</td>
<td>Where fire rated partitions or fire separations are installed, install firestop filler at the top of partitions and at all gaps between partition and adjacent surface.</td>
</tr>
<tr>
<td>3.3</td>
<td>Installation of Gypsum Board Suspended Ceilings</td>
</tr>
<tr>
<td>.1</td>
<td>9 gauge diameter hangers shall be spaced not over 1200 mm o.c. in the direction of the 38 mm main runner channels and not over 1200 mm o.c. in the direction at right angles to the main runners, and 300 mm of the ends of the main runner runs and of boundary walls or similar interruptions of ceiling continuity.</td>
</tr>
<tr>
<td>.2</td>
<td>Main runners shall be placed not over 1200 mm on centres, properly positioned levelled, and hangers shall be saddle tied along runner.</td>
</tr>
<tr>
<td>.3</td>
<td>Main runners shall not be let into nor come in contact with abutting walls. Runner channels shall be located within 300 mm of the walls to support the ends of the furring channels.</td>
</tr>
<tr>
<td>.4</td>
<td>Provide main runners for support of metal furring and gypsum board at underside of structure where structural members are greater than 1200 mm o.c. Install runners parallel with structural members.</td>
</tr>
<tr>
<td>.5</td>
<td>Metal furring channels shall be spaced 400 mm on centres and securely clipped with furring channel clips or saddle tied with two strands of 16 gauge diameter tie wire to main runners or main support members and shall not be let into or come in contact with abutting masonry walls.</td>
</tr>
<tr>
<td>.6</td>
<td>End splices shall be provided by nesting channels or studs no less than 200 mm and securely wire tied.</td>
</tr>
<tr>
<td>.7</td>
<td>Metal furring channel clips shall be installed on alternate sides of the main runner channel. Wire-tie metal furring channel to 38 mm channel when clips cannot be alternated and to main support members.</td>
</tr>
<tr>
<td>.8</td>
<td>At light fixtures or any openings that interrupt the main runner or channels, reinforce grillage with 20 mm cold rolled channels wire tied atop and parallel to the main runner channels.</td>
</tr>
</tbody>
</table>
.9 Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.

.10 Install work level to tolerance of 1:1200.

.11 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers and grilles.

.12 Install 19 x 64 mm furring channels parallel to, and at exact locations of steel stud partition header track.

.13 Gypsum board of maximum practical length shall be applied with the long dimensions at right angles to the furring channels and fastened with screws spaced 200 mm on centres in the field of the board and along abutting ends.

.14 All abutting end or edge joints shall occur over the web surface of the furring channel and shall be fitted neatly and accurately with end joints staggered.

.15 Gypsum board shall be properly supported around all cutouts and openings in the ceiling.

34 Ceiling Bulkheads

.1 Furr for gypsum board faced vertical bulkheads within and at termination of ceilings.

.2 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.

3.5 Installation of Accessories

.1 Erect accessories straight, plumb or level, rigidly and at the proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure at 150 mm on centres.

.2 Install corner beads on all external corners.

.3 Install casing beads at all junctures not treated with joint finishing, at the full perimeter of suspended ceilings and at all free edges of gypsum board.

3.6 Installation of Gypsum Board Joint Treatment

.1 All visible junctions of gypsum board panels shall be taped and filled in accordance with the following.

.2 Joint compounds shall be mixed in accordance with the manufacturer's instructions and CSA A-82.31.

.3 Pre-fill abutting rounded edges of eased edge gypsum board with pre-filled compound, leaving a depression for tape.
4. Apply reinforcing tape embedding it in joint compound and fold it and embed it all angles to provide a true angle.

5. A filling coat shall be applied over the embedding coat to fill board tapers flush with the gypsum board surface. On joints with no taper the fill coat shall cover the tape and feather out at least 100 mm on either side of the tape.

6. A finishing coat shall be applied to the fill coat and feathered to a smooth uniform finish.

7. Where necessary sanding shall occur between coats and following the final application of compound to provide a smooth surface.

8. Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board so as to be invisible after painting is completed.

9. All junctions of gypsum board panels above ceiling shall be taped and filled in accordance with the following.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>.1</td>
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<td></td>
</tr>
</tbody>
</table>

3.7 Access Doors

1. Install access doors to electrical or mechanical system components specified in Divisions 21, 22, 23, 26, 27 and 28.

2. Rigidly secure frames to furring or framing systems.

3.8 Control Joints

1. Construct control joints of preformed units set in gypsum board facing and supported independently on both sides of joint.

2. Provide continuous polyethylene dust barrier behind and across control joints.

3. Locate control joints at changes in substrate construction and at approximate 10 m spacing on long walls and at approximate 15 m spacing on ceilings.

4. Install control joints straight and true.
PART 1 - GENERAL

1.1 Related Work .1 Room Finish Schedule Section 09 00 00

1.2 Examination .1 Examine the work upon which the work of this Section depends and report any defect to the Architect.

1.3 Environmental Conditions .1 Maintain temperatures of over 15°C for 48 hours before, during and 48 hours after laying tiles.

1.4 Replacement .1 Provide additional tiles of each type specified and hand them over on site as directed by Owner. Quantities shall be 5%.

1.5 Protection .1 Finished work shall be protected from usage and damage by other trades until setting beds have cured.

1.6 Warranty .1 A ten year written warranty shall be provided for defects in the materials used in the thin set system for installing porcelain wall and floor tile. The warranty shall cover the replacement cost for the tile work effected by the defect.

1.7 Samples .1 Provide a sample of each tile to be used for Architect's approval at least four weeks prior to commencement of the work.

.2 Provide a sample of a straight cut in tile for approval before cutting of the tile commences.

1.8 Qualification .1 Tile work shall be carried out by a member of the Terrazzo, Tile and Marble Association of Canada.

PART 2 - PRODUCTS

2.1 Materials .1 Porcelain tile shall be:

.1 Floor Tile: 300 mm x 300 mm x 9.5 mm “Regal” as distributed by Olympia Tile. Colours shall be matte Black. Provide matching 100 mm high base.

.2 Floor Tile Edging: Satin anodized aluminum RENO-T, in height and profile to suit the tile thickness as manufactured by Schlüter Systems (Canada) Inc.

.3 Base Tile Caps, Wall Tile Caps and Corners: Satin anodized aluminum RONDEC in height and profile to suit the tile thickness as manufactured by Schlüter Systems (Canada) Inc.

.5 Sand: Clean, sharp, coarse, graded, free from dust, salt, alkali and other deleterious matter, conforming to CSA A82.56-M1976.

.6 Water: Clean and potable.

.7 Thin Set System: shall be Keralastic used with Kerabond both as manufactured by Mapei Canada Ltd, Laval, Quebec.

.8 Grout: shall be Keracolour as manufactured by Mapei. Colour to Architect's later selection from manufacturer's range.

.9 Grout Additive: shall be Plasti joints as manufactured by Mapei, Canada. Mix in proportions recommended by manufacturer for grout.

.10 Thick bed mortar and levelling coat additive: shall be Planicrete 50 as manufactured by Mapei Canada Ltd.

.11 Control joint filler: Planipatch as manufactured by Mapei Canada Ltd.

PART 3 - EXECUTION

3.1 Workmanship

.1 Apply tile to clean and sound surfaces.

.2 Verify soundness and trueness of surfaces that are to receive tile before commencing work. Notify Architect of all concerns.

.3 Carefully layout tile patterns to conform precisely to the drawings. Confer with the Architect regarding all concerns with layout.

.4 All tile cutting shall be with an appropriate cutting tool to provide clean straight edges.

.5 Fit tile around corners, fitments, fixtures, and other built-in objects. Maintain uniform joint appearance.

.6 Grind all cut edges of tile to match other uncut edges.

.7 Maximum surface tolerance 1:800.

.8 Make joints between tile uniform and approximately 5 mm wide, plumb, straight, true even and flush with adjacent tile. Ensure sheet layout not visible after installation. Align patterns.

.9 Lay out tiles so perimeter tiles are minimum ½ size.

.10 Sound tiles after setting and replace hollow-sounding units to obtain full bond.

.11 Clean installed tile surfaces after installation and grouting cured.
.12 Fill saw cut crack-control joints in slab-on-grade with control joint filler.

.13 Make control joints in tile over similar joints in structure. Make joint width same as tile joints.

3.2 Application of Floor Tile

.1 Floor tile shall be applied to concrete slabs with a thin-set system grout in accordance with the manufacturer's instruction and T.T.M.A.C. Specification 200-15.

.2 The mortar setting bed for the tile shall not exceed 3mm. Areas that require a float coat shall have a water resistant mortar prepared and applied as follows. Prepare a sand and cement mortar using thin set additive to make a plastic trowelling mix. Trowel in place to a plumb, true surface and allow to set.

.3 Where required to achieve the required finished floor elevation, apply a thick mortar bed as levelling coat using the specified additive.

.4 Apply thin set mixture with a notched trowel using sufficient material to bed the tile completely. The tile shall be applied while the mixture surface is wet and tacky. As work progresses align and rub or beat tiles with a block to embed tile in mixture and assure a true surface.

.5 Install movement floor joint directly over existing joints in structure underlying the floor tile.

.6 Install floor tile edging at all junctions of floor tile with dissimilar finishes.

.7 Lay floor tile in such a manner that oversized joints do not occur at any of the perimeter walls.

.8 Apply grout mix no less than 24 hours after setting tiles and work into joints, using a stiff brush, trowel or sponge float. All joints shall be completely filled leaving no voids. Remove excess grout with a squeegee or trowel.

.9 Cut tiles to conform to floors sloping to floor drains.

3.3 Application of Tile Base

.1 Apply base with a thin set system in accordance with manufacturer’s instructions and T.T.M.A.C. specifications.

.2 Base tile joints shall align with floor tile joints.

.3 Supply and install a continuous base tile cap with a minimum number of joints.

.4 Supply and install an outside corner trim at all outside corners.
PART 1 - GENERAL

1.1 Related Work Specified Elsewhere

1.2 Examination

1.3 Samples

1.4 Delivery and Storage

1.5 Preparation

1.6 Seismic Bracing

1.7 Replacement Tiles
.2 Replacement tiles quantities shall be 5% of total quantity of each type supplied to the job and shall be left in a place designated by the Architect in their original wrappings.

PART 2 - PRODUCTS

2.1 Lay-in Acoustic Tile

.1 Type “I” Acoustic Units:

CGC Inc., Radar ClimaPlus to match existing

.1 Pattern: Illusion Eight/12
.2 Colour: White
.3 Edge: Shadowline tapered, Lay-in
.4 Size: 1220 mm x 610 mm
.5 Thickness: 19 mm

.2 Type “II” Acoustic Units;

CGC Inc., Radar ClimaPlus

.1 Pattern: Illusion Four/48
.2 Colour: White
.3 Edge: Shadowline tapered, Lay-in
.4 Size: 1220 x 610 mm
.5 Thickness: 19 mm

.3 Type “III” Acoustic Units;

CGC Inc., Clean Room ClimaPlus

.1 Pattern: Smooth Textured
.2 Colour: White
.3 Edge: Square-cut, Lay-in
.4 Size: 1220 x 610 mm
.5 Thickness: 16 mm

2.2 Hangers

.1 Hangers shall be No. 12 gauge galvanized steel wire.

2.3 Main Carrier Tees

.1 Cold rolled zinc coated steel 25 mm wide carrier tees in a flat white baked enamel of suitable design to carry all loads shown on the drawings and specifications to be imposed on it. Main carriers shall be pre-punched to receive tees on the grids as shown on the drawings.

2.4 Cross Tees

.1 Cold rolled 25 mm wide zinc coated steel cross tees with a flat white baked enamel finish of suitable design to carry all loads shown on the drawings and specifications to be imposed on it. Cross tees shall have an overlap at the intersections and shall provide a flush finish.

2.5 Wall Mouldings

.1 Cold rolled 25 mm wide 22 gauge thick, zinc coated steel mouldings finished in white baked enamel.
PART 3 - EXECUTION

3.1 Installation of Suspension System

.1 The entire installation shall be in accordance with the manufacturer's specifications and shall be carried out by skilled mechanics.

.2 Set out supporting members parallel to wall and in accordance with the drawings issued by the Architect. If the designated layout causes any border tiles to be less than 50mm in width immediately notify the Architect, halt the installation and await the Architect's instructions. Doubling of wall moulding with tee bar at wall-ceiling intersection is not acceptable. Ceiling tile layout at such locations shall be coordinated with Architect.

.3 If the finished ceiling height arrived at on site cannot match the required ceiling height marked on the drawings, contact the Architect immediately for further instructions.

.4 All hanger wires shall be anchored to the lower cord of the steel joists, to steel channels or to cold rolled support channels attached to the bar joists or bridging.

.5 Where it is not possible by direct suspension to support the ceiling grid or other components in the ceiling assembly as specified above, provide a secondary suspension system to support the ceiling hangers required, in accordance with manufacturer's recommendations.

.6 Co-ordinate installation of hanger wires with gypsum board assembly in ceiling space.

.7 Provide extra wire hangers at recessed light fixtures, grilles, or other devices. All 610 mm x 1220 mm light fixtures shall have 6 wire hangers immediately supporting them.

.8 Provide and install all necessary additional tee-bars to support all diffusers or grilles as specified in the mechanical drawings and specifications to be placed in lay-in tile ceilings.

.9 Main carrier tees shall be supported at least every 1220 mm and levelled to a tolerance of 1 in 1000. Main carrier tees shall be supported not more than 300 mm from the ends. Support system shall be in accordance with manufacturer's recommendations.

.10 Interlock cross tees with main carrier tees to take specified tile. Tees shall be provided with 12 mm end clearance.

.11 Wall moulding section shall be fastened to wall at 450 mm o.c. maximum.

3.2 Installation of Lay-In-Tiles

.1 Cut border tiles cleanly to finish neatly against vertical surfaces and support border tiles on abutting surfaces with a wall moulding.
.2 Where tiles are specified with a tapered edge carefully cut border tiles to create a neat tapered edge against wall mouldings.

.3 Cut tiles to accommodate all pendant light fixtures, support rods, diffusers, grilles or other as specified in the mechanical and electrical drawings and provide tee-bars at all edges. Refer to the mechanical drawings for the locations and extent of these items.

.4 Install tiles around all interruptions to the ceiling. Provide extra supporting members and carefully cut tiles. Provide tee bar at all cut edges of tile.

.5 Provide metal or plastic rings to be fitted around cut openings in ceiling tile for penetration of all support rods for pendant light fixtures. Diameter shall suit cut out for support rods.

.6 The completed installation shall be level to a tolerance of 1 in 1000 in any direction and shall have a maximum deflection of 1/360th of the span.

.7 Ceiling tiles shall only be installed after all mechanical, electrical and Bell Telephone Company work in the ceiling space has been completed. Do not install ceiling tiles until work above ceiling has been inspected by Consultants.

.8 Installation of suspended ceiling will not be accepted where cross tees, wall mouldings or main carrier tees are warped or deflected due to improper support.

.9 Supply and install hold-down clips for lay-in acoustic tile in vestibules. Install two clips per 1200 mm side and one clip per 600 mm side.

3.3 Cleaning

.1 Touch up scratches, abrasions, voids and other defects in painted surfaces of suspension system.

.2 Replace damaged or soiled tiles.
PART 1 - GENERAL

1.1 Samples .1 Submit samples of each different material to the Architect for approval prior to commencement of the work. Material used in the building shall correspond to approved samples in all respects.

1.2 Delivery and Storage .1 Deliver and store materials in original packages with the manufacturer's labels and seal intact.

1.3 Replacement Materials .1 Supply in original packages a quantity of replacement tile and rubber base of each colour installed equal to the greater of either one full box of each colour installed or 5% of each tile used.

1.4 Maintenance .1 Provide complete instructions for future maintenance.

PART 2 - PRODUCTS

2.1 Materials .1 Filler, primer and adhesives: Type and brand approved by the Architect and the flooring materials manufacturer for applicable conditions. Use Mapei “Planipatch” or approved equal to fill saw cut control joints in the concrete slab.

2.2 Reinforced Vinyl Tile: In accordance with CSA Specification A-126-1, Type A, plain and mottled. Tile shall be 300 mm x 300mm x 3 mm as manufactured by Armstrong. Colours will be selected from the Imperial Texture and Imperial Texture Classics lines. Colours shall be selected from the manufacturer’s full range to a maximum of 6 different colours.

2.3 Rubber Base: 100 mm high x 3 mm thick rubber base supplied in coils of 18 metre lengths. Colours shall be selected from the Manufacturer's full range. Base shall be a cove base. A maximum of 6 different base colours shall be to Architect's later selection. Acceptable manufacturers are Amtico or Johnsonite.

2.4 Edge Trim: Where floor tile terminates against dissimilar flooring finish, provide the appropriate solid rubber edge trims, minimum thickness 3 mm. Four colours shall be selected from the manufacturer’s standard range.

2.5 Stair Nosing: Johnsonite VIRH rubber stair nosing with integral non-slip strip. Colour to Architect’s latter selection.

PART 3 - EXECUTION

3.1 Examination .1 Examine surfaces on which resilient flooring and rubber base are to be installed and ensure that they are flush, level, dry and free from deleterious substances. Commencement of work implies full acceptance of responsibility for the appearance and function of floor and base finishes.
### 3.2 Preparation of Surfaces

1. The recommendations of the manufacturer of the floor covering will be considered as minimal. Remove foreign matter, grease, oil, paint and anything that may prevent good adhesion.

2. Do not use gypsum products.

3. Where the surface is concrete, remove loose material, grind out protrusions, patch depressions and fill cracks and holes with latex cement. Fill saw cut control joints in slab-on-grade.

### 3.3 Installation of Reinforced Vinyl Tile

1. Lay flooring in strict accordance with manufacturer's printed directions. Work shall be performed by persons skilled in this work.

2. Lay special patterns in contrasting tile colours as shown on the drawings.

3. Tile pattern shall be a square grid in line with axis of the room except where shown otherwise on drawings. Maintain continuity of the grid pattern in the Gymnasium where games lines are also installed.

4. Ensure compatibility of adhesives with floor surfaces.

5. Concrete shall be at least 28 days old before tile is applied.

6. Fill cavities, cracks and joints with filler recommended by the tile manufacturer.

7. Maintain room surface and material at a minimum temperature of 20 degrees C for three days before, during and for 2 days after completion of laying.

8. Clean floor, apply primer to concrete floors and permit to dry. Apply an even coat of adhesive over the entire surface to be covered.

9. Lay tile with joints butted closely, in true plan, smooth and square with axis of room. Joints or any part of a joint shall be no more than 1.5mm wide. Clean off excess adhesive as work progresses.

10. Cut and fit around built-in or other penetrating items.

11. At door openings, terminate tile under the centre line of the closed door.

12. Roll tile as each section of floor is completed and again when the installation is complete with a polished clean roller weighing 45 kilograms to ensure uniform adhesion.

13. Supply and install a rubber edge strip where tiled areas abut other floor finishes unless otherwise specified in other floor finish specifications.
3.4 Installation of Rubber Base

.1 Install rubber base at all vertical surfaces including columns in rooms called up to have rubber base by the Room Finish Schedule. Install base at toe space of all millwork base cabinets.

.2 Set rubber base tightly against vertical surfaces on top of flooring ensuring that sufficient adhesive is used to adhere the base firmly against the wall.

.3 Joints in the rubber base shall be tight and no part of the joint shall exceed 1.5 mm in width. Joints shall occur no more frequently than every 1200 mm except where the vertical surface changes plane.

.4 Joints shall occur no closer than 300 mm to any corner.

3.5 Cleaning

.1 As soon as the adhesive has set, but not less than three days after installation, clean the vinyl reinforced tile flooring, wash with a neutral cleanser and rinse.

.2 Wax application shall be by Owner. Coordinate date of final cleaning to occur immediately prior to Owner’s scheduled waxing schedule.
PART 1 - GENERAL

1.1 References
CSA A126.3-M1984 Sheet Vinyl Flooring Products.

1.2 Samples
1. Submit duplicate 600 x 600 mm sample pieces of sheet material and welding rod strips.
2. Submit samples of the coved base cap strip and the cove base fillet.

1.3 Maintenance Data
Provide maintenance data for resilient flooring for incorporation into Operation and Maintenance Manual.

1.4 Shop Drawings
Submit shop drawings showing the full seam layout.

1.5 Maintenance Materials
1. Provide maintenance materials in accordance with specification.
2. Deliver 5% of each colour, pattern and type flooring material required for project for maintenance use. Identify each roll. Store where directed.
3. Maintenance materials to be in one piece and same production run as installed materials.

1.6 Environmental Requirements
Maintain air temperature and structural base temperature at flooring installation area above 18°C for 72 hours before, during and 72 hours after installation.

1.7 Storage
1. Store rolls upright to avoid distortion and cracking
2. Tie loose rolls or part rolls to avoid damage to end.

1.8 Warranty
Full manufacturer's warranty for 5 years from date of substantial completion.

1.9 Qualifications
Qualified installer as recommended by manufacturer.

1.10 Mock-up
1. Prepare a mock-up showing a typical internal corner and external corner cove-base application, including heat welded seams.
2. Allow 24 hours for inspection of mock-up by the Architect before proceeding with the work.
3. When accepted, mock-up will establish the minimum standard of acceptance of the work.

PART 2 - PRODUCTS

2.1 Materials
Sheet flooring shall be.
.1 Melodia from the Tarkett Collection, a homogeneous reinforced polyurethane sheet flooring as manufactured by Johnsonite.

.2 One colour to Architect’s later selection.

.3 Thickness: 2.0 mm.

.2 Welding Rod Strips: of same material and thickness as adjacent work colour matching floor material. Colour to be later selected by Architect.

.3 Primers and Adhesives: as manufactured and as recommended by flooring manufacturer for use with their product.

.4 Sub-floor Filler and Leveller: cement underlayment as manufactured and recommended by flooring manufacturer for use with their product.

.5 Stainless Steel Cove Base Cap Strip: Purpose designed for capping sheet flooring coves.

.6 Edge Termination and Transition Strips: Solid tapered rubber transition and termination strips suitable for wheelchair environments. Colour to later selection.

.7 Sealer and Wax: type recommended by resilient flooring material manufacturer for material type and location.

PART 3 - EXECUTION

3.1 Inspection

.1 Ensure concrete floors are dry by using test methods recommended by flooring manufacturer.

.2 Ensure that existing flooring and existing flooring adhesives are fully removed.

3.2 Subfloor Treatment

.1 Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler.

.2 Clean floor and apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler cured and dry.

.3 Prime concrete slab to resilient flooring manufacturer’s printed instructions.

3.3 Flooring Application

.1 Apply adhesive uniformly using recommended trowel. Do not spread more adhesive than can be covered by flooring before initial set takes place.
.2 Lay flooring with seams parallel to building lines as detailed on drawings.

.3 Lay sheet flooring to produce a minimum number of seams and in accordance with reviewed shop drawings.

.4 Run sheets in direction of traffic and continuously seal according to manufacturer's printed instructions.

.5 As installation progresses, roll flooring with 45 kg minimum roller to ensure full adhesion.

.6 Cut flooring neatly around fixed objects.

.7 Terminate flooring at centre line of door in openings where adjacent floor finish or colour is dissimilar.

.8 Rout sheet flooring and heat weld seams using special welding rods as manufactured by flooring manufacturer.

.9 Trim welding only once the materials have cooled.

3.4 Installation of Cove Base

.1 Install 100 mm high cove base at all vertical surfaces including columns in rooms called up to have coved base by the Room Finish Schedule.

.2 Set coved base tightly against vertical surfaces ensuring that sufficient adhesive is used to adhere the base firmly against the vertical surface.

.3 Use vinyl fillet strip at junction of flooring and wall, and cap off using stainless steel cap strip at top of cove. Ensure that the size of the fillet strip is sufficient for there to be full contact with the cove of the sheet flooring.

.4 Joints in the coved base shall be heat welded. Joints shall occur no more frequently than every 1200 mm except where the vertical surface changes plane.

.5 Seal at top of cap strip as per manufacturer's directions.

.6 Heat weld all inside and outside corners, flat and vertical seams of coved sheet flooring.

.7 Groove along the centre of the seams to approximately 1.5 mm in depth.

.8 Provide watertight seal at all projections through the floor using sealant recommended by flooring manufacturer.
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PART 1 - GENERAL

1.1 Related Work
.1 Resilient Floor Tile
.2 Room Finish Schedule

1.2 Delivery and Storage
.1 Deliver materials in their original wrappings with the manufacturer's labels and seals intact.
.2 Store materials in the building areas designated by the Architect.
.3 Protect carpet from dirt, stains, moisture and other damage.

1.3 Shop Drawings
.1 Submit shop drawings showing the location of seams and of the directional changes of all carpeting.
.2 Show all pertinent installation details and mouldings to be used on the shop drawings.
.3 No carpet shall be installed until shop drawings have been reviewed.

1.4 Testing
.1 Flammability rating shall be in accordance with CGSB 4-GP-129P Menthamamine Timed Burning Tablet.
.2 The Owner reserves the right to take random samples from production runs and/or delivered carpeting for testing for abrasion resistance, soilling, crushing, breaking strength, distortion after cutting in of floor outlets, elongation, loop strength and colour fastness in order to ascertain if the manufactured and/or delivered materials conform to the approved samples and specifications; and reject items not conforming to submitted samples.
.3 Submit certificate to demonstrate compliance with CAN/ULC S102-1988 (R2000) and CAN/ULC S102.2-1988 (R2000).
.4 Submit proof that carpet has been tested and passed Indoor Air Quality (IAQ) Carpet Testing Program requirements of the Canadian Carpet Institute.
.5 Submit report verifying that tuft bind meets requirements of CAN/CGSB-4.129-93 when tested to CAN/CGSB-4.2.

1.5 Samples
.1 Submit duplicate 500 mm x 500 mm samples of each colour of carpet selected before any carpets are delivered to the site.
.2 Samples shall be accompanied by the manufacturer's specifications for the construction of the carpet.

1.6 Maintenance Data
.1 Furnish the Owner with detailed, printed instructions or maintenance procedures as recommended by the Carpet Manufacturer for maximum life and appearance.
1.7 Guarantee

.1 Upon completion of the project a written guarantee shall be submitted to the Architect from the manufacturer of the carpet and installing sub-contractor. The manufacturer's guarantee shall cover defects in the carpet for its lifetime against abrasive wear of 10% or more of the surface pile in normal use, failure of static protection, edge ravel in normal use, delamination in normal use, failure of tuft bind, delamination of backing and failure of adhesive. Manufacturer equally warrants that products are compatible with and will resist the radiant floor heating in the concrete slab.

.2 The guarantee shall be made jointly and severally by the carpet installer and the carpet manufacturer.

.3 The installer guarantees to cover at no cost to the Owner for two (2) years the carpet installation against loose fitting, breaking of seams or breaking away from sub-base.

.4 Repair, and/or replace when so directed by the Architect, within the said periods, any and all portions of work and materials which fail to perform according to the requirements of these Specifications.

1.8 Replacement Materials

.1 Supply a quantity of replacement carpet in unopened boxes equal in area to 5% of each type and colour installed. Carpet shall be from the same dye lot as the installed carpet.

.2 All carpet material that is left over from the installation and that is 1 square metre or more in size shall be left with the Owner.

1.9 Environmental Requirements

.1 Safety: Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials.

.2 Ventilation:

.1 Advise the contractor 48 hours in advance of the start of carpet installation operations. The contractor will arrange for ventilation of the work space in accordance with the Contractor's carpeting schedule.

.3 Carpet packages shall be opened and allowed to de-gas off-site for 3 days prior to delivery and installation.

1.10 Tile Joint Plan

.1 The carpet tile joints shall not necessarily be at 90 degrees throughout the floor area. Carpet joints may vary from room to room in accordance with the building grid lines.

.2 Prepare a carpet tile joint diagram before ordering carpet and submit in accordance with 1.3 above.

.3 Carpet tiles of less than 1/3 the size of a full tile will be rejected.
PART 2 - PRODUCTS

2.1 **Materials**

.1 All carpet shall be of first quality manufacture. No seconds or imperfects will be acceptable.

.1 Carpet shall be carpet tiles, 500 x 500 mm, Entropy, GlasBac Tile, with DuPont Antron Lumena yarn, tufted, weight 678 g/sq. m., as manufactured by InterfaceFLOR.

.2 One colour and style shall be to Architect’s later selection.

.2 Floor carpet adhesive and primer shall be as recommended by the carpet manufacturer subject to the requirements that low odour types free of volatile hydrocarbons such as toluene and mineral spirits shall be used. A “Material Safety Data Sheet” acceptable to Labour Canada and Health and Welfare Canada shall be provided to the Architect for the carpet adhesive and primer proposed for use.

.3 Sub-floor filler and leveller: cementitious products as manufactured by Mapei, as recommended by flooring manufacturer for use with their product. Do not use gypsum based products.

.4 Hard rubber low profile transition strips where carpet terminates at dissimilar material: Johnsonite or Centura low profile transition strips. Colour shall be chosen by the Architect.

.5 Rubber base: specified in Section 09 65 19.

PART 3 - EXECUTION

3.1 **Examination**

.1 Examine surfaces to receive carpeting.

.2 Do not start work until surfaces to receive carpet are satisfactory.

.3 Test the floors for dampness. Do not lay carpet tile unless satisfactory results are obtained.

.4 Remove wax and/or other foreign material detrimental to a proper installation.

.5 The commencement of the installation of carpet tile shall be considered as an acceptance of the surface to be covered.

3.2 **Workmanship**

.1 Carpet shall be installed by workmen skilled in this method of installation. The manufacturer's representative must be present to assure that recommendations are strictly adhered to.

.2 Maintain area of work in clean orderly manner, removing scraps, debris and other superfluous matter.
3.3 Preparation of Surfaces

.1 Do not commence installation until other trades have completed their work in the areas concerned.

.2 Clean floors to receive carpet insuring that they are free from dust, wax, ridges, undulations, cracks and all foreign matter.

.3 Recommended procedures for installation furnished by the manufacturer shall be closely followed and particular attention shall be paid to recommendations for application of carpet adhesive and seam cement.

3.4 Installation

.1 Installation of carpet tile shall be by manufacturer or his approved applicator.

.2 Temperatures of at least 21 deg. C shall be provided in the area to receive carpet for at least 48 hours before, during and after installation. The subfloor surface shall be a minimum of 10 deg. C.

.3 Install and secure carpet tile in accordance with methods and equipment as recommended by the carpet manufacturer.

.4 All joints between carpet and dissimilar flooring material shall be flush joints. Metal surface edge trims are not acceptable.

.5 Locate joints at centre line of door in closed position.

.6 Cut carpet to fit accurately around perimeter of walls, columns and into recesses. Cut neatly around all penetrating items.

.7 The entire installation shall be level, flush across seams and free of wrinkles, bubbles and other defects.

.8 Joints shall be hairline seams and inconspicuous. The pattern, texture and colour of the carpet shall be continuous across areas carpeted.

.9 Do all cutting and punching of the carpets at inserts for power and telephone outlets. Keep holes to an absolute minimum diameter to allow services involved to pass through and that trim will completely hide hole when installed. Cooperate and coordinate with electrical trade to ensure correct location of outlets is obtained.

.10 Finish installation to present smooth wearing surface free from conspicuous seems, burring and other faults.

3.5 Clean-Up and Protection

.1 After completion of carpeting operations in an area, remove carpeting other rubbish and debris from the premises and leave the area clean. Vacuum carpets clean.

.2 Vacuum carpets clean.

.3 Clean all adhesive off adjacent exposed surfaces.
.4 Protect carpeting and finish from damage with heavy duty 8 mil. Polyethylene plastic sheeting to cover all areas that have received new carpet. Lap all joints minimum 300 mm and securely tape top sheet to bottom sheet. Provide security measures as required to protect stored and/or installed carpet. Close completed areas to traffic until the Architect has inspected and accepted the work in such areas.
PART 1 - GENERAL

1.1 Extent of Work  .1 Work for this section shall include all painted areas specified in the Room Finish Schedule.

1.2 Samples  .1 On request of the Architect submit samples of materials proposed for use in the work. Where samples are required each sample shall be submitted on a board 200 mm wide by 300 mm long. One half of each sample will be retained by the Architect for future comparison. Finished work shall be equal to approved samples.

.2 When required, samples shall be made of the actual work in the building.

1.3 Protection  .1 Protect surrounding or adjacent work by adequately covering with tarpaulins or similar coverings.

.2 Any damage resulting from failure to provide proper protection shall be made good at no cost to the Owner.

.3 Before commencement of work all electric plates, surface hardware and other fixtures shall be removed and shall be replaced when painting is complete.

1.4 Storage  .1 Store paint materials in areas assigned for the purpose. Ventilate well and take all fire precautions. Keep containers closed.

.2 Keep all paint materials in unopened original containers, sealed and labelled.

.3 Packaged items requiring inside protection shall be stored in a warm, dry area within the building.

.4 All soiled or used rags and waste shall be removed from the building every night.

1.5 Environmental Requirements  .1 Broom clean rooms where painting work will be carried out. Keep rooms clean while work of this trade is being carried out.

.2 Do not apply paint finish in areas where dust is being generated.

PART 2 - PRODUCTS

2.1 Materials  .1 Except where specified otherwise, materials shall be manufactured by Benjamin Moore, Pratt & Lambert Incorporated, Sico Incorporated, ICI, Sherwin Williams, or Para Paints.

.2 The products of generally only one manufacturer shall be used on the project and the Architect should be notified of the proposed products to be used prior to delivery of the materials to the site.
.3 Materials shall conform to CGSB 1-GP-CP.

PART 3 - EXECUTION

3.1 Examination

.1 Report in writing to the Architect any defects in work affecting the work of this Section.

.2 Commencement of work shall be construed as evidence of acceptance of underlying surfaces as satisfactory.

.3 Work shall not take place or be left to dry in any area where the temperature is below 10°C.

3.2 Reference Standards

.1 Apply finishes in accordance with CAN 2-85.100-M81 as applicable.

3.3 Extent of Painting

.1 All new items that are not pre-finished and which are installed at the interior and exterior of the building under this contract shall be painted.

.2 All unfinished exterior mechanical and electrical equipment, piping and ducts shall be field painted to match the colour of surrounding finished surfaces except in the Boiler Room where accent colours are to be used.

.3 All miscellaneous metalwork, including, but not limited to, exposed surfaces of all masonry shelf angles and exposed miscellaneous steel, shall be painted.

.4 All lines and symbols on asphalt paving as shown on the drawings.

.5 Refer to Room Finish Schedule.

3.4 Surface Preparation

.1 Prepare wood surfaces to CGSB 85-GP-1M.

.1 Use CGSB 1-GP-126M-Amdt-Jul-78 vinyl sealer over knots resinous areas.

.2 Apply wood paste filler to nail holes and cracks.

.3 Tint filler to match stains for stained woodwork.

.2 Touch up shop paint primer on steel with CGSB 1-GP-40M to CGSB 85-GP-14M.

.3 Prepare galvanized steel and zinc coated surfaces to CGSB 85-GP-16M.

.4 Prepare masonry, stucco and concrete surfaces to CGSB 85-GP-31M.

.5 Prepare concrete floors to CGSB 85-GP-32M.

.6 Prepare plaster and wallboard surfaces to CGSB 85-GP-33M. Fill minor cracks with plaster patching compound.
3.5 **Application**

.1 Paint colours shall be in accordance with the colour schedule to be prepared by the Architect at a later date.

.2 The different surfaces in any one room will not necessarily be one colour. Door frames, ceiling bulkheads, and other elements within rooms shall be painted with different strong accent colours. The total number of strong accent colours in the project shall be limited to twelve accent colours. A total of four basic wall colours and one ceiling colour shall be used. Doors and door frames shall be painted different colours from walls. Allow for three stain colours.

.3 Where surfaces of rooms are specified in the Room Finish Schedule to be painted all elements fixed to that surface shall be painted including frames of openings, doors, radiators, exposed new metal surfaces, and millwork unless otherwise specified. Paint behind radiator covers.

.4 Finish closets and alcoves as specified for adjoining rooms.

.5 Apply each coat at the proper consistency in accordance with the manufacturer's directions.

.6 Sand lightly and dust between coats to remove defects visible from distance up to 1.5 m.

.7 Regardless of the number of coats specified for any surface apply sufficient numbers of extra coats of paint to produce a solid uniform appearance and coverage in the opinion of the Architect.

.8 Paint shall be applied by brush or roller only. Varnish by brush only.

.9 Top and bottom edges of doors shall receive the same finish as the face of the door.

.10 Finish all wood surfaces of unfinished shelving.

.11 Unless they are pre-finished, paint all surfaces of open cabinetwork excluding underside of counter tops.

.12 Sides, backs and bottoms of drawers do not require painting.

.13 Making good in work of this Section shall extend beyond the immediate limits of the disturbed surfaces to nearest natural break lines in such a manner that the patching becomes an imperceptible part of the general decor.

3.6 **Mechanical and Electrical**

.1 Paint exposed conduits, pipes and other mechanical and electrical equipment occurring in finished areas as well as inside cabinet work. Colour and texture to match adjacent surfaces except in the Boiler Room where accent colours are to be used.
.2 Paint inside of ductwork where visible with primer and one coat of matte black paint.

.3 Paint piping, conduits, ductwork and other unfinished equipment in mechanical and electrical rooms, other than the Boiler Room, in accordance with colour schedule specified under Division 15 and 16.

.4 Paint disconnect switches for fire alarm system and exit light system in red enamel.

.5 Paint both sides and edges of plywood backboards for electrical equipment before installing backboards and mounting equipment on them. Leave equipment in original factory finish except for touch up as required, and paint conduits, mounting accessories and other unfinished items.

.6 Keep sprinkler heads free of paint.

3.7 Adjustment and Cleaning

.1 Touch up and refinish minor defective applications. Refinish entire wall, ceiling or similar surfaces where finish is damaged or not acceptable.

.2 Remove spilled or splattered finish materials from surfaces of installations provided by others. Do not mar surfaces while removing.

.3 Leave storage and mixing areas clean and in same condition as equivalent spaces in building.

3.8 Interior Finishes

.1 Formula 1: for concrete block walls apply:
one coat block filler CGSB 1-GP-188M
two coats semi-gloss latex CGSB 1-GP-195M.

.2 Formula 2: for plaster and gypsum board ceilings apply:
one coat primer-sealer CGSB 1-GP-119M-Amdt-Sep-80	
two coats of eggshell latex CGSB 1-GP-118M

.3 Formula 3: for gypsum board walls apply
one coat of primer-sealer to CAN/CGSB-1-119-M89
two coats of semi-gloss 100% acrylic latex enamel.

.4 Formula 4: for interior woodwork surfaces designated for painting:
one coat enamel undercoat CGSB 1-GP-38M	
two coats semi-gloss enamel CGSB 1-GP-57M

.5 Formula 5: for primed ferrous metal surfaces except exposed columns apply:
one coat spot priming CGSB 1-GP-40M
one coat enamel undercoat CGSB 1-GP-38M
two coats semi-gloss enamel CGSB 1-GP-57M

.6 Formula 6: for galvanized and zinc coated metal apply:
one coat vinyl wash primer CGSB 1-GP-121M
one coat enamel undercoat CGSB 1-GP-38M
two coats semi-gloss enamel CGSB 1-GP-57M

.7 Formula 7 (Polyurethane): for woodwork to receive stained finish apply:
one coat solvent based stain CAN/CGSB-1.145. Type 2 (interior) Class B semi transparent.
one coat oil modified clear polyurethane CAN/CGSB-1.175 Type 1 gloss thinned.
two coats oil modified clear polyurethane CAN/CGSB-1.175 Type 2 satin.

.8 Formula 8 (Polyurethane): for woodwork to receive clear finish apply:
one coat oil modified clear polyurethane CAN/CGSB-1.175 Type 1 gloss thinned.
two coats oil modified clear polyurethane CAN/CGSB-1.175 Type 2 satin.

.9 Formula 9: for interior ductwork visible through grilles or diffusors apply:
one coat matt black confirming to CGSB 1-GP-114b
May be spray applied.

.10 Formula 10: for concrete floors
one coat of two component catalyzed semi-gloss epoxy resin. Reduce in accordance with manufacturer’s instructions.
one coat of two component catalyzed semi-gloss epoxy resin.