# SPECIFICATIONS FOR

# Renovations to

# Orchard Park Secondary

# School

# Hamilton-Wentworth

# District School Board

# Issued for Tender

# May 2026

**Electrical produced by Shellard Building Systems Ltd.**



**Mechanical produced Shellard Building Systems Ltd.**

## 1. GENERAL REQUIREMENTS

The rules and information that follow are for the protection of all persons using Hamilton-Wentworth District School Board's property. The Contractor must follow the directions. Failure to conduct work in a safe and healthy manner may result in removal of employees from Board property and/or termination of contract. The rules contained here will not cover all repair/renovation/construction work situations. The Contractor, however, must understand that the Board's intention is to carry out all work in a safe and healthy manner. Every Contractor and sub-contractor employed on site shall read all the instructions herein. Reference to the 'Board' or 'Client/Owner' herein means the Hamilton-Wentworth District School Board.

## 2. REPORT TO OFFICE

***All Contractors entering schools MUST REPORT TO THE SCHOOL OFFICE AND SIGN IN Describe what you plan to do and how long it will take and sign out before they leave.***

## 3. WORK SITE LOCATION

It is the responsibility of the contractors to provide appropriate and adequate rope, barricades, fencing, hoarding, warning signs, warning lights to clearly demark the site boarders and areas not to be used by usual occupants of the building or grounds. Without limiting the generality of the foregoing, the Contractor shall at all times erect and maintain adequate fencing around all excavations, pits, and in other places of danger. Sufficient barricades must be in place to prevent persons from potentially placing themselves in danger.

## 4. OPERATION OF VEHICLES ON BOARD PROPERTY

Trucks, etc., shall proceed with caution at 10 KPH maximum on school property. When children are playing, coming or going from school, etc., trucks and other vehicles will be stopped and remain stopped until all children enter the school or leave school grounds. All trucks must be equipped with an automatic warning beep or horn sound when backing up. If there are two people in the truck, one should get out and walk behind the truck while it is backing up, and act as a signaler.

The Contractor must provide a list of their mobile equipment requirements on site. Before entering Board property, the Owner/Client must have this list and the appropriate arrangements made for access onto Board grounds.

Construction vehicles used on Board property must not be loaded beyond their licensed capacity, and passengers must ride within the cab, except when backing up. Riding upon running boards, fenders, hoods, scraper blades, and buckets, or in boxes or other attachments is prohibited. Employees must not board nor jump off moving vehicles.

Signs shall be posted in prominent locations and in sufficient numbers to warn workers of a hazard on a project.

Construction vehicles must be left in designated areas and, when not in use, must not obstruct emergency vehicles or public ways.

Access to the construction site will be established by the Owner/Client prior to the start of construction.

5. **DISCOVERY OF UNKNOWN SUBSTANCE**

The hazardous substances locations listed in the current Designated Substances Report provided by the Owner may not be complete. If an unknown substance is discovered during a renovation/repair that may be asbestos, then notify the Owner immediately, and the material must not be disturbed until a sample is analyzed. Contact the Environmental Consultant for further action. Copy the Prime Consultant and Owner/Client.

6. **HAZARDOUS MATERIALS**

Work described within the Hazardous Materials specifications is required to be performed by a qualified Abatement Contractor on the HWDSB's prequalification list.

7. **ASBESTOS**

The Contractors are responsible to provide asbestos awareness training to their employees. All schools have lists of asbestos and its location in the school. It is available through the school office and should be checked before starting new work. If the job is a large renovation, the Contractor will have been provided with a more detailed pre-renovation asbestos survey. This also should be read before commencing new work.

8. **SILICA**

Silica: the general contractor and sub-trades are required to ensure all work is performed in accordance with the Silica on Construction Projects guideline, as published on the Province of Ontario's website.
https://www.ontario.ca/document/silica-construction-projects#

9. **LEAD**

Lead: the general contractor and sub-trades are required to ensure all work is performed in accordance with the Lead on Construction Projects guideline, as published on the Ministry of Labour, Immigration, Training and Skills Development website.
https://www.labour.gov.on.ca/english/hs/pubs/lead/

10. **MERCURY**

Mercury: the general contractor and sub-trades are required to ensure all work performed to remove and dispose of mercury-containing fluorescent lights and mercury-containing items (e.g. thermostats) is completed by workers who have been trained by a competent and qualified person.

11. **PCB**

PCBs: the general contractor and sub-trades are required to ensure all work performed to remove and dispose of PCB-containing ballasts is completed in strict accordance with federal regulations. Removal and handling of PCBs is to be performed by workers who have been trained by a competent and qualified person.

12. **TOOLS AND EQUIPMENT**

All vehicles, machinery, tools and equipment shall be inspected regularly and shall be maintained in a condition that does not endanger a worker. Equipment includes all guards and other safety devices. Gasoline engines are to be shut down and cold before refueling.

13. **PROPANE TANKS**

Propane tanks shall not be stored in school buildings overnight.

A qualified person with an Ontario Propane License will be the only one allowed to work on propane installations or to supervise the moving of these installations.

No storage area for propane at any time should be placed closer than three (3) meters to a source of ignition or fire, except as allowed under the regulations.

When cylinders are not in use, they must be protected from falling materials.

Cylinders must always be transported by some material handling device (not carried manually). When being transported in vehicles, the movement of cylinders should be prevented and the cylinders must have their gauges removed, and caps installed. Cylinders must never be hoisted with a rope or chain sling.

14. **OXYGEN AND ACETYLENE CYLINDERS**

Oxygen and acetylene cylinders must be chained in the vertical position or be strapped on a welding cart designed for the purpose. When not on a cart, the cylinder pressure gauge must be removed and the cylinder cap on. Full and empty tanks are to be stored in separate signed areas.

Cylinders must always be transported by some material handling device (not carried manually). When being transported in vehicles, the movement of cylinders should be prevented and the cylinders must have their gauges removed, and caps installed. Cylinders must never be hoisted with a rope or chain sling.

15. **FLAMMABLE LIQUIDS**

All oakum, rags, or other materials impregnated with paint thinners, etc., must be stored in an approved, labeled container and/or area.

Approved safety containers must be used for the storage and transportation of flammable materials. All containers must be appropriately labeled according to WHMIS Legislation.

Where flammable materials are being transported or transferred, they must be properly secured and ventilated.

16. **CONTROLLED PRODUCTS**

All controlled products must have the most recent WHMIS labels on the container brought to the school. One day's supply may be used without a label if used by one employee exclusively. Contractors must be able to show that they have attended a WHMIS training course.

Contractors must comply with all aspects of the Workplace Hazardous Materials Information System (Ontario Regulation 644/88).

Contractors must have all controlled products labeled according to WHMIS Legislations when the materials are brought onto Board property. Contractors must provide Workplace Labels for controlled products which do not have supplier labels on the containers.

Contractors must have copies of Safety Data Sheets (SDSs) for all controlled products they bring onto Board property readily available at the worksite. The Contractor must ensure that the information on the SDS is up to date (SDSs are valid for three (3) years from the date of production).

Any Board employee or any Contractor working for the Board may request, through the Facility Services Representative, a copy of any or all SDSs for controlled products used by the Contractor, if the controlled products are used or contained in an area where Board employees or other contractors may enter.

Contractors who use controlled products must ensure that their workers are properly trained in the safe use and handling of such products. Contractor's employees must be trained through the Infrastructure Health and Safety Association or Hamilton-Halton Construction Association programs for construction workers. In addition, contractors should review with their employees: fire hazard information, health hazard information, controls which should be in place, and protective equipment that should be used.

17. **NATURAL GAS PIPING**

Only persons with a gas-fitter's license are to tighten or loosen, install or remove a natural gas fitting, device, or pipe.

18. **SAFETY EQUIPMENT**

The Contractors are responsible for and obligated to have all employees wear such protective clothing and use such personal protective equipment and devices as are necessary to protect the worker against the hazards to which the worker may be exposed. Workers required to wear protective clothing or use personal protective equipment or devices shall be adequately instructed and trained by the contractor in the care and use of the clothing, equipment or devices before wearing or using them. Safety equipment shall include but not be limited to, safety boots, hard hats, safety glasses, goggles, gloves, respirators, hearing protection devices, safety belts, safety harness, and lifelines.

19. **FIRE EXTINGUISHERS**

The Contractors are responsible for providing fire extinguishers in the repair/renovations/construction areas at readily accessible and adequately marked locations. Contractors shall ensure that employees are able to use the extinguishers in a safe and proper manner. Fire extinguishers must be protected from physical damage or from freezing. After a fire extinguisher is used, it shall be refilled or replaced immediately. Every fire extinguisher shall be inspected for defects or deterioration, at least once a month by a competent worker who shall record the date of the inspection on a tag attached to it. Fire extinguishing equipment shall be of a suitable type and size to permit the evacuation of workers during a fire.

20. **SMOKING/VAPING**

Smoking and Vaping on school property is not permitted.

21. **ALCOHOL & DRUGS**

Consuming alcohol or drugs on Board property work sites is prohibited. Persons appearing to use alcohol or drugs may be removed from the site.

22. **HOUSEKEEPING**

If a form work tie, reinforcing steel, a nail or another object protruding from concrete or another surface may endanger a worker, the protrusion shall be removed or cut off at the surface or otherwise protected as soon as practicable. Materials must be laid down and piled, stored or moved in a manner that does not endanger a worker. Pieces of pipe, welding rod, and small round objects must be placed in refuse containers and not left on the floor.

23. **HYGIENE**

A reasonable supply of portable drinking water should be kept readily accessible at a project for the use of workers in accordance with the Regulations. The Contractor shall provide or arrange for the use of portable toilet and clean up facilities before work is started on a project. Such facilities to be reasonable accessible. Workers who use corrosive, poisonous or other substances likely to endanger their health shall be provided by the contractor with washing facilities with clean water, soap and individual towels.

24. **ELECTRICAL WIRING**

Only journey-persons electricians are to work on building electrical wiring, switches, etc., including temporary power tie-ins.

25. **LADDERS, SCAFFOLDS, SWING STAGES, VERTICAL MAN-LIFTS**

The Contractors are responsible for training their employees in inspecting, erecting, dismantling, and using scaffolds, ladders, swing stages, and vertical man-lifts per Working at Heights Standards O.Reg 297/13. A scaffold shall be designed by a professional engineer where required by the Regulations and every scaffold, suspended platform, suspended scaffold, elevating work platform or boatswain's chair shall meet the requirements of the Regulations of the OHSA.

When no figures are given, the drawings shall be followed to scale, but figures shall govern in all cases of difference. Larger scale drawings shall govern all smaller scale drawings.

The drawings and this specification shall be considered co-operative. All work necessary to the completion of the contract, whether shown on the plans and not described herein, or vice-versa, shall be considered a part of this contract and must be properly executed.

The Contractor will understand that the work herein described and shown on drawings shall be complete in every detail, notwithstanding every item necessarily involved is not particularly mentioned, and the Contractor will be held to provide all labour and materials necessary for the entire completion of the work intended to be described, and shall not avail himself of any manifestly unintentional error or omission, should such exist.

26. **LOCATION OF APPARATUS**

The location of apparatus, fixtures, outlets, etc., shown or specified shall be considered as only approximate. The actual location shall be as directed and as required to suit the conditions at the time of installation. Before installation of the apparatus, the Contractor shall consult the Board and ascertain the actual location required.

27. **MEASUREMENTS, ETC.**

Before ordering any material or doing any work, such Contractor shall verify all measurements at the building or as may be required for the proper fitting of their work and to make adjustable parts fit to fixed parts. They shall be responsible for the correctness of their figures, and properly correct without charge any work which does not fit, and furnish new work if necessary.

No extra charge will be allowed on account of the differences between the actual dimensions and the measurements indicated on the drawings. Any difference which may be found shall be submitted to the Board for consideration before proceeding with the work.

28. **CUTTING, PATCHING AND DIGGING**

The Contractor before any cutting/coring, shall electromagnetically or otherwise scan all walls and/or floors for in wall or in/or under slab existing electrical lines, water, heating, sanitary, gas piping and any ductwork. Structural reinforced walls and slabs shall be x-ray scanned for structural reinforcing. All scanning reports shall be sent to the Architect for review.

The Contractor shall do all cutting, fitting or patching of their work that may be required to make its several parts come together properly and fit to it receive or be received by work of other Contractors shown upon or reasonably implied by the contract documents, and he shall make good after them as the Board may direct.

All cutting of the various trades shall be done only by skilled mechanics and competent persons of such trades, and all such cutting shall be made good by competent workers of each trade only.

Any cost caused by ill-timed work shall be borne by the party responsible therefore.

The Contractor shall not endanger any existing work by cutting, digging or otherwise, and shall not cut or alter the work of another Contractor save with the consent of the Board.

29. **FURRING IN PIPES AND DUCTS**

The General Contractor shall be responsible for an acceptable job of furring in all pipes and ducts where shown on the plans or reasonably expected in finished rooms. Furring in shall be carried out in the material of the walls, adjacent to the pipes, such as metal stud, wood, masonry, etc.

30. **MOISTURE TESTING OF CONCRETE SLABS**

The Contractor shall be responsible for all moisture testing of existing or newly poured/cured concrete slabs by in-situ concrete relative humidity test to ASTM F2170, a minimum of 4 drilled probes shall be randomly placed to measure humidity (RH) levels in each area. Relative humidity level of substrate surface for respective specified finished flooring products shall meet the manufacturer's recommendations of those products. If RH readings are above the recommended levels, the Contractor shall first use dehumidification equipment to bring relative humidity to acceptable levels or provide a full cover moisture mitigation membrane as specified in the flooring sections. After testing is done the Contractor shall patch all drilled probe holes flush to match existing materials.

31. **BROKEN GLASS**

The Contractor shall be held responsible for all damaged, broken or scratched glass in areas affected by their work, and at completion shall replace at their own expense all such glass.

32. **OWNER'S EQUIPMENT**

All equipment, fixtures, doors, hardware and all other items removed in the course of renovations, and not required for completion of the contract, shall be handed in to the Board. A list of these items (in duplicate) shall be prepared and signed by the Contractor's and the Facility Services Department's representatives.

33. **CLEANING UP**

In addition to the housekeeping requirements as set out under paragraph 16., if the work consists of renovation work in an existing school or Board building, the building must be cleaned of all such materials at the close of each day's work. Each sub-contractor shall clean their own work.

Upon completion of the work, all debris, surplus materials, tools and equipment shall be cleaned up and removed from the building and the site and the building left broom clean and the site in a neat and tidy condition to the satisfaction of the Board. The Contractor shall clean all floors, glass, painted and stained woodwork, all hardware, fixtures, and equipment.

34. **GUARANTEES**

General

All work is to be guaranteed for a period of one (1) year after 100 percent completion of the work, during which time any imperfections which may develop in the workmanship or materials used or any work affected in making good such imperfections must be made good promptly by the Contractor without cost to the Board.

A warranty inspection is to be made just prior to the termination of the guarantee period to list all outstanding imperfections to be corrected by the contractor at no cost to the Board.

35. **ACCEPTANCE**

By reason of having submitted a tender on the work described herein, the general contractor does hereby acknowledge that they have read the specifications and do hereby accept these conditions and specifications as the instructions governing the work.

36. **UNIONS**

It is wholly the Contractor's and their Subcontractors responsibility to follow all Trade Union requirements for which they are signed. If conflicts, disputes, pickets or any other disturbances or lost time occurs, the Contractor must take the necessary steps expediently to resolve the matter. The Board and the Consultant will not be held liable for any cost of injunctions or lost time.

37. **MAINTANENCE MATERIALS**

Provide all maintenance materials to the Owner as outlined in each specification sections.

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**1.1 INTENT**

.1 This section outlines the general conditions that shall be administered by the General Contractor. While the specification section establishes the requirements for each trade, the General (or Principal) Contractor shall directly supervise and administer all contract requirements to ensure the provision of materials, labour and equipment necessary to complete the work on time and to the quality specified. Reference to GC refers to General Conditions for Public and Invitational Tenders as amended by Supplementary General Conditions.

**2.1 SCOPE OF WORK**

.1 The general scope of work shall include, but not be limited to, the supply of labour, equipment, materials, and transportation to execute work in accordance with the drawings and specifications.

**3.1 QUALIFICATION OF CONTRACTOR**

.1 All work shall be done by a recognized established qualified and competent contractor. This contractor shall employ only skilled mechanics or installers who have been thoroughly trained or competent in carrying out the work specified in the contract.

.2 Where required by a manufacturer of specialty products, only contractors that are approved as applicators shall be utilized.

**4.1 CONSTRUCTION SCHEDULE AND ON-SITE PROJECT DOCUMENTS**

.1 Within receipt of the authorization letter to proceed by Owner, prepare and submit a detailed Construction Schedule, clearly showing the anticipated progress stages, start and finish date of each construction phase and date of final completion with-in 10 working days showing dates for the following:

a) Submission of material sample submittals (along with an itemized list of samples to be submitted)

b) Submission of shop drawings (along with an itemized list of shop drawings to be submitted)

c) Supply and installation of:

i) All new ceilings
ii) All new flooring
iii) All other Architectural work shown on drawings or specified herein
iv) All HVAC Equipment
v) All New Lighting
vi) Mechanical items in Sections 15
vii) Electrical items in Sections 16

.2 On approval of the Construction Schedule by the Owner, proceed to ensure completion of work within the scheduled time. Carry out work in a continuous manner. If at any time one phase falls behind schedule, take necessary measures to expedite subsequent phases to maintain or improve on completion date.

.3 Maintain at the job site, one copy each of following:

a) Contract Drawings (architectural, engineering and all related consulting drawings)
b) Specifications
c) Addenda
d) Reviewed shop drawings
e) Change Orders, Contemplated Change Orders and Change Directives/Notices
f) Site/Field Instructions
g) Other modifications to contract
h) Field test reports
i) Copy of approved Construction Schedule
j) Manufacturers' installation and application instructions.
k) List of Sub-contractors
l) Progress photographs
m) Record Set of Drawings (being progressively updated)
n) Minutes of Meetings
o) Building Permit

**5.1 SPECIFICATIONS**

.1 Portions of Specifications are written in short form. Therefore, it shall be understood that where item of Work is stated in heading followed by material, equipment, component, or operation, words "shall be", "shall consist of" or similar words or phrases are implied which denote supply, fabricate and supply, install, provide or commission of such materials, equipment or operations for component of Work designated by heading.

.2 Whenever used in Specifications the following definitions shall apply:

a) SUPPLY - Procurement or fabrication of standard components not to special design of materials, equipment, or components, or performance of services to extent indicated. Where used with respect to materials, equipment, or components, term shall include delivery to Site but is not intended to include installation of item, either temporary or final.
b) FABRICATE AND SUPPLY - Fabrication of materials, equipment or component, to special customized design to extent indicated including delivery to Site, assisting in form of supervision to those Section(s) installing materials, equipment or component. Term does not include installation of item either temporary or final.
c) INSTALL - Placement of materials, equipment, or components, including receiving, unloading, transporting, storage, uncrating and installing, and performance of such testing and finish work as is compatible with degree of installation specified complete ready for use.
d) PROVIDE - To Supply and Install, compete and in place, including accessories, finishes, tests and services as required to render item so specified

complete ready for use.

e) COMMISSION - Startup and initial operation of equipment as required and/or as specified in respective Sections, to demonstrate satisfactory operation of components and entire system including calibration of any control instrumentation as required to maintain operations.

.3 Drawings, Lists or Schedules of Items are intended to show scope and arrangement of work. For location of item described refer to such Drawings,
Lists or Schedules unless location stipulated in Specifications.

.4 Wherever words "acceptable", "approved", "reviewed", "satisfactory", "selected", "directed", "designated", "permitted", "inspected", "instructed", "clarification", "required", "report", "submit", "obtain", "consult", "advise", or similar words or phrases are used in Standards or in Contract Documents, it shall be understood that, unless context provides otherwise words "by/to/with/from the Architect shall follow them as applicable.

.5 Related Work', 'Related Divisions', 'Related Sections' etc.: Specification sections provided herein may note and/or itemize specific sections or divisions of related work. This information is provided for general reference only. In all circumstances, the actual scope of related work is to be as shown/required by the scope of work outlined in all of the Contract Documents (including the drawings) and in no way is to be limited to any information, provided, not provided and/or referenced in the Specification documents.

**6.1 TEMPORARY SERVICES**

.1 Refer to Owner's General Conditions.

.2 If necessary the Contractor shall provide, at their expense, the following temporary services for construction purposes from existing terminals, only in locations designated by the Owner:

**Power:** 110 volt electrical, 230 volt electrical (at available current) for temporary lighting and operation of power tools. Owner will pay for electricity rates. The contractor can use the power at the school, however

.3 The Owner may discontinue such services at any time to serve emergency Owner's requirements and will accept no liability for any damage or delay resulting from such withdrawal of the service.

.4 **Telephone:** Provide and pay for temporary telephone service for use on site.

.5 The General (or Principal) Contractor is responsible for providing temporary services during the contract for all construction purposes.

## 7.1 TEMPORARY FACILITIES

**.1 Temporary Toilet Facilities:**

.1 General Contractor shall supply and maintain temporary toilet facilities on-site, **School Washroom Facilities are not to be used by Trades personnel.**

**.2 Temporary Enclosures, Bracings, Scaffolding etc.:**

.1 Isolate work areas to protect other tenants and workers from injury, private and public property from damage, by providing guards, rails, hoardings, braces, shoring, underpinning, temporary covers, covered passageways, ramps, stairs, warning signs, visual, audible signals, and fire rated exit enclosures.

.2 Provide necessary protection without interfering with free, safe passage and maximum possible use of the premises by other tenants.

.3 Replace, repair or make good damage immediately.

.4 Ensure that no unauthorized personnel are allowed in the work areas.

.5 Erect all scaffolding independent of walls. Construct in a safe, secure and rigid manner. When not in use place in a position as not to hinder other trades or work. Remove promptly when work is complete.

.3 **Temporary Storage**:

**.1** A construction storage area will be designated on site for the storage of construction materials. **Interior occupied areas shall not be used for construction storage.**

.2 Provide secure shipping style containers and/or suitable coverings for materials that are to remain dry.

.3 Deliver, store and maintain packaged materials and equipment with manufacturer's seals and labels intact.

.4 Prevent damage, adulteration, and soiling of material and equipment during delivery, handling and storage. Immediately remove rejected materials and equipment from site.

.5 Store and maintain material and equipment in accordance with manufacturer's and supplier's instructions.

.6 Do not load, or permit to be loaded, any part of the work with a weight or a force that will endanger the work.

.4 **Temporary Construction Office:**

.1 General Contractor shall supply and maintain temporary construction office on-site if they deem necessary, **School interior areas shall not be used for construction office**.

**8.1 HEATING AND VENTILATION**

.1 Pay for temporary heat and ventilation used during construction including cost of installation, fuel, operation, maintenance and removal of equipment. Use of direct-fired heaters discharging waste products into work areas will not be permitted unless prior approval is given by the Owner.

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

.1 facilitate progress of work
.2 protect work and products against dampness and cold
.3 prevent moisture condensation on surfaces
.4 provide ambient temperature and humidity levels for storage, installation and curing of materials
.5 provide adequate ventilation to meet health regulations for safe working environment.

**9.1 CONSIDERATION FOR OTHER OCCUPANTS**

.1 Execute work to cause minimum interference to other occupants and their personal effects.

.2 Take reasonable measures to control noise during operations.

**10.1 EXISTING SERVICES**

.1 All work associated with existing services shall be done in accordance with applicable codes. Obtain and pay for any required permits or fees.

.2 Temporarily disconnect and remove existing services as may be necessary to gain access to the work. Upon completion, reinstall and re-connect services to original condition.

.3 Re-route any existing services which interfere with the work of this contract. Extend or modify any existing services as necessary to suit new conditions resulting from the work of this contract.

.4 Obtain the Owner's approval prior to making any modifications to the existing services.

.5 Before commencing work, establish location and extent of service lines in area of work and notify Owner of findings.

.6 Where unknown services are encountered, immediately advise Owner and confirm findings in writing.

**11.1 FIRE SAFETY REQUIREMENTS**

.1 Refer to General Conditions and in addition, comply with the Ontario Fire Code, by:

.1 Shutting off and capping abandoned service lines.

.2 Maintaining and protecting continuing service lines.

.3 Providing fire watches as required.

.4 Management of combustible salvage, waste and rubbish.

.5 Protecting persons and properties.

.6 Maintaining operable fire detection and protection equipment.

.7 Maintaining fire fighters' access.

.8 Providing temporary fire extinguishing equipment.

.9 Maintaining existing and temporary fire exits.

**12.1 CONTRACTOR'S USE OF SITE**

.1 Limited to areas for work and outside office and storage as directed by the Owner.

.2 Do not unreasonably encumber site with materials or equipment.

.3 Do not obstruct entrances, stairs or fire exits.

.4 Maintain free access route for fire, ambulance and garbage trucks.

.5 The placement of refuse bin will be allowed in an area agreed to with the Owner.

.6 Make good damage to paving, grass, walkways, curbs, trees, planting beds, etc. caused due to the work of this Contract.

.7 No On-Site Parking will be provided by the Owner. Off-Site parking on Municipal Streets must be reviewed and approved by the local Municipality.

.8 Existing millwork, cabinets, countertops, loose or fixed furniture, equipment or other similar permanent surfaces to remain or be relocated shall not be used for construction work surfaces or storage. The general Contractor and or Subcontractor shall provide their own temporary storage and work surfaces.

**13.1 CUTTING, FITTING, HOT WORK AND PATCHING**

.1 All cutting and patching by General Contractor.

.2 Inspect and locate existing conditions including elements subject to damage or movement.

.3 Obtain the Engineer's and Owner's approval before doing any hot work, cutting, boring or sleeving load bearing members.

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

**14.1 LAYOUT OF WORK**

.1 Be responsible for layout of all parts of the work in accordance with lines, levels, elevations and measurements shown on the drawings. Errors resulting from failure to verify figures or the proper layout of any element of the installation shall be rectified without additional cost.

**15.1 STANDARDS**

.1 The specification refers to national and international standards, such as CGA, CGSB, CSA, ULC, ASTM, etc. Be familiar and comply with or exceed the requirements of these standards. Failure to comply may result in rejection of the work and the need to replace or repair at no additional cost.

.2 In case of conflict or discrepancy, the more stringent requirements shall apply.

**16.1 CODES**

.1 Comply with the most recent versions of: The building Code Act, as amended; The Ontario Building Code and all supplements, as amended and all other Regulations and By-Laws of the authorities having jurisdiction an ammendments thereto. All after are referred to 'Code'. Where Code or Contract Documents do not cover a particular requirement then conform to the National Building Code of Canada and all supplements.

.2 In case of conflict or discrepancy, the more stringent requirements shall apply.

**17.1 SHOP DRAWINGS, SAMPLES, CONTROL PANELS**

.1 Throughout the specifications, requirements are listed for the submission of drawings, samples and control panels or unit materials. The General (or Principal) Contractor is responsible for the submission and receipt of acceptances and approvals to ensure unnecessary work delays.

.2 Adjustments made on shop drawings by the Owner or Owner's Consultant are not intended to change the Contract Price.

**18.1 INSPECTION AND TESTING**

.1 Make arrangements for, and pay for, required inspections or tests specified or as required by governing authorities.

.2 Submit 2 copies of inspection and test reports promptly to the Owner.

.3 Allow sufficient time and access for the Owner or the Owner's Consultant to inspect the work or analyze test results.

.4 Do not proceed until written approval of inspection or testing is issued by the Owner.

**19.1 HEALTH AND SAFETY**

.1 Abide by the provisions of all Acts, Regulations pertaining to health and safety including the latest versions of the Occupational Health and Safety Act and the Workplace Hazardous Materials Information System (W.H.M.I.S.).

.2 Maintain on site a list of all hazardous materials (as required by WHMIS Regulation) proposed for use on site together with current Safety Data Sheet (SDS). Supply the Owner with a current copy of the list and SDS sheets.

.3 Label all hazardous materials according to the requirements of WHMIS.

.4 The Contractor shall have written spill response procedures and material on-site to respond to pollutants and contaminants into the natural environment in excess of levels permitted in regulations or to cause or likely to cause an adverse effect.

.5 The Contractor shall post all appropriate job site signs, notices, instructions and safety requirements in English and/or graphic symbols for the duration of the work.

**20.1 CO-ORDINATION**

.1 Examine requirements of materials, labour and equipment standards for the work of this contract.

.2 Ensure that where the work of one trade is to be built-in or is to be incorporated into or is dependent on the work of another trade, provide material, labour and equipment so as to avoid work delays.

.3 Ensure that installations, individually and collectively fully comply with contract requirements.

.4 The Architect or Engineers may issue additional drawings to help with execution of the work, however these drawings are issued for clarification only and shall have the same meaning and intent as the Contract Documents and shall be included in the Contract Documents.

**21.1 SUBSTITUTIONS, OR EQUAL AND APPROVED EQUALS**

**.1 All Tenders are to be based strictly upon the items and suppliers specified in/on the Contract Documents. Refer to HWDSB General Information for Contractor suggested alternate suppliers or materials.**

.2 Or Equal, Approved Equal and Substitute alternate suppliers and materials may be approved by the Consultants and Owner after the Contract is awarded but only due to the following circumstances; Suppliers or materials are no longer available or cannot be ordered and/or produced with-in the Owner's timeframes for project completion including but no limited to interim dates for project phases; the proposed alternate supplier and material meets the same quality and performance

standards as specified and will result in a credit amount to the Contract value amounts accepted by the Owner.

.3 The Owner also reserves the right not to accept or allow any substitutions to Suppliers or Products specified in the Contract Documents if they do not meet the Owner's standards of quality, and performance.

**22.1 CLEANING AND DISPOSAL**

.1 Provide on-site dump containers in location approved by Owner, for collection of waste materials and rubbish.

.2 Maintain premises free from debris and waste material on a daily basis. Remove all waste materials from site. Do not burn or bury materials on site and do not dispose of materials into storm or sanitary sewers.

.3 Dispose of all recyclable waste materials at recycling storage/handling facilities, where such facilities exist within 70 kilometers of site.

.4 Co-ordinate and supervise the completion operations of each trade. Provide a clean-up team to carry out the final clean-up of finished surfaces as required for immediate use after acceptance.

.5 During Final Cleaning of all exposed to view surfaces. Remove all grease, dust, stains, labels, protection materials, fingerprints, from all finished exposed to view surfaces including all glass and mirrors, use cleaning products that are recommended by the manufactures and approved by the owner. Clean all finished flooring according to manufacturer's instruction. Clean and seal all rubber cove base material. Clean all light fixtures, reflectors and lenses complete. Broom clean and power wash, if necessary all existing exterior paved surfaces and rake clean all other surfaces of the grounds effected by the work operations. Remove all debris and surplus materials from concealed accessible spaces. Replace any broken or scratched glass or mirrors. Repair any new damaged quartz surfaces. Replace with new final filters all mechanical equipment operated during construction. Clean all work with appropriate apparatus and cleaning materials in accordance with applicable specification sections and manufacturer's recommendations. Upon completion of final cleaning, remove all equipment, tools, materials and debris from building and site ready for occupancy by Owner.

**23.1 AS-BUILT DRAWINGS AND CLOSEOUT DOCUMENTS**

.1 The Contractor shall have on-site (2) sets of drawings for recording progressive recording of any items deviating from the drawings, including but not limited to change orders, site instructions, hidden or unknown conditions, underground utility locations, field changes in dimensions and details, locations of existing structural, mechanical and electrical building systems and related components not otherwise shown on drawings. etc. not otherwise shown on the drawings. These changes shall be recorded in red ink or pencil and upon completion shall reflect 'as-built conditions.

.2 At the completion of the work and before final acceptance the General Contractor shall transfer all as-built on-site hand marked up information and supply Architectural, Structural, Mechanical and Electrical as-built drawings of the work in the latest autocad format. Digital record autocad files will be supplied to the General Contractor by the Consultants for purposes of recording as-built information. At no cost to the Consultants or Owner.

.3 Some trades must maintain records and provide as-built, operating and maintenance information for 'as-built' drawings, digital files, operating and maintenance manuals. Throughout the progress of the work, ensure that these are properly recorded. Assemble and forward the required information, timed to prevent delay in final acceptance.

.4 Submit a set of as- built drawings to the Consultants for review. Make any necessary changes and then submit (2) sets of drawings and (1) digital autocad files on USB Drive or on downloadable format for presentation to the Owner.

.5 Submit (1) digital files on USB Drive as well as (1) PDF copy and (1) copy of Operating and Maintenance documents in 3 ring letter size loose leaf vinyl hard covered binders, with Title sheet labeled 'Operating and Maintenance Data Manual' Organize into tabbed sections parallel to project specification layout for presentation to the Owner. All information to be neatly typed in English. Include but not limited to the following: Any equipment which includes an extended warranty will be listed in a separate section at the beginning of the manual, clearly labelled and including the vendor contact information, description of the equipment or material and the warranty period. Maintenance instructions for finished surface and material; copy of hardware schedule, paint colour formulas, and interior and exterior colour and finish schedules; description, operation, and maintenance instructions all equipment and systems, including complete list of equipment parts. Indicate name plate information such as; make, model, serial number, size and capacity etc.; names, addresses and phone numbers of Sub-Contractors and Suppliers. Also refer to Owner's Front End Documents.

.6 The General Contractor, Mechanical Contractor and Electrical Contractor, shall each note a $2,500.00 hold back amount in their progress draws to cover final submission of all as-built drawings, Operation and Maintenance Manuals. Holdback values will be released upon final Consultant review and approval of documents for presentation to the Owner.

.7 See section below for Guarantees and Warranties

**24.1 CONSTRUCTION MEETINGS AND MINUTES**

.1 The General Contractor shall conduct all construction meetings on a bi-weekly basis or as determined by the Consultant and shall record and distribute all minutes of those meetings in a timely manner no longer than 72 hours after the meeting. Up to date construction time schedules shall be presented at the beginning of the work and on a monthly basis after.

**25.1 ALLOWANCES**

.1 The Cash Allowance listed in the tender documents to cover but not limited to: signage, roofing, PA system, Communications and Data, and Kitchen Equipment.

.2 Expend Cash Allowances only as directed and authorized by the Architect and confirm in writing. Supply detailed and itemized costs for all Allowances in writing for the Architect's review and approval prior to proceeding with the work.

.3 Unexpended amount(s) of cash allowances may be reallocated to other cash allowances at the sole discretion of the Architect.

.4 Refer to Owner's General Conditions for applicable Overhead and Profit mark-up. Note Overhead and Profit mark-up is not allowed on the carried cash allowance, however if the cash allowance expenditure exceeds the carried sum then Overhead and Profit will be allowed on the amount(s) over.

**26.1 GUARANTEES, WARRANTIES AND BONDS**

.1 Expedite the preparation and submission of warranties, particularly extended period warranties, as specified.

.2 Provide warranties that are fully executed and notarized.

.3 Include the following: Name and Address of project(s): Guarantee and Warranty commencement date (certificate or report of final Completion); duration of Guarantee and Warranty; clear indication and description of what is being covered and what remedial action will be taken if Guarantee and/or Warranty needs to be invoked by Owner: and signage and seal of General Contractor.

.4 This information shall be included with-in the Closeout Documents.

-End-

2090 Shirley Drive Kitchener Ontario N2B 0A3
Phone: (519) 578.1000 Toll Free: (800) 265.8959 Fax: (519) 578.3262

# Schedule of Finish Hardware

ARCHITECT/DESIGNER: RICHARD G. BUTTERWORTH ARCHITECT INC.
127 JUDITH CRESCENT
ANCASTER ON L9G 1L3
PHONE - 905.304.0241

PROJECT: ORCHARD PARK SECONDARY SCHOOL
200 DEWITT ROAD
STONEY CREEK ON
8080

PROJECT CONSULTANT: ROBERT ROWARTH, AHC

PREPARED: March 17, 2026

Scan to check out our website

www.knells.ca

# DOOR INDEX

| Mark | Heading # | Mark | Heading # | Mark | Heading # |
|---|---|---|---|---|---|
| D1 | 1 | | | | |
| D2 | 2 | | | | |
| D3 | 3 | | | | |
| D4 | 4 | | | | |
| D5 | 5 | | | | |
| D6 | 6 | | | | |

KNELL'S DOOR & HARDWARE

2090 SHIRLEY DRIVE

KITCHENER ON N2B 0A3

Tel: 519-578-1000 Fax: 519-578-3262

ORCHARD PARK SECONDARY SCHOOL

Control No.8080

8080

Submitted By: ROBERT ROWARTH, AHC

# Hardware Finishes

| Finish | Description |
|---|---|
| 626 | US26D-SATIN CHROMIUM (BRASS) |
| 689 | POWDER COAT, ALUMINUM |
| C26D | SATIN CHROMIUM |
| C32D | STAINLESS STEEL, SATIN |
| US26D | SATIN CHROME |
| US32D | SATIN STAINLESS STEEL |

HARDWARE SCHEDULE - CODE # 8080

ORCHARD PARK SECONDARY SCHOOL

200 DEWITT ROAD

Heading # 1

1 SGL DOOR D1 SERVERY 1042A TO STORAGE — 90º LH

3-0 x 7-0 x 1 3/4 HMD Door/ HMF Frame — NON-RTD Door/NON-RTD Frame

| | | | | |
|---|---|---|---|---|
| 3 | HINGE, 4 1/2, STD WT | 5BB1 X 4.5 X 4 | 626 | IVE |
| 1 | CYLINDRICAL LOCK WITH THRU BOLTS | ND80TD X RHO X 13-247 X 10-025 X ICA X 50-231 | 626 | SCH |
| 1 | CYLINDER CORE | 23-030 X S123 X EVEREST-S X MK | 626 | SCH |
| 2 | PLATE | GSH 83A 1-2 CUT FOR 161 (ESCUTCHEON) | 32D | GAL |
| 1 | KICK PLATE | GSH 80A X 12 X 34.5 | C32D | GAL |
| 1 | KICK PLATE | GSH 80A X 12 X 35.5 | C32D | GAL |
| 1 | FLOOR STOP | GSH 209 | C26D | GAL |

---

Heading # 2

1 SGL DOOR D2 CORRIDOR 1044 TO SERVERY 1042A — 90º LH

3-6 x 7-0 x 1 3/4 HMD Door/ HMF Frame — 45 MIN Door/45 MIN Frame

| | | | | |
|---|---|---|---|---|
| 3 | HINGE, 5, HVY WT | 5BB1HW X 5 X 4.5 | 626 | IVE |
| 1 | PASSAGE SET, WITH THRU BOLTS | ND10S X RHO X 13-248 X 10-025 | 626 | SCH |
| 1 | CLOSER | 4040XP.RWPA.689.SRT | 689 | LCN |
| 1 | ARMOR PLATE | GSH 90F X 24 X 40.5 | C32D | GAL |
| 1 | ARMOR PLATE | GSH 90F X 24 X 41.5 | C32D | GAL |
| 1 | FLOOR STOP | GSH 209 | C26D | GAL |

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Heading # 3

1 SGL DOOR D3 CORRIDOR 1044 TO STORAGE 1044B — 90º LH

3-0 x 7-0 x 1 3/4 HMD Door/ HMF Frame — NON-RTD Door/NON-RTD Frame

| | | | | |
|---|---|---|---|---|
| 3 | HINGE, 4 1/2, STD WT | 5BB1 X 4.5 X 4 | 626 | IVE |
| 1 | CYLINDRICAL LOCK WITH THRU BOLTS | ND80TD X RHO X 13-247 X 10-025 X ICA X 50-231 | 626 | SCH |
| 1 | CYLINDER CORE | 23-030 X S123 X EVEREST-S X MK | 626 | SCH |
| 1 | CLOSER | 4040XP.RWPA.689.SRT | 689 | LCN |
| 1 | KICK PLATE | GSH 80A X 24 X 34.5 | C32D | GAL |
| 1 | KICK PLATE | GSH 80A X 24 X 35.5 | C32D | GAL |
| 1 | FLOOR STOP | GSH 209 | C26D | GAL |

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HARDWARE SCHEDULE - CODE # 8080

ORCHARD PARK SECONDARY SCHOOL

200 DEWITT ROAD

Heading # 4

1 SGL DOOR D4 KITCHEN 1044A FROM OFFICE 1045 — 90º RHR

3-0 x 7-0 x 1 3/4 HMD Door/ HMF Frame — NON-RTD Door/NON-RTD Frame

| | | | | |
|---|---|---|---|---|
| 3 | HINGE, 4 1/2, STD WT | 5BB1 X 4.5 X 4 | 626 | IVE |
| 1 | CYLINDRICAL LOCK WITH THRU BOLTS | ND78TD X RHO X 13-247 X 10-025 X ICA X 50-231 | 626 | SCH |
| 2 | CYLINDER CORE | 23-030 X S123 X EVEREST-S X MK | 626 | SCH |
| 1 | FLOOR STOP | GSH 209 | C26D | GAL |

---

Heading # 5

1 SGL DOOR D5 CORRIDOR 1043 FROM CORRIDOR 1044 — 90º LHR

3-0 x 7-0 x 1 3/4 HMD Door/ HMF Frame — 45 MIN Door/45 MIN Frame

| | | | | |
|---|---|---|---|---|
| 3 | HINGE, 4 1/2, STD WT | 5BB1 X 4.5 X 4 | 626 | IVE |
| 1 | CYLINDRICAL LOCK WITH THRU BOLTS | ND78TD X RHO X 13-247 X 10-025 X ICA X 50-231 | 626 | SCH |
| 2 | CYLINDER CORE | 23-030 X S123 X EVEREST-S X MK | 626 | SCH |
| 1 | OVERHEAD STOP/HOLDER, CONCEALED | 104S | US32D | GLY |
| 1 | CLOSER | 4040XP.RWPA.689.SRT | 689 | LCN |
| 1 | KICK PLATE | GSH 80A X 12 X 35.5 | C32D | GAL |
| 1 | KICK PLATE | GSH 80A X 12 X 34.5 | C32D | GAL |

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Heading # 6

1 SGL DOOR D6 SERVERY 1042A FROM FOLDING GATE — 90º RHR

1-0 x 8-0 x 1 3/4 WD Door/ WDF Frame — NON-RTD Door/NON-RTD Frame

| | | | | |
|---|---|---|---|---|
| 4 | INVISIBLE HINGE | 218US26D | US26D | SOS |
| 1 | MORTISE CYLINDER | 26-091 X 112 X S123 X ICA X 50-231 | 626 | SCH |
| 1 | CYLINDER CORE | 23-030 X S123 X EVEREST-S X MK | 626 | SCH |
| 1 | FLUSH PULL | 962 | 626 | IVE |
| 1 | CATCH, BALL | CL21A | US26D | IVE |

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HWDSB

**Capital Projects**
Facility Services

# Construction School Specific Information Sheet

## 1. School Information:

| | |
|---|---|
| **School Name:** | Orchard Park Secondary School |
| **Bell Times** | |
| Morning (School Entry)**:** | 8:00 AM |
| Afternoon (School Dismissal): | 2:10 PM |
| **Caretaking Phone Number:** | 289-922-9457 |
| ***After-Hours Emergency Number:** | 905-667-3079 |
| ****Caretaking Hours** | |
| September to June | 6:00 AM – 10:00 PM |
| December Holiday Break | 6:00 AM – 2:00 PM |
| March Break | 6:00 AM – 2:00 PM |
| July to August | 6:00 AM – 2:00 PM |
| Saturday / Sunday | CLOSED |
| **Account Code:** | HPXXXX |
| **Security Panel Code:** | XXXX |

*Please call the After-Hours Emergency Number noted above if issues arise outside of Caretaking Hours. These would include unanticipated interruption of services, issues with building or room access, fire alarm or security concerns, etc.

**Caretaker hours are not guaranteed. Please confirm with the HWDSB project supervisor prior to any work taking place, and then on a weekly basis throughout the duration of the project.

## 2. School Entry for afterhours, school holidays or closures:

Please follow these steps upon entry to the building outside of caretaker hours and on school holidays or closures:

1. Call PasWord Protection Services at 1-800-561-3099 and notify them in advance of the day(s) and time(s) that access to the building will be required. They will require the HP code noted above.
2. Disarm the security panel when arriving.
3. Arm the security panel when leaving.
4. Call PasWord Protection Services to verify that the building is armed and secure.

Failure to follow this procedure outside of caretaker hours and on school holidays or closures will result in an automatic dispatch of a security guard to the building to verify who has entered/exited the building. Security costs associated with the dispatch of a security guard for failing to follow the procedure will be expensed to the contractor responsible for the incident.

**3. Protocol for Work Impacting Fire Alarm System or Devices**

The contractor is to follow this procedure when the fire alarm system is impacted.

A. References and Definitions:

Fire Alarm Control and Testing Service Provider: Hamilton Fire Control

Fire Alarm and Security System Monitoring Service Provider: PasWord Protection Services

Fire Watch: An hourly patrol of areas that are not protected/monitored by the fire alarm system. These include but are not limited to, a disconnected device, a covered device, a bypassed device, or device in trouble. The general contractor is responsible for fire watch in all construction areas. Caretaking staff are responsible for fire watch in all other areas of the school. Fire watch is to be recorded in a Fire Watch Log.

Fire Watch Log: The general contractor is to document and maintain a written log confirming fire watch has been conducted hourly. This log is to remain on site for the duration of the project. This written log is maintained separate from the caretaking fire watch log. The caretaking log is digitally recorded within the Boards asset management system (eBase).

B. Mandatory Pre-Construction Site Meeting with Hamilton Fire Control

1. Contractor to request a meeting prior to mobilization with Michael Fleet from Hamilton Fire Control (HFC), the project supervisor from HWDSB, the facility operation supervisor from HWDSB and the head caretaker to review any work that will affect the fire alarm system. This can be coordinated by the project supervisor upon request.

   Contact: Michael Fleet - Hamilton Fire Control
   Phone: (905) 527-7042
   Email: michael@hamiltonfirecontrol.ca

2. Contractor to minute the meeting and submit to the project supervisor and Michael Fleet from HFC for review within 48 hours of the site-walk-through.

C. Mandatory Construction Protocol if the Fire Alarm System is Impacted

1. Contractor to follow procedures discussed and documented from the pre-construction site meeting with Hamilton Fire Control.

2. If devices are impacted during occupied hours:
   - Per the Fire Safety Plan, contractor to notify PasWord Protection Services that they'll be on Fire Watch (in the area of the impacted devices only). PasWord Protection Services will not take any action; the notification is for information purposes only.
   - Contractor to either take the device offline or protect/cover it. Fire watch (in the area of the impacted device only) is required in either of these scenarios. If the alarm goes off during work, all occupants, including contractors, are to evacuate the building and the fire department will be dispatched.

   If hot work is taking place, prior to the above-noted steps:
   - Contractors are required to advise HWDSB at least 24 hours before any hot work is scheduled to take place.
   - The contractor is required to provide a hot work permit to HWDSB at the same time.

3. If devices are impacted outside of occupied hours, and the contractor is the only party in the building:
   - The same protocol above is to be followed.

4. If the system or specific devices will not be operational while the school is completely vacant (i.e. overnight or on a weekend when no Work is taking place):
   - No action required.

***The system is not to be bypassed (device(s) or full system). The system is NOT to be put on test. The only time the system will be put on test and the school will be on Fire Watch is if the system is being tested.***

***In the event a fire alarm device is activated, all occupants of the school, including contractors, must evacuate the school. The fire department will be dispatched. The contractor will be responsible for all fire department costs resulting from construction.***

**4. Please follow these steps for planning any service (electrical, gas, water) shutdowns:**

A. Internal Localized System/Service Shutdowns:

1. Localized shutdowns **require minimum 3 days' notice** to HWDSB project supervisor for coordination with the school facility and staff.
2. Shutdowns must be completed outside of school bell times/operational hours which vary by facility and must be scheduled for evenings after 6:00 PM, weekends or board holidays.
3. If a shutdown will impact the security system, the contractor shall contact PasWord Protection Services at 1-800-561-3099 and notify them in advance of the day(s) and time(s) of the shutdown.
4. If a shutdown impacts the fire alarm system, the contractor shall follow the Fire Alarm Bypass Protocol, section 4 above.
5. If required, the contractor is to coordinate with Board vendor/s to be on site to ensure boilers, roof top units, heat pumps, etc. are functioning properly after service disruption has concluded.

    - Chamberlain Building Services Inc - info@chbs.ca, 905-664-1914 or
    - Union Boiler Company Limited - info@unionboiler.com, 905-528-7977

6. Process will vary based on services shutdown and ability to localize shutdown.

B. Complete School System/Service Shutdowns:

1. Complete building shutdowns **require minimum 5 days' notice** to HWDSB project supervisor.
2. Shutdowns must be completed outside of school bell times/operational hours which vary by facility and must be scheduled for evenings after 6:00 PM, weekends or board holidays.
3. Contractor to contact PasWord Protection Services at 1-800-561-3099 and notify them in advance of the day(s) and time(s) of shutdown.
4. During the shutdown, the contractor is responsible for following Fire Alarm Bypass Protocol, section 4 above.
5. The contractor is to coordinate with Board vendor/s to be on site to ensure boilers, roof top units, heat pumps, etc. are functioning properly after service disruption has concluded.

    - Chamberlain Building Services Inc - info@chbs.ca, 905-664-1914 or
    - Union Boiler Company Limited - info@unionboiler.com, 905-528-7977

6. HWDSB project supervisor will coordinate with other HWDSB departments to ensure all systems (IIT, security, communications) are up and running after service disruption has concluded.
7. If required, HWDSB project supervisor will coordinate with City of Hamilton staff if site has shared facilities such as recreation centre, community centre, pool or library, etc.
8. Process will vary based on service shutdown.

C. Heating and Cooling System Shutdowns:

1. Heating and cooling system shutdowns **require minimum 5 days' notice** to HWDSB project supervisor
2. Shutdowns must be completed outside of school bell times/operational hours which vary by facility and must be scheduled for evenings after 6:00 PM, weekends or board holidays.
3. The contractor is to coordinate with Board vendor/s to be on site to ensure boilers, roof top units, heat pumps, etc. are functioning properly after service disruption has concluded.

    - Chamberlain Building Services Inc - info@chbs.ca, 905-664-1914 or
    - Union Boiler Company Limited - info@unionboiler.com, 905-528-7977

4. If the boiler system is drained, the contractor upon refilling the system, is responsible for coordinating Board approved chemical treatment vendor to treat water.

    - Aquarian Chemicals Inc - info@aquarianchemicals.com, 905-825-3711

5. Process will vary based on services shutdown and ability to localize shutdown.

D. Asbestos Abatement and Designated Substance Related Work:

1. Designated substance related work **requires minimum 5 days' notice** to HWDSB project supervisor.
2. Designated substance related work in occupied areas must be completed outside of school bell times/operational hours which vary by facility and must be scheduled for evenings after 6:00 PM, weekends or board holidays.

# Orchard Park Secondary School

# Hospitality Program Renovations

## Limited Designated Substance Audit Report

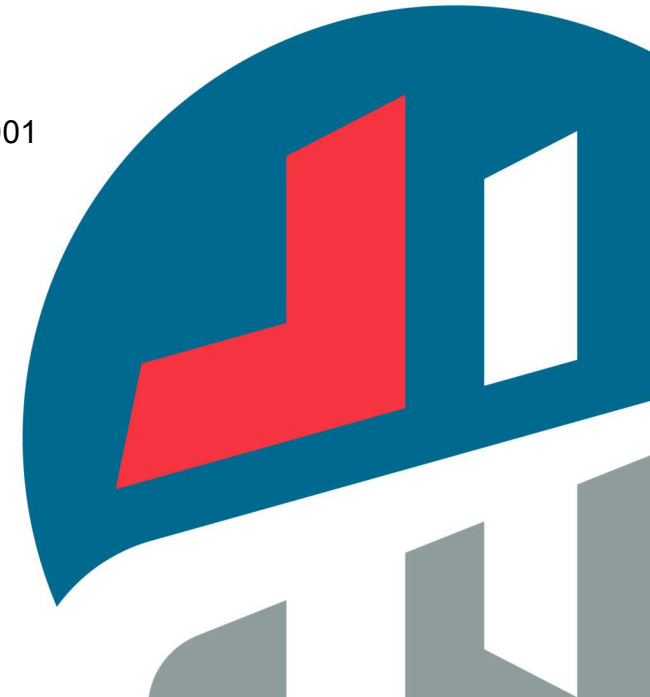
**Project Location:**
200 Dewitt Road, Stoney Creek, ON

**Prepared for:**
Hamilton-Wentworth District School Board
20 Education Court, Hamilton, ON

**Prepared by:**
MTE Consultants Inc.
1016 Sutton Drive, Unit A
Burlington, ON L7L 6B8

February 3, 2026

**MTE File No.:** 65261_001



Engineers, Scientists, Surveyors.

# Contents



## Appendices

# 1.0 INTRODUCTION

## 1.1 Authorization

MTE Consultants Inc. (MTE) was retained by Hamilton-Wentworth District School Board (the Client) to conduct a Designated Substance Audit for the building located at 200 Dewitt Road in Stoney Creek, Ontario.

The purpose of the audit was to identify the presence of Designated Substances within the building in accordance with Section 30 of the Occupational Health & Safety Act (OHSA), in advance of a hospitality program renovation. This report meets the requirements of Section 30 of the OHSA and the requirements of Ontario Regulation (O. Reg.) 278/05.

# 2.0 SCOPE OF WORK

As requested by the Client, this assessment was limited to Hospitality Area, which included the following locations:

- Corridor 1043
- Rooms 1042
- Room 1042A/B
- Room 1044
- Room 1044A/B
- Room 1045

These areas are referred to in the following sections as the “Subject Areas”.

The Scope of Work for this assessment was completed by MTE and included the following activities:

- Review of existing or historical reports and documentation pertaining to Designated Substances within the building;
- Visual inspection of accessible locations within the Subject Area to identify the following suspect Designated Substances and Hazardous Building Materials:
    - Asbestos;
    - Lead;
    - Mercury;
    - Silica;
    - Mould growth;
    - Ozone Depleting Substances; and,
    - Polychlorinated Biphenyls, limited to fluorescent light ballasts;
- The following Designated Substances are not expected to be present due to the building use or in a form that is hazardous: Acrylonitrile, Arsenic, Benzene, Coke Oven Emissions, Ethylene Oxide, Isocyanates, and Vinyl Chloride;
- Collection of bulk building material samples suspected to contain asbestos;
- Collection of paint scrape samples suspected to contain lead;
- Submission of samples to an accredited and/or qualified laboratory;

- Interpretation of laboratory results; and,
- Preparation of this report of findings and recommendations.

# 3.0 METHODOLOGY AND ASSESSMENT CRITERIA

This audit was conducted using visual and laboratory identification methods for the assessment of materials outlined in Section 2.0 and their corresponding location and use. Materials that are determined to be asbestos-containing materials (ACM) are further classified by their friability and condition. The areas outlined in Section 2.0 were inspected and limited to building components, materials and service connections. Notwithstanding that reasonable attempts were made to identify all Designated Substances, the possibility of concealed substances and material exists and may not become visible until substantial demolition has occurred and therefore are currently undocumented. All work was conducted in accordance with industry accepted methods and MTE Standard Operating Procedures and did not include the following:

- Materials indicated in this report as “Potentially Concealed”;
- Locations that may be hazardous to the surveyor (located at heights, electrical equipment, confined spaces);
- Where invasive inspection could cause consequential damage to the property or impair the integrity of the equipment, such as roof system, sealants, exterior finishes, underground services or components of mechanical equipment;
- Locations concealed by building finishes that require substantial demolition or removal for access or determination of quantities (plumbing or electrical lines);
- Non-permanent items or personal contents, furnishings; and,
- Settled dust or airborne agents unless otherwise stated.

# 4.0 ASSESSMENT AND RESULTS

An inspection of the building was conducted by MTE on January 13, 2026.

A description of the building and assessed finishes is provided below. Refer to Section 4.1 for a summary of findings.

| Building Element | Description |
|---|---|
| **Building Structure** | Structural steel<br>Concrete<br>Concrete block |
| **Mechanical Systems/Insulations** | Boiler heating |
| | Parging on pipe fittings<br>Fibreglass insulation on pipe straights<br>Fibreglass insulation on ventilation |
| **Electrical/Plumbing Systems** | Fluorescent light tubes<br>Copper piping with solder |
| **Floor Finishes** | Vinyl floor tiles<br>Terrazzo |

| Building Element | Description |
|---|---|
| **Wall Finishes** | Ceramic tile & grout<br>Concrete block and mortar |
| **Ceiling Finishes** | Drywall<br>2' x 2' Textured Pinhole ceiling tiles<br>2' x 2' Small Fissure Random Pinhole ceiling tiles |

## 4.1 Findings and Analytical Results

A summary of sampling locations and analytical results are included in **Appendix A**.

Laboratory certificates of analysis are included in **Appendix B**.

Figures of inspected areas are included in **Appendix C**.

A photographic log is included in **Appendix D.**

A detailed summary of findings and recommended actions is provided in **Table 4.3 of Appendix A.**

### *4.1.1 Asbestos*

Asbestos was used in building materials throughout the years with a peak usage in the 1950s and 1960s. While the manufacture of most ACM was banned in the 1970s, buildings constructed in the 1980s have the potential for ACM as well. In 1986, legislation limiting the use of asbestos in consumer products was introduced.

As part of this inspection, a total of 38 bulk samples of suspect ACM were submitted for asbestos analysis with a total of 25 analyses being performed. The difference between the number of samples submitted and the number of samples analysed can be a function of either the stop-positive method or the requirement of analyzing multiple layers, performed by the laboratory, from a single sample reported as additional samples or subsets of a sample.

Bulk samples were submitted for asbestos analysis to Paracel Laboratories Ltd. (Paracel), in Mississauga, Ontario. Paracel is certified under the Canadian Association of Laboratory Accreditation to perform asbestos analysis of bulk samples (accreditation number A3762). Laboratory analysis was conducted in accordance with the United States Environmental Protection Agency (USEPA), Test Method EPA/600-R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, June, 1993 by Polarized Light Microscopy (PLM) as prescribed by O. Reg. 278/05.

Based on the laboratory results and visual identification, ACM was confirmed present at the time of the inspection. In addition, suspect ACM was either observed or may potentially be concealed by building finishes.

### *4.1.2 Lead*

Lead was historically used in mortar pigments, ceramic glazing; plumbing solder, electrical equipment and electronics solder, in pipe gaskets as packing in cast iron bell and spigot joints of sanitary drains, flexible plumbing connections, flashing panels, acoustical dampeners, phone cable casing and some architectural applications. In buildings constructed after 1990, these applications are no longer applicable outside of specialized uses (shielding for medical imaging etc.).

As part of this inspection, a total of 8 paint scrape samples were collected from surfaces and represent the paint colours observed throughout the Subject Areas.

Based on the laboratory results and visual identification, lead-containing materials were confirmed present at the time of the inspection. In addition, lead-containing solder on copper pipe connections or lead pipe gaskets may potentially be concealed in buried lines or wall cavities.

### 4.1.3 Mercury

Mercury is typically used in building service applications such as fluorescent light tubes, compact fluorescent bulbs, metal halide (sodium halide) lamp bulbs, and neon lights as a vapour. Mercury may exist in thermostats and pipe or mechanical equipment thermometers as a liquid. Mercury is presumed to be present in the above materials.

Mercury-containing materials were visually identified at the time of the inspection.

### 4.1.4 Silica

Silica is present in rock, stone, soil, and sand. Masonry products such as concrete block, brick, and mortar, as well as concrete and associated products contain silica. Due to its ubiquitous nature, silica was historically used in a wide variety of building materials and is still used today in new construction.

Building materials that are presumed to contain silica were visually identified at the time of the inspection.

### 4.1.5 Mould

No water damaged or mould growth impacted building materials were observed during the inspection.

### 4.1.6 Polychlorinated Biphenyls (PCB)

Suspect PCB-containing light ballasts were visually identified during the inspection. All live electrical equipment that could not be properly and safely de-energized was not assessed, therefore light ballasts were not inspected. Light ballasts which were not accessed, will require additional investigation to determine their PCB content when removed from service.

### 4.1.7 Ozone-Depleting Substances (ODS)

ODS are chemical compounds that include chlorofluorocarbons (cfcs), hydrochlorofluorocarbons (hcfcs), halons, methyl bromide, carbon tetrachloride, hydrobromofluorocarbons, chlorobromomethane, and methyl chloroform which are widely used in cooling and refrigeration. The use of ODS is regulated under Ontario Regulation 463/10 *Ozone Depleting Substances and Other Halocarbons* Made under the Environmental Protection Act.

Building components presumed to contain ODS were identified at the time of the inspection.

## 4.2 Conclusions and Recommendations

A detailed summary of recommended actions is provided in **Table 4.3 of Appendix A**.

In accordance with Section 30 of OHSA and Section 8 of O. Reg. 278/05, the Owner must provide a copy of this report to all contractors doing work at the building. The Owner must also provide a copy of this report to all prospective contractors.

Should any additional suspect Designated Substances be discovered during building renovation demolition, work in the vicinity should cease and the materials should not be disturbed until proper notification, testing and abatement instructions are provided. All waste generated as a result of any and all work at the Site must be handled, transported and disposed of in accordance with Ontario Regulation 347 made under the Environmental Protection Act and local by-laws. Based on the assessment findings and analytical results, the following abatement measures are presented. It should be noted that the recommended actions are the minimum required actions, as prescribed by the appropriate Acts, regulations, guidelines, standards, codes and general best practice measures.

### 4.2.1 Asbestos

ACMs were identified during the assessment. If these materials, including those deemed or suspected, will be disturbed, or will likely be disturbed, during building maintenance, renovations, construction, or demolition activities, they must be handled and disposed of in accordance with the procedures prescribed by O. Reg. 278/05.

All asbestos work must be conducted by contractors who are trained in the type of asbestos operations required, and should be overseen by a qualified third party Health, Safety and Environmental professional. In order to conduct Type 3 asbestos operations, contractors must be certified as Asbestos Abatement Workers AAW (Trade code 253W) and Asbestos Abatement Supervisors AAS (Trade code 253S) by The Ministry of Training, Colleges and Universities (Ministry of Advanced Education and Skills Development) as prescribed by Section 20 of O. Reg. 278/05. Suspect or visually confirmed ACM must be deemed to be asbestos-containing and treated as if they contain a type of asbestos other than Chrysotile.

ACM may be present in concealed locations and if construction, renovation, alteration, or maintenance activities are planned, invasive inspections of concealed locations for potential ACM must be performed prior to such activities.

Should any suspect ACM be discovered during the course of construction, renovation, alteration, or maintenance activities, work which disturbs the material must cease immediately. Suspect ACM must be treated as asbestos-containing or sampled prior to disturbance to assess the presence of asbestos.

### 4.2.2 Lead

Lead-containing paint and suspect lead-containing solder on plumbing connections were identified. As such special requirements for the management, handling and disposal of lead-containing materials by the owner, constructor, contractor, sub-contractors and workers apply. The abatement contractor should consult Environmental Abatement Council of Canada's (EACC) *Lead Guideline for Construction, Renovation, Maintenance or Repair (October 2014)* for the procedures and methods required to remove and dispose of lead-containing materials.

Low level lead-containing paint is also present, and the following general procedures are recommended as a precautionary measure as per Environmental Abatement Council of Canada's (EACC) *Lead Guideline for Construction, Renovation, Maintenance or Repair (October 2014)*:

- General dust control;
- The washing of hands and face at on-site facilities;
- No smoking, eating, chewing gum or drinking in the work area; and,
- No removal of painted surfaces by means of abrasive blasting.

### 4.2.3 Mercury

Mercury-containing materials were identified. All mercury containing materials or sources should be removed, intact, prior to any work which may disturb or damage them and cause worker exposure to mercury liquid and/or vapour.

On-site crushing of mercury-containing materials should not occur. Care should be taken to ensure safe storage of the above until recycling or disposal can be coordinated. Under current legislation, mercury waste requires handling and disposal in accordance with Ontario Regulation 490/09 of the OHSA and Ontario Regulation 347 of the Environmental Protection Act.

### 4.2.4 Silica

Silica is presumed to be present; therefore, special requirements for management and handing are required. The contractor should also consult MOL Occupational Health and Safety Branch's Guideline: *Silica on Construction Projects* (April 2011) for the procedures and methods required to remove and dispose of silica-containing materials.

### 4.2.5 Mould

No water damage or suspect mould growth was observed during the assessment therefore no special management and handling requirements are warranted.

### 4.2.6 Polychlorinated Biphenyls (PCB)

Suspect PCB-containing fluorescent light ballasts were identified but could not be conclusively classified as PCB-containing or non-PCB-containing.

It is the responsibility of the owner to inspect, or ensure the inspection of all light ballasts as they are removed from service to make certain they are properly classified as PCB-containing or non-PCB containing. Fixtures will require dismantling to access date stamps (located on the back of the ballast) in order to be correctly classified in accordance with Environment Canada's document "*Identification of Lamp Ballasts Containing PCBs, Report EPS 2/CC/2 (revised), August 1991"*.

Statutory Orders and Regulations (SOR)/2008-273, the *PCB Regulations*, made under the *Canadian Environmental Protection Act,* permits continued use of in-service PCB-containing light ballasts until the end of service life or until December 31, 2025.

### 4.2.7 Ozone Depleting Substances (ODS)

Building components presumed to contain ODS were identified and special requirements for management, handing and disposal by the owner, constructor, contractor, sub-contractors and workers apply.

Under current legislation, there are no requirements to remove ODSs from service simply because they are present. However, prior to commencing any work where this equipment will be dismantled, destroyed or disposed of, the refrigerant must be drained by a licensed technician and tagged with a notice indicating that the equipment no longer contains refrigerant. The appropriate notices or records shall be maintained in accordance with O. Reg. 463/10 for a minimum of two (2) years and shall include, but not be limited to, service records, transfers/releases of refrigerants, refrigerant types and refrigerant systems.

# 5.0 LIMITATIONS

Services performed by **MTE Consultants Inc.** (MTE) were conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the Environmental Engineering & Consulting profession. No other representation expressed or implied as to the accuracy of the information, conclusions or recommendations is included or intended in this report.

This report was completed for the sole use of MTE and the Client. It was completed in accordance with the approved Scope of Work referred to in Section 2.0. As such, this report may not deal with all issues potentially applicable to the site and may omit issues that are or may be of interest to the reader. MTE makes no representation that the present report has dealt with all-important environmental features, except as provided in the Scope of Work. All findings and conclusions presented in this report are based on site conditions, as they existed during the time period of the investigation. This report is not intended to be exhaustive in scope or to imply a risk-free facility.

Any use which a third party makes of this report, or any reliance on, or decisions to be made based upon it, are the responsibility of such third parties. MTE accepts no responsibility for liabilities incurred by or damages, if any, suffered by any third party as a result of decisions made or actions taken, based upon this report. Others with interest in the site should undertake their own investigations and studies to determine how or if the condition affects them or their plans.

It should be recognized that the passage of time might affect the views, conclusions and recommendations (if any) provided in this report because environmental conditions of a property can change. Should additional or new information become available, MTE recommends that it be brought to our attention in order that we may re-assess the contents of this report.

All of which is respectfully submitted,

**MTE Consultants Inc.**

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AKR

https://mte85.sharepoint.com/sites/65621_001/Shared Documents/03- Reports/65261_001 - DSA Rpt - 200 Dewitt Road - AKR - Feb-3-26.docx

# Appendix A

## Tables

| TABLE 4.1: BULK ASBESTOS SAMPLE SUMMARY TABLE | | | | |
|---|---|---|---|---|
| **Sample #** | **Location** | **Material Description** | **Asbestos Results (% Type)** | **Is Material ACM** |
| S01A | ROOM 1044A CEILING (ALSO OBSERVED IN 1044B) | DRYWALL JOINT COMOUND | ND | YES |
| S01B | ROOM 1044A CEILING (ALSO OBSERVED IN 1044B) | DRYWALL JOINT COMOUND | 3% CHRYSOTILE | YES |
| S01C | ROOM 1044A CEILING (ALSO OBSERVED IN 1044B) | DRYWALL JOINT COMOUND | NA | YES |
| S01D | ROOM 1044 CEILING (ALSO OBSERVED IN 1044B) | DRYWALL JOINT COMOUND | NA | YES |
| S01E | ROOM 1044 CEILING (ALSO OBSERVED IN 1044B) | DRYWALL JOINT COMOUND | NA | YES |
| S02A | ROOM 1045 | 9"X9" VINYL FLOOR TILE - BROWN | 2% CHRYSOTILE | YES |
| | | MASTIC | 3% CHRYSOTILE | YES |
| S02B | ROOM 1045 | 9"X9" VINYL FLOOR TILE - BROWN | NA | YES |
| | | MASTIC | NA | YES |
| S02C | ROOM 1045 | 9"X9" VINYL FLOOR TILE - BROWN | NA | YES |
| | | MASTIC | NA | YES |

| TABLE 4.1: BULK ASBESTOS SAMPLE SUMMARY TABLE | | | | |
|---|---|---|---|---|
| **Sample #** | **Location** | **Material Description** | **Asbestos Results (% Type)** | **Is Material ACM** |
| **S03A** | **ROOM 1045** | 12"X12" VINYL FLOOR TILE - WHITE WITH OAT PATTERN | ND | NO |
| | | **MASTIC** | **3% CHRYSOTILE** | **YES** |
| **S03B** | **ROOM 1045** | 12"X12" VINYL FLOOR TILE - WHITE WITH OAT PATTERN | ND | NO |
| | | **MASTIC** | **NA** | **YES** |
| **S03C** | **ROOM 1045** | 12"X12" VINYL FLOOR TILE - WHITE WITH OAT PATTERN | ND | NO |
| | | **MASTIC** | **NA** | **YES** |
| S04A | ROOM 1044 (OBSERVED THROUGHOUT SUBJECT AREA) | CERAMIC WALL TILE GROUT | ND | NO |
| S04B | ROOM 1044 (OBSERVED THROUGHOUT SUBJECT AREA) | CERAMIC WALL TILE GROUT | ND | NO |
| S04C | ROOM 1044 (OBSERVED THROUGHOUT SUBJECT AREA) | CERAMIC WALL TILE GROUT | ND | NO |
| S05A | ROOM 1045 | 2'X2' CEILING TILE - TEXTURED PINHOLE | ND | NO |
| S05B | ROOM 1045 | 2'X2' CEILING TILE - TEXTURED PINHOLE | ND | NO |
| S05C | ROOM 1045 | 2'X2' CEILING TILE - TEXTURED PINHOLE | ND | NO |

| TABLE 4.1: BULK ASBESTOS SAMPLE SUMMARY TABLE | | | | |
|---|---|---|---|---|
| **Sample #** | **Location** | **Material Description** | **Asbestos Results (% Type)** | **Is Material ACM** |
| S06A | ROOM 1042 (OBSERVED IN ROOM 1042A AND 1042B) | 2'X2' CEILING TILE - SMALL FISSURE RANDOM PINHOLE | ND | NO |
| S06B | ROOM 1042 (OBSERVED IN ROOM 1042A AND 1042B) | 2'X2' CEILING TILE - SMALL FISSURE RANDOM PINHOLE | ND | NO |
| S06C | ROOM 1042 (OBSERVED IN ROOM 1042A AND 1042B) | 2'X2' CEILING TILE - SMALL FISSURE RANDOM PINHOLE | ND | NO |
| S07A | ROOM 1042B | DRYWALL JOINT COMOUND | ND | NO |
| S07B | ROOM 1042A | DRYWALL JOINT COMOUND | ND | NO |
| S07C | ROOM 1042A | DRYWALL JOINT COMOUND | ND | NO |
| **S08A** | **ROOM 1044A** | **PIPE ELBOW PARGING** | **70% CHRYSOTILE** | **YES** |
| **S08B** | **ROOM 1044A** | **PIPE ELBOW PARGING** | **NA** | **YES** |
| **S08C** | **ROOM 1044A** | **PIPE ELBOW PARGING** | **NA** | **YES** |
| **S09A** | **ROOM 1045 (OBSERVED THROUGHOUT SUBJECT AREA ABOVE FALSE CEILING)** | **CONCRETE BLOCK MORTAR** | **0.5% CHRYSOTILE** | **YES** |
| **S09B** | **ROOM 1045 (OBSERVED THROUGHOUT SUBJECT AREA ABOVE FALSE CEILING)** | **CONCRETE BLOCK MORTAR** | **NA** | **YES** |
| **S09C** | **ROOM 1045 (OBSERVED THROUGHOUT SUBJECT AREA ABOVE FALSE CEILING)** | **CONCRETE BLOCK MORTAR** | **NA** | **YES** |

| TABLE 4.1: BULK ASBESTOS SAMPLE SUMMARY TABLE | | | | |
|---|---|---|---|---|
| **Sample #** | **Location** | **Material Description** | **Asbestos Results (% Type)** | **Is Material ACM** |
| S10A | CORRIDOR 1043 DOORWAY BULKHEAD | DRYWALL JOINT COMPOUND | ND | NO |
| S10B | CORRIDOR 1043 DOORWAY BULKHEAD | DRYWALL JOINT COMPOUND | ND | NO |
| S10C | CORRIDOR 1043 DOORWAY BULKHEAD | DRYWALL JOINT COMPOUND | ND | NO |

**NA**: Not Analyzed due to stop positive method **ND**: No asbestos fibres detected above the laboratory minimum detection limit

A bulk material sample containing 0.5% or more asbestos therefore establishes that material as asbestos-containing. In accordance with Table 1 of O. Reg. 278/05, a minimum number of samples for the material to be classified as non asbestos. A homogeneous material is defined by O. Reg. 278/05 “as material that is uniform in colour and texture”. Homogeneous samples are identified by an alphabetical suffix to sample names to represent multiple samples of a homogeneous material. When a homogeneous material is analysed it is determined to be asbestos-containing upon the first positive detection of asbestos equal to or greater than 0.5%. Subsequent samples of the same material are therefore not analysed. Some bulk samples are comprised of multiple layers and as such will require multiple analysis. In such cases each layer is isolated at the laboratory and analysed individually to determine asbestos content. As a result the laboratory may report additional samples beyond the submitted number of samples or include multiple analyses as subsets within a sample.

| TABLE 4.2: LEAD IN PAINT SAMPLE SUMMARY TABLE | | | | | |
|---|---|---|---|---|---|
| **Sample #** | **Location** | **Colour** | **Material** | **Lead Content (ug/g)** | **Classification** |
| LP1 | ROOM 1045 | BEIGE | WALL | 479 | LOW LEVEL LEAD-CONTAINING |
| **LP2** | **ROOM 1042 (ALSO OBSERVED IN ROOM 1044)** | **RED** | **WALL** | **4,270** | **LEAD-CONTAINING** |
| LP3 | ROOM 1044 | YELLOW | WALL | 6 | LOW LEVEL LEAD-CONTAINING |
| LP4 | ROOM 1042A EXTERIOR (ALSO OBSERVED ON EXTERIOR OF ROOM 1042B) | GREY | WALL | 58 | LOW LEVEL LEAD-CONTAINING |
| LP5 | ROOM 1044 (OBSERVED THROUGHOUT) | DARK GREY | DOORS AND FRAMES | 932 | LOW LEVEL LEAD-CONTAINING |
| LP6 | ROOM 1044A (OBSERVED IN ROOMS 1044, AND 1044B) | WHITE | CEILING | 33 | LOW LEVEL LEAD-CONTAINING |
| LP7 | ROOM 1042 | BLUE | WALL | <5 | LOW LEVEL LEAD-CONTAINING |
| LP8 | CORRIDOR (ABOVE DOOR FRAME ENTRANCE TO ROOM 1044) | LIGHT BLUE | BULKHEAD | 6 | LOW LEVEL LEAD-CONTAINING |

**"<":** The samples analysed reported concentrations of lead to be less than 1000 ug/g and are therefore classified as low level lead-containing. However, no lead concentrations were reported above the sample specific laboratory detection limit.

As outlined in EACO's Lead Guideline for Construction, Renovation, Maintenance or Repair (October 2014), for the purpose of classifying surface coatings and mortars by laboratory analysis, any material containing lead at a concentration:

- Greater than 0.5% by weight (5,000 µg/g, mg/kg, ppm) is considered lead-based;
- Between 0.1 % and 0.5% by weight (1,000 to 5,000 µg/g, mg/kg, ppm) is considered lead-containing; or
- Less than 0.1% (1,000 µg/g, mg/kg, ppm) is considered low level lead-containing.

## Table 4.3 - Summary of Designated Substances and Recommended Actions

### 200 Dewitt Road, Hamilton, Ontario

| Material | Location(s) | Material Description | Management Requirements If No Impacts to Material | Recommended Actions If Material Will Be Or Likely Be Impacted By Maintenance, Renovation, Construction or Demolition Activities |
|---|---|---|---|---|
| **Asbestos Friable** | Room 1044A | Insulation on Pipe Fittings | In place management in accordance with O. Reg. 278/05 | Removal in accordance with O. Reg. 278/05<br>< $1m^2$ as a Type 2 or Type 2 Glove Bag Operation and for > $1m^2$ as a Type 2 Glove Bag or Type 3 Operation |
| **Asbestos Non-Friable** | Room 1045 | 9"x9" Brown Floor Tile & Associated Mastic | In place management in accordance with O. Reg. 278/05 | Removal in accordance with O. Reg. 278/05 as a Type 1 Operation<br>OR<br>Type 2 Operation using power tools with HEPA Filter Attachement in conjunction with dust suppression |
| **Asbestos Non-Friable** | Rooms 1044, 1044A, and 1044B | Drywall Ceiling | In place management in accordance with O. Reg. 278/05 | Removal in accordance with O. Reg. 278/05<br>< $1m^2$ as a Type 1 Operation and for > $1m^2$ as a Type 2 Operation - Hand tools only in conjunction with dust suppression |
| **Asbestos Non-Friable** | Throughout Interior | Concrete Block mortar | In place management in accordance with O. Reg. 278/05 | Removal in accordance with O. Reg. 278/05 as a Type 1 Operation<br>OR<br>Type 2 Operation using power tools with HEPA Filter Attachement in conjunction with dust suppression |
| **Potentially Concealed Asbestos** | Above Ceiling Finishes and Wall Cavities | Insulation on Pipe Fittings | In place management in accordance with O. Reg. 278/05 | Invasive inspection prior to maintenance/renovations/construction/demolition activities, if present and sampling confirms as ACM, removal in accordance with O. Reg. 278/05 |
| **Potentially Concealed Asbestos** | Electrical Wiring Throughout Interior of Building | Jacketing on Electrical Wiring | In place management in accordance with O. Reg. 278/05 | Invasive inspection prior to maintenance/renovations/construction/demolition activities, if present and sampling confirms as ACM, removal in accordance with O. Reg. 278/05 |
| **Potentially Concealed Asbestos** | Wall Cavities | Vermiculite Loose-Fill Insulation | In place management in accordance with O. Reg. 278/05 | Invasive inspection prior to maintenance/renovations/construction/demolition activities, if present and sampling confirms as ACM, removal in accordance with O. Reg. 278/05 |
| **Potentially Concealed Asbestos** | Underground Piping Systems | Asbestos Cement (Transite) Pipe | In place management in accordance with O. Reg. 278/05 | Invasive inspection prior to maintenance/renovations/construction/demolition activities, if present and sampling confirms as ACM, removal in accordance with O. Reg. 278/05 |

| Table 4.3 - Summary of Designated Substances and Recommended Actions | | | | |
|---|---|---|---|---|
| 200 Dewitt Road, Hamilton, Ontario | | | | |
| **Material** | **Location(s)** | **Material Description** | **Management Requirements If No Impacts to Material** | **Recommended Actions If Material Will Be Or Likely Be Impacted By Maintenance, Renovation, Construction or Demolition Activities** |
| **Lead-Containing Paint** | Rooms 1042 and 1044 | Red Paint on Walls | In place management in accordance with EACC's Lead Guideline | Removal as required prior to maintenance, renovations, construction or demolition activities in accordance with EACC's Lead Guideline as a: Class 1, Class 2A, Class 3A, or a Class 3B Operation |
| **Low Level Lead-Containing Paint** | Room 1045 | Beige Paint on Walls | None | General hygiene procedures during renovation activities:<br>• General dust control,<br>• Washing of hands and face at on-site facilities,<br>• No smoking, eating, chewing gum or drinking in the work area,<br>• No abrasive blasting. |
| | Room 1044A | Yellow Paint on Walls | | |
| | Room 1042A and 1042B | Grey Paint on Walls | | |
| | Room 1044 | Dark Grey Paint on Doors and Frames | | |
| | Room 1044, 1044A, and 1044B | White paint on Ceiling | | |
| | Room 1042 | Blue Paint on Walls | | |
| | Corridor 1043 | Light Blue Paint on Doorway Bulkhead | | |
| **Suspect Lead** | Throughout Interior of Building on Plumbing Connections | Lead Solder on Copper Pipe | In place management in accordance with EACC's Lead Guideline | Removal prior to renovation/demolition activities in accordance with EACC's Lead Guideline as a: Class 1 Operation |
| **Potentially Concealed Lead** | Concealed on Sanitary/Waste Lines | Lead Packed Pipe Gaskets | None | Invasive inspection prior to renovation or demolition activities. If confirmed present, removal in accordance with EACC's Lead Guideline as a: Class 1 Operation |
| **Mercury** | Throughout Interior of Building in Light Fixtures | Fluorescent Light Tubes in Light Fixtures | None | Intact removal and storage with no on-site crushing and disposal of materials to a licensed facility |
| **Mercury** | Throughout Interior of Building in Light Fixtures | Compact Fluorescent Bulbs | None | Intact removal and storage with no on-site crushing and disposal of materials to a licensed facility |

| Table 4.3 - Summary of Designated Substances and Recommended Actions | | | | |
|---|---|---|---|---|
| **200 Dewitt Road, Hamilton, Ontario** | | | | |
| **Material** | **Location(s)** | **Material Description** | **Management Requirements If No Impacts to Material** | **Recommended Actions If Material Will Be Or Likely Be Impacted By Maintenance, Renovation, Construction or Demolition Activities** |
| **Silica** | Throughout Interior | Brick and Mortar, Terrazzo, Concrete, Ceramic Tile and Grout, | None | Conduct any work during renovation, demolition activities in accordance with the Ministry of Labour Guideline Silica on Construction Projects |
| **Potentially Concealed PCBs** | Light Fixtures Throughout | Fluorescent Light Ballasts in Light Fixtures | SOR/2008-273, the PCB Regulations, permits continued use of in-service PCB-containing light ballasts until the end of service life or until December 31, 2025 | Assess Each Ballast Upon Removal From Service Appropriate storage and disposal of any PCB-containing ballasts in accordance with SOR/2008-273 |
| **ODS** | Rooms 1044, and 1044A | Refrigerators | None | Prior to the removal and disposal of equipment suspected of containing ODS, a licensed technician should be retained to drain and tag the equipment in a manner authorized under O. Reg. 463/10 |

Notes:
1) A copy of this report should be provided to all prospective contractors prior to quotation, in accordance with Section 30 of the Occupational Health and Safety Act.
2) Recommended actions are the minimum required actions, as prescribed by the appropriate Acts, regulations, guidelines, standards, codes and general best practice measures. Prior to demolition, the Contractor may choose to alter the approach and combine or break out sections of work. This is acceptable provided that the appropriate Acts, regulations, guidelines, standards and codes are followed and afford protection for the health and safety of workers, occupants and the public that is at least equal to the protection that would be provided by complying with the minimum requirements.
3) All waste generated is subject to characterization and disposal in accordance with Ontario Regulation 347.

# Appendix B

# Laboratory Certificates of Analysis

PARACEL LABORATORIES LTD.

TRUSTED.
RESPONSIVE.
RELIABLE.

15 - 6800 Kitimat Rd
Mississauga, ON, L5N 5M1
1-800-749-1947
www.paracellabs.com

# Certificate of Analysis

**MTE Consultants Inc. (Burlington)**

1016 Sutton Drive, Unit A
Burlington, ON L7L 6B8
Attn: Gavin Oakes

Client PO:
Project: 65621_001 - Orchard Park Hospitality Rno
Custody:

Report Date: 23-Jan-2026
Order Date: 19-Jan-2026

**Order #: 2604018**

This Certificate of Analysis contains analytical data applicable to the following samples as submitted :

| Paracel ID | Client ID |
|---|---|
| 2604018-01 | S01A - DWJC |
| 2604018-02 | S01B - DWJC |
| 2604018-03 | S01C - DWJC |
| 2604018-04 | S01D - DWJC |
| 2604018-05 | S01E - DWJC |
| 2604018-06.1 | S02A - 9x9 VFT - Brown |
| 2604018-06.2 | S02A - 9x9 VFT - Brown |
| 2604018-07.1 | S02B - 9x9 VFT - Brown |
| 2604018-07.2 | S02B - 9x9 VFT - Brown |
| 2604018-08.1 | S02C - 9x9 VFT - Brown |
| 2604018-08.2 | S02C - 9x9 VFT - Brown |
| 2604018-09.1 | S03A - 12x12 VFT - White w/ Oat |
| 2604018-09.2 | S03A - 12x12 VFT - White w/ Oat |
| 2604018-10.1 | S03B - 12x12 VFT - White w/ Oat |
| 2604018-10.2 | S03B - 12x12 VFT - White w/ Oat |
| 2604018-11.1 | S03C - 12x12 VFT - White w/ Oat |
| 2604018-11.2 | S03C - 12x12 VFT - White w/ Oat |
| 2604018-12 | S04A - Ceramic Tile Grout |
| 2604018-13 | S04B - Ceramic Tile Grout |
| 2604018-14 | S04C - Ceramic Tile Grout |
| 2604018-15 | S05A - 2x2 CT - Textured Pin |
| 2604018-16 | S05B - 2x2 CT - Textured Pin |
| 2604018-17 | S05C - 2x2 CT - Textured Pin |
| 2604018-18 | S06A - 2x2 CT - Small Fissure Random Pin |
| 2604018-19 | S06B - 2x2 CT - Small Fissure Random Pin |
| 2604018-20 | S06C - 2x2 CT - Small Fissure Random Pin |

Approved By:

Emma Diaz

Lab Manager

| | |
|---|---|
| 2604018-21 | S07A - DWJC |
| 2604018-22 | S07B - DWJC |
| 2604018-23 | S07C - DWJC |
| 2604018-24 | S08A - Elbow Parging |
| 2604018-25 | S08B - Elbow Parging |
| 2604018-26 | S08C - Elbow Parging |
| 2604018-27 | S09A - CBM |
| 2604018-28 | S09B - CBM |
| 2604018-29 | S09C - CBM |
| 2604018-30 | S10A - DWJC |
| 2604018-31 | S10B - DWJC |
| 2604018-32 | S10C - DWJC |

Certificate of Analysis

Report Date: 23-Jan-2026

**Client: MTE Consultants Inc. (Burlington)**

Order Date: 19-Jan-2026

**Client PO:**

**Project Description: 65621_001 - Orchard Park Hospitality Rno**

## Asbestos, PLM Visual Estimation MDL - 0.5%

| Paracel ID | Sample Date | Colour | Description | Asbestos Detected | Material Identification | % Content |
|---|---|---|---|---|---|---|
| 2604018-01 | 14-Jan-26 | Grey | Drywall | No | **Client ID: S01A - DWJC** | |
| | | | | | **Material:** | |
| | | | | | Cellulose | 5 |
| | | | | | Non-Fibers | 95 |
| 2604018-02 | 14-Jan-26 | Beige | Drywall Joint Compound | **Yes** | **Client ID: S01B - DWJC** | |
| | | | | | **Material:** | |
| | | | | | **Chrysotile** | 3 |
| | | | | | Non-Fibers | 97 |
| 2604018-03 | 14-Jan-26 | Beige | Drywall Joint Compound | | **Client ID: S01C - DWJC** | |
| | | | | | **Material:** | |
| | | | | | not analyzed, positive stop | |
| 2604018-04 | 14-Jan-26 | Beige | Drywall Joint Compound | | **Client ID: S01D - DWJC** | |
| | | | | | **Material:** | |
| | | | | | not analyzed, positive stop | |
| 2604018-05 | 14-Jan-26 | Beige | Drywall Joint Compound | | **Client ID: S01E - DWJC** | |
| | | | | | **Material:** | |
| | | | | | not analyzed, positive stop | |
| 2604018-06.1 | 14-Jan-26 | Grey | Vinyl Floor Tile | **Yes** | **Client ID: S02A - 9x9 VFT - Brown** | |
| | | | | | **Material:** | |
| | | | | | **Chrysotile** | 2 |
| | | | | | Non-Fibers | 98 |
| 2604018-06.2 | 14-Jan-26 | Black | Mastic | **Yes** | **Client ID: S02A - 9x9 VFT - Brown** | |
| | | | | | **Material:** | |
| | | | | | **Chrysotile** | 3 |
| | | | | | Non-Fibers | 97 |
| 2604018-07.1 | 14-Jan-26 | Grey | Vinyl Floor Tile | | **Client ID: S02B - 9x9 VFT - Brown** | |
| | | | | | **Material:** | |
| | | | | | not analyzed, positive stop | |
| 2604018-07.2 | 14-Jan-26 | Black | Mastic | | **Client ID: S02B - 9x9 VFT - Brown** | |
| | | | | | **Material:** | |
| | | | | | not analyzed, positive stop | |
| 2604018-08.1 | 14-Jan-26 | Grey | Vinyl Floor Tile | | **Client ID: S02C - 9x9 VFT - Brown** | |
| | | | | | **Material:** | |
| | | | | | not analyzed, positive stop | |
| 2604018-08.2 | 14-Jan-26 | Black | Mastic | | **Client ID: S02C - 9x9 VFT - Brown** | |
| | | | | | **Material:** | |
| | | | | | not analyzed, positive stop | |

Certificate of Analysis

Report Date: 23-Jan-2026

**Client: MTE Consultants Inc. (Burlington)**

Order Date: 19-Jan-2026

**Client PO:**

**Project Description: 65621_001 - Orchard Park Hospitality Rno**

## Asbestos, PLM Visual Estimation MDL - 0.5%

| Paracel ID | Sample Date | Colour | Description | Asbestos Detected | Material Identification | % Content |
|---|---|---|---|---|---|---|
| 2604018-09.1 | 14-Jan-26 | White | Vinyl Floor Tile | No | **Client ID: S03A - 12x12 VFT - White w/ Oat** | |
| | | | | | **Material:** | |
| | | | | | Non-Fibers | 100 |
| 2604018-09.2 | 14-Jan-26 | Black/Yellow | Mastic | **Yes** | **Client ID: S03A - 12x12 VFT - White w/ Oat** | |
| | | | | | **Material:** | [AS-LR-NA] |
| | | | | | **Chrysotile** | 3 |
| | | | | | Non-Fibers | 97 |
| 2604018-10.1 | 14-Jan-26 | White | Vinyl Floor Tile | No | **Client ID: S03B - 12x12 VFT - White w/ Oat** | |
| | | | | | **Material:** | |
| | | | | | Non-Fibers | 100 |
| 2604018-10.2 | 14-Jan-26 | Black/Yellow | Mastic | | **Client ID: S03B - 12x12 VFT - White w/ Oat** | |
| | | | | | **Material:** | |
| | | | | | not analyzed, positive stop | |
| 2604018-11.1 | 14-Jan-26 | White | Vinyl Floor Tile | No | **Client ID: S03C - 12x12 VFT - White w/ Oat** | |
| | | | | | **Material:** | |
| | | | | | Non-Fibers | 100 |
| 2604018-11.2 | 14-Jan-26 | Black/Yellow | Mastic | | **Client ID: S03C - 12x12 VFT - White w/ Oat** | |
| | | | | | **Material:** | |
| | | | | | not analyzed, positive stop | |
| 2604018-12 | 14-Jan-26 | Off-white | Grout | No | **Client ID: S04A - Ceramic Tile Grout** | |
| | | | | | **Material:** | |
| | | | | | Non-Fibers | 100 |
| 2604018-13 | 14-Jan-26 | Off-white | Grout | No | **Client ID: S04B - Ceramic Tile Grout** | |
| | | | | | **Material:** | |
| | | | | | Non-Fibers | 100 |
| 2604018-14 | 14-Jan-26 | Off-white | Grout | No | **Client ID: S04C - Ceramic Tile Grout** | |
| | | | | | **Material:** | |
| | | | | | Non-Fibers | 100 |
| 2604018-15 | 14-Jan-26 | Grey | Ceiling Tile | No | **Client ID: S05A - 2x2 CT - Textured Pin** | |
| | | | | | **Material:** | |
| | | | | | Cellulose | 40 |
| | | | | | MMVF | 30 |
| | | | | | Non-Fibers | 30 |
| 2604018-16 | 14-Jan-26 | Grey | Ceiling Tile | No | **Client ID: S05B - 2x2 CT - Textured Pin** | |
| | | | | | **Material:** | |
| | | | | | Cellulose | 40 |
| | | | | | MMVF | 30 |
| | | | | | Non-Fibers | 30 |

Certificate of Analysis

Report Date: 23-Jan-2026

**Client: MTE Consultants Inc. (Burlington)**

Order Date: 19-Jan-2026

**Client PO:**

**Project Description: 65621_001 - Orchard Park Hospitality Rno**

## Asbestos, PLM Visual Estimation MDL - 0.5%

| Paracel ID | Sample Date | Colour | Description | Asbestos Detected | Material Identification | % Content |
|---|---|---|---|---|---|---|
| 2604018-17 | 14-Jan-26 | Grey | Ceiling Tile | No | **Client ID: S05C - 2x2 CT - Textured Pin** | |
| | | | | | **Material:** | |
| | | | | | Cellulose | 40 |
| | | | | | MMVF | 30 |
| | | | | | Non-Fibers | 30 |
| 2604018-18 | 14-Jan-26 | Grey | Ceiling Tile | No | **Client ID: S06A - 2x2 CT - Small Fissure Random** | |
| | | | | | **Material:** | |
| | | | | | Cellulose | 40 |
| | | | | | MMVF | 30 |
| | | | | | Non-Fibers | 30 |
| 2604018-19 | 14-Jan-26 | Grey | Ceiling Tile | No | **Client ID: S06B - 2x2 CT - Small Fissure Random** | |
| | | | | | **Material:** | |
| | | | | | Cellulose | 40 |
| | | | | | MMVF | 30 |
| | | | | | Non-Fibers | 30 |
| 2604018-20 | 14-Jan-26 | Grey | Ceiling Tile | No | **Client ID: S06C - 2x2 CT - Small Fissure Random** | |
| | | | | | **Material:** | |
| | | | | | Cellulose | 40 |
| | | | | | MMVF | 30 |
| | | | | | Non-Fibers | 30 |
| 2604018-21 | 14-Jan-26 | White | Drywall Joint Compound | No | **Client ID: S07A - DWJC** | |
| | | | | | **Material:** | |
| | | | | | Non-Fibers | 100 |
| 2604018-22 | 14-Jan-26 | White | Drywall Joint Compound | No | **Client ID: S07B - DWJC** | |
| | | | | | **Material:** | |
| | | | | | Non-Fibers | 100 |
| 2604018-23 | 14-Jan-26 | White | Drywall Joint Compound | No | **Client ID: S07C - DWJC** | |
| | | | | | **Material:** | |
| | | | | | Non-Fibers | 100 |
| 2604018-24 | 14-Jan-26 | Grey | Elbow Parging | **Yes** | **Client ID: S08A - Elbow Parging** | |
| | | | | | **Material:** | |
| | | | | | **Chrysotile** | 70 |
| | | | | | Non-Fibers | 30 |
| 2604018-25 | 14-Jan-26 | Grey | Elbow Parging | | **Client ID: S08B - Elbow Parging** | |
| | | | | | **Material:** | |
| | | | | | not analyzed, positive stop | |
| 2604018-26 | 14-Jan-26 | Grey | Elbow Parging | | **Client ID: S08C - Elbow Parging** | |
| | | | | | **Material:** | |
| | | | | | not analyzed, positive stop | |

Certificate of Analysis

Report Date: 23-Jan-2026

**Client: MTE Consultants Inc. (Burlington)**

Order Date: 19-Jan-2026

**Client PO:**

**Project Description: 65621_001 - Orchard Park Hospitality Rno**

## Asbestos, PLM Visual Estimation MDL - 0.5%

| Paracel ID | Sample Date | Colour | Description | Asbestos Detected | Material Identification | % Content |
|---|---|---|---|---|---|---|
| 2604018-27 | 14-Jan-26 | Grey | Mortar | **Yes** | **Client ID: S09A - CBM** | |
| | | | | | **Material:** | |
| | | | | | **Chrysotile** | 0.5 |
| | | | | | Non-Fibers | 99.5 |
| 2604018-28 | 14-Jan-26 | Grey | Mortar | | **Client ID: S09B - CBM** | |
| | | | | | **Material:** | |
| | | | | | not analyzed, positive stop | |
| 2604018-29 | 14-Jan-26 | Grey | Mortar | | **Client ID: S09C - CBM** | |
| | | | | | **Material:** | |
| | | | | | not analyzed, positive stop | |
| 2604018-30 | 14-Jan-26 | White | Drywall Joint Compound | No | **Client ID: S10A - DWJC** | |
| | | | | | **Material:** | |
| | | | | | Non-Fibers | 100 |
| 2604018-31 | 14-Jan-26 | White | Drywall Joint Compound | No | **Client ID: S10B - DWJC** | |
| | | | | | **Material:** | |
| | | | | | Non-Fibers | 100 |
| 2604018-32 | 14-Jan-26 | White | Drywall Joint Compound | No | **Client ID: S10C - DWJC** | |
| | | | | | **Material:** | |
| | | | | | Non-Fibers | 100 |

Total Analyses = 25

## Analysis Summary Table

| Analysis | Method Reference/Description | Lab Location | Lab Accreditation | Analysis Date |
|---|---|---|---|---|
| Asbestos, PLM Visual Estimation | EPA 600/R-93/116 | 1 - Mississauga | CALA 3762 | 23-Jan-26 |

Mississauga Lab: 15 - 6800 Kitimat Rd Mississauga, Ontario, L5N 5M1

## Qualifier Notes

Sample Qualifiers :

AS-LR-NA: Layers/materials inseparable, combined and not analysed separately

## Work Order Revisions | Comments

None

## Other Report Notes

Samples were analysed as received. Paracel is not responsible for inherent analytical limitations. Analytes in bold indicate asbestos mineral content. All samples where asbestos is detected below 1% include quantity verification with additional analysis steps including gravimetric reduction and/or point counting. Problem matrices, such as those high in cellulose and/or non-friable organically bound materials, routinely include additional gravimetric reduction to remove interfering fibers/binders. Content denoted as '<MDL' indicates trace asbestos was observed below the noted detection limit, but could not be accurately quantified. Content denoted as 'Present' indicates that only a qualitative analysis was possible as a consequence of the sample matrix. Sample collection according to the regulation/method recommendations is the responsibility of the client.

MMVF: Man Made Vitreous Fibers: Fiberglass, Mineral Wool, Rockwool, Glasswool

PARACEL LABORATORIES LTD

2604018

Head Office
300-2319 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8
p: 1-800-749-1947
e: paracel@paracellabs.com

**Chain of Custody**
(Lab Use Only)

Page 1 of 1

| | |
|---|---|
| Client Name: MTE Consultants | Project Reference: 65621_001 - Orchard Park Hospitality Rno |
| Contact Name: Aaron Rows; Gavin Oakes | Quote #: MTE Standing Offer |
| Address: 1016 Sutton Drive, Unit A Burlington, Ontario L7L 6B8 | PO #: |
| Telephone: 905-639-2552 | Email Address: arows@mte85.com goakes@mte85.com |

**Turnaround Time:**
☐ Immediate ☐ 1 Day -EOD
☐ 4 Hour ☐ 2 Day -EOD
☐ 24 Hour ☐ 3 Day -EOD
☒ Regular

Date Required:

## ASBESTOS & MOLD ANALYSIS

**Matrix:** ☐ Air ☒ Bulk ☐ Tape Lift ☐ Swab ☐ Other **Regulatory Guideline:** ☒ ON ☐ QC ☐ AB ☐ SK ☐ Other:

**Analyses:** ☐ Microscopic Mold ☐ Culturable Mold ☐ Bacteria GRAM ☐ PCM Asbestos ☒ PLM Asbestos ☐ Chatfield Asbestos ☐ TEM Asbestos

Paracel Order Number: 2604018

| | Sample ID | Asbestos - Bulk: Materials to Be Analyzed * (If Positive Stop requested, indicate if by Sample (SMP) or Material (MAT)) | POS STOP SMP | POS STOP MAT | Sampling Date | Air Volume (L) | Analysis Required |
|---|---|---|---|---|---|---|---|
| 1 | S01A-E - DWJC | | ☒ | ☐ | 14 Jan 26 | - | PLM |
| 2 | S02A-C - 9"x9" VFT - Brown | | ☐ | ☒ | 14 Jan 26 | - | PLM |
| 3 | S03A-C - 12"x12" VFT - White w/ Oat | | ☐ | ☒ | 14 Jan 26 | - | PLM |
| 4 | S04A-C - Ceramic Tile Grout | | ☒ | ☐ | 14 Jan 26 | - | PLM |
| 5 | S05A-C - 2'x2' CT - Textured Pin | | ☒ | ☐ | 14 Jan 26 | - | PLM |
| 6 | S06A-C - 2'x2' CT - Small Fissure Random Pin | | ☒ | ☐ | 14 Jan 26 | - | PLM |
| 7 | S07A-C - DWJC | | ☒ | ☐ | 14 Jan 26 | - | PLM |
| 8 | S08A-C - Elbow Parging | | ☒ | ☐ | 14 Jan 26 | - | PLM |
| 9 | S09A-C - CBM | | ☒ | ☐ | 14 Jan 26 | - | PLM |
| 10 | S10A-C - DWJC | | ☒ | ☐ | 14 Jan 26 | - | PLM |

* If left blank, all lab identified distinct materials in each sample will be analyzed and reported separately, as per EPA 600/R-93/116. Additional charges will apply.
Manufactured multi-layered building materials will be analyzed as one sample, unless requested by client.

Comments:

Method of Delivery: Purolator

Submitting adequate sample volume is the responsibility of the client. Refer to the reverse of this COC for recommended sample volumes. Signing this CoC authorizes Paracel to complete the analysis on the sample as submitted.

| | | | |
|---|---|---|---|
| Relinquished By (Sign): | Received at Depot: | Received at Lab: | Verified By: |
| Relinquished By (Print): Aaron Rows | | | |
| Date/Time: 16 Jan 26 8:40am | Date/Time: | Date/Time: Jan 19/26 8:45 | Date/Time: Jan 19/26 9:43 |

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351 Nash Road North, unit 9B
Hamilton, ON L8H 7P4
1-800-749-1947
www.paracellabs.com

# Certificate of Analysis

**MTE Consultants Inc. (Burlington)**

1016 Sutton Drive, Unit A
Burlington, ON L7L 6B8
Attn: Gavin Oakes

Client PO:
Project: 65621_001- Orchard Park Hospitality Reno
Custody: -

Report Date: 22-Jan-2026
Order Date: 19-Jan-2026

**Order #: 2604028**

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

| Paracel ID | Client ID |
|---|---|
| 2604028-01 | LP01-Beige |
| 2604028-02 | LP02-Red |
| 2604028-03 | LP03-Yellow |
| 2604028-04 | LP04-Grey |
| 2604028-05 | LP05- Dark Grey |
| 2604028-06 | LP06-White |
| 2604028-07 | LP07-Blue |
| 2604028-08 | LP08-Light Blue |

Approved By:

Milan Ralitsch, PhD
Senior Technical Manager

Certificate of Analysis

Report Date: 22-Jan-2026

**Client: MTE Consultants Inc. (Burlington)**

Order Date: 19-Jan-2026

**Client PO:**

**Project Description: 65621_001- Orchard Park Hospitality Reno**

## Analysis Summary Table

| Analysis | Method Reference/Description | Lab Location | Extraction Date | Analysis Date |
|---|---|---|---|---|
| Metals, ICP-MS | EPA 6020 - Digestion - ICP-MS | Hamilton | 21-Jan-26 | 21-Jan-26 |

**Qualifier Notes:**

**Sample Data Revisions**

None

**Work Order Revisions/Comments:**

**Other Report Notes:**

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.

Certificate of Analysis

Report Date: 22-Jan-2026

**Client: MTE Consultants Inc. (Burlington)**

Order Date: 19-Jan-2026

**Client PO:**

**Project Description: 65621_001- Orchard Park Hospitality Reno**

## *Sample Results*

### Lead

**Matrix: Paint**

| Paracel ID | Client ID | Sample Date | Units | MDL | Result |
|---|---|---|---|---|---|
| 2604028-01 | LP01-Beige | 14-Jan-26 | ug/g | 5 | 479 |
| 2604028-02 | LP02-Red | 14-Jan-26 | ug/g | 5 | 4270 |
| 2604028-03 | LP03-Yellow | 14-Jan-26 | ug/g | 5 | 6 |
| 2604028-04 | LP04-Grey | 14-Jan-26 | ug/g | 5 | 58 |
| 2604028-05 | LP05- Dark Grey | 14-Jan-26 | ug/g | 5 | 932 |
| 2604028-06 | LP06-White | 14-Jan-26 | ug/g | 5 | 33 |
| 2604028-07 | LP07-Blue | 14-Jan-26 | ug/g | 5 | <5 |
| 2604028-08 | LP08-Light Blue | 14-Jan-26 | ug/g | 5 | 6 |

## *Laboratory Internal QA/QC*

| Analyte | Result | Reporting Limit | Units | Source Result | %REC | %REC Limit | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|
| **Matrix Blank** | | | | | | | | | |
| **Lead** | **ND** | **5** | **ug/g** | | | | | | |
| **Matrix Duplicate** | | | | | | | | | |
| **Lead** | **ND** | **5** | **ug/g** | **ND** | | | **NC** | **50** | |
| **Matrix Spike** | | | | | | | | | |
| Lead | 48.7 | 5.00 | ug/g | ND | 97.2 | 70-130 | | | |

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**Paracel ID: 2604028**

rder Number
Use Only)

**Chain Of Custody**
(Lab Use Only)

| | | |
|---|---|---|
| Client Name: MTE Consultants | Project Ref: 65621_001 - Orchard Park Hospitality Reno | Page 1 of 1 |
| Contact Name: Gavin Oakes;Aaron Rows | Quote #: MTE Standing Offer | **Turnaround Time** |
| Address: 1016 Sutton Drive, Unit A<br>Burlington, ON L7L 6B8 | PO #: | ☐ 1 day ☐ 3 day<br>☐ 2 day ☑ Regular |
| Telephone: 905-639-2552 | E-mail: goakes@mte85.com<br>arows@mte85.com | Date Required: |

☐ REG 163/04 ☐ REG 406/19

☐ Table 1 ☐ Res/Park ☐ Med/Fine
☐ Table 2 ☐ Ind/Comm ☐ Coarse
☐ Table 3 ☐ Agri/Other
☐ Table ___
For RSC: ☐ Yes ☐ No

**Other Regulation**

☐ REG 558 ☐ PWQO
☐ CCME ☐ MISA
☐ SU - Sani ☐ SU - Storm
Mun: ___
☐ Other:

**Matrix Type:** S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

| | Sample ID/Location Name | Matrix | Air Volume | # of Containers | Sample Taken Date | Sample Taken Time | Required Analysis: Lead |
|---|---|---|---|---|---|---|---|
| 1 | LP01 - Beige | P | - | 1 | 14 Jan 26 | 3:00 pm | X |
| 2 | LP02 - Red | P | - | 1 | | | X |
| 3 | LP03 - Yellow | P | - | 1 | | | X |
| 4 | LP04 - Grey | P | - | 1 | | | X |
| 5 | LP05 - Dark Grey | P | - | 1 | | | X |
| 6 | LP06 - White | P | - | 1 | | | X |
| 7 | LP07 - Blue | P | - | 1 | | | X |
| 8 | LP08 - Light Blue | P | - | 1 | | | X |
| 9 | | | | | | | |
| 10 | | | | | | | |

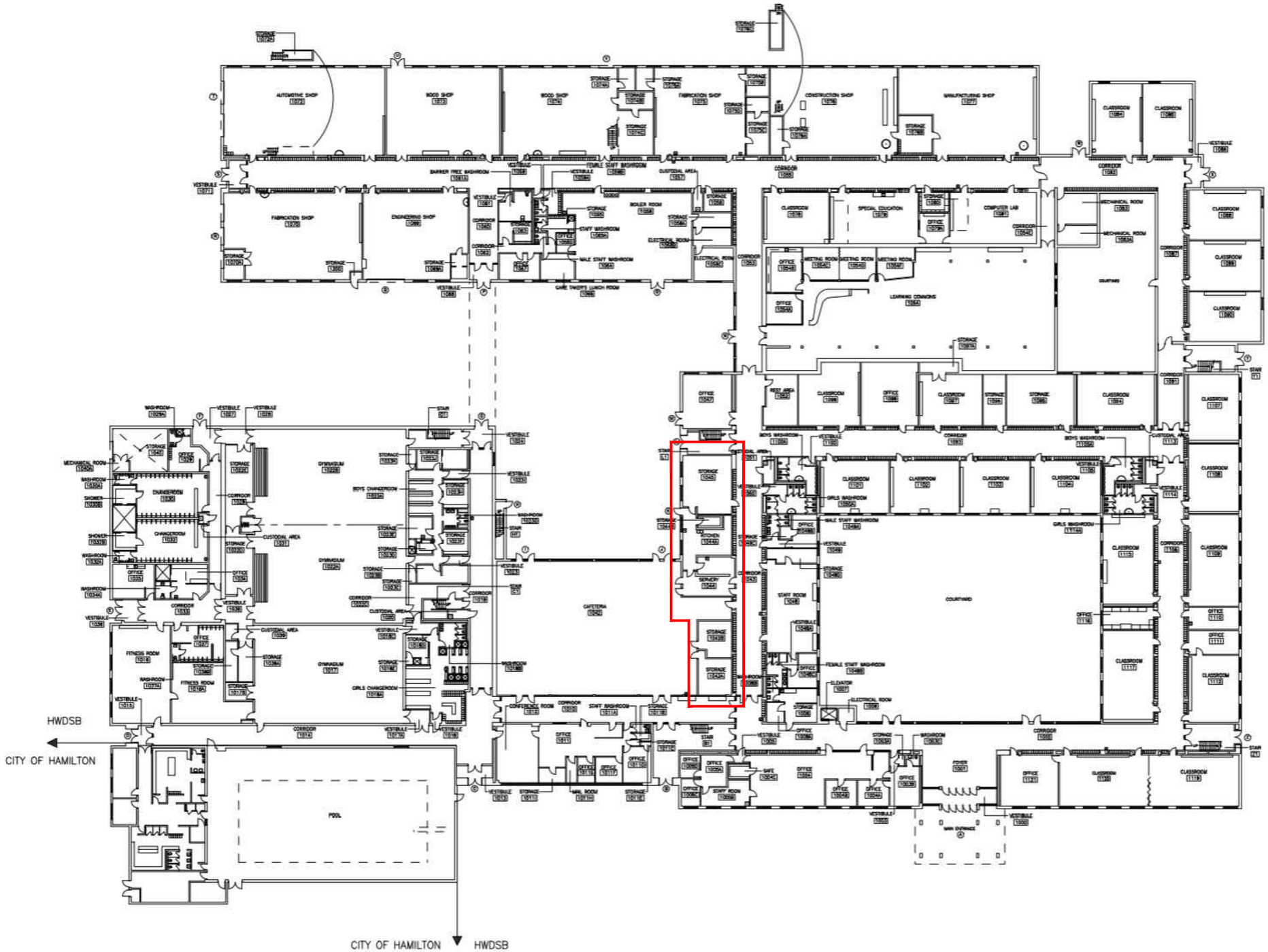
Comments:

Method of Delivery: Purolator

| | | | |
|---|---|---|---|
| Relinquished By (Sign): Aaron Rows | Received By Driver/Depot: | Received at Lab: RB | Verified By: RB |
| Relinquished By (Print): Aaron Rows | Date/Time: | Date/Time: 1/19/26 10:13 | Date/Time: 1/19/26 11:33 |
| Date/Time: 16 Jan 26 8:40am | Temperature: °C | Temperature: - | pH Verified: ☐ By: |

# Appendix C

# Figures




Notes:

ALL DRAWINGS TO BE REFERENCED WITH THE DSA REPORT. LOCATIONS AND QUANTITIES ARE APPROXIMATE.

ALL KNOWN OR SUSPECT DESIGNATED SUBSTANCES ARE NOT DEPICTED ON THIS FIGURE. REFER TO THE DSA REPORT FOR A COMPLETE LIST OF IDENTIFIED KNOWN AND SUSPECT DESIGNATED SUBSTANCES.

THIS FIGURE IS COLOUR DEPENDENT, PHOTOCOPIES MAY ALTER INTERPRETATION OF FIGURE. ALWAYS REFER TO ORIGINAL DRAWINGS AND DSA REPORT.

**Designated Substances and Hazardous Materials Legend**

Scope of Work

MTE
Engineers, Scientists, Surveyors

Ph. (905) 639-2552 www.mte85.com

CLIENT
Hamilton-Wenworth District School Board

PROJECT
DESIGNATED SUBSTANCE ASSESSMENT

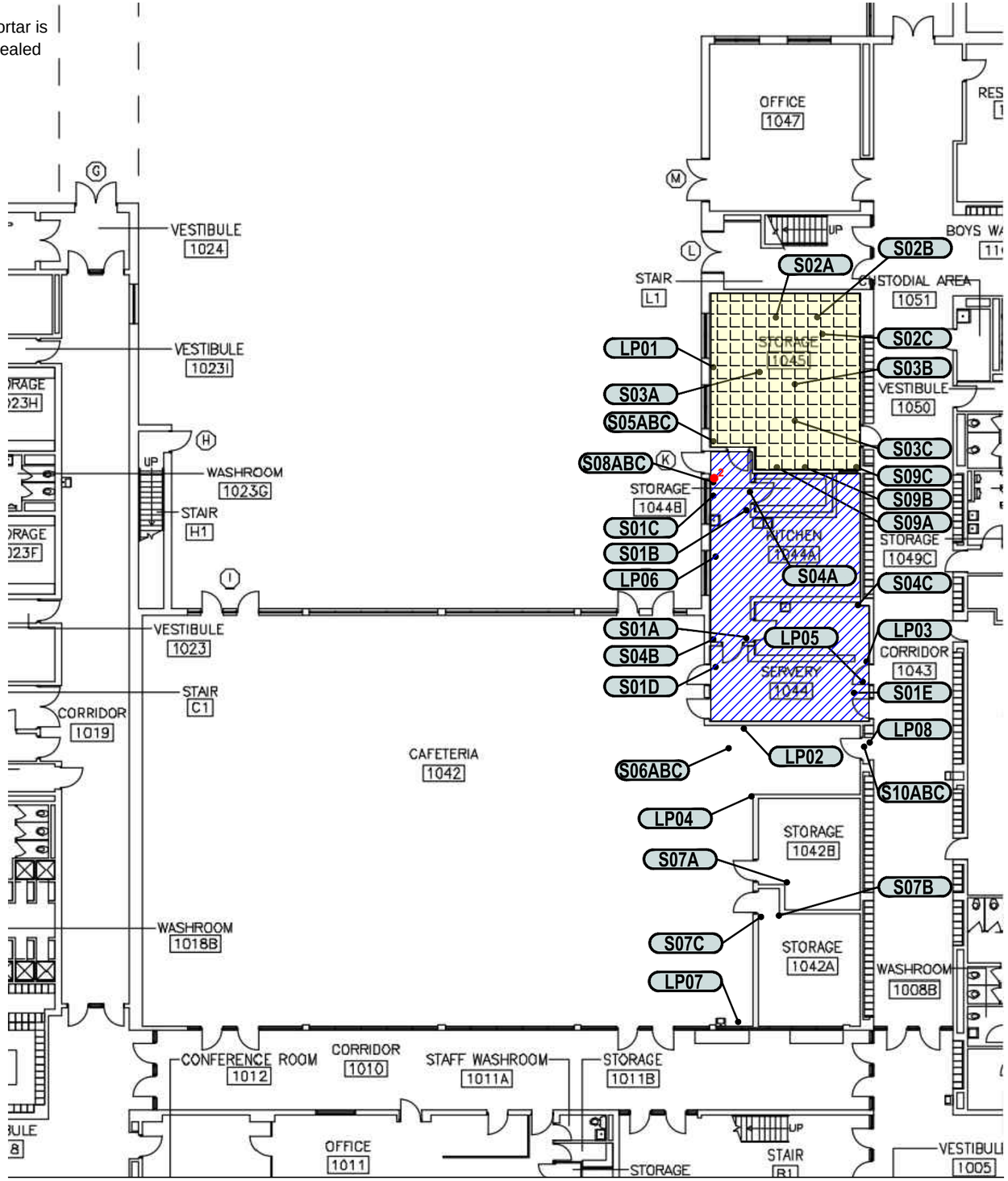
DRAWING
**MAIN FLOOR**
**200 DEWITT ROAD**
**HAMILTON, ONTARIO**

| | | | |
|---|---|---|---|
| Project Manager | G. OAKES | Date | JANUARY 2026 |
| Baseplan By | MTE | Project No. | 65621_001 |
| Figure By | SXS | Drawing No. | 1.0 |
| Scale | N.T.S. | | |

January 19, 2026 - 4:30 pm - Plotted By: SXS Project: 65621_001 CAD: P:\P\65621_001\65621_001- DSA.DWG

Asbestos-containing concrete block wall mortar is present above ceilings and potentially concealed underneath ceramic wall tile finish.

Asbestos-containing pipe elbows may be concealed above ceiling finishes.




Notes:

ALL DRAWINGS TO BE REFERENCED WITH THE DSA REPORT. LOCATIONS AND QUANTITIES ARE APPROXIMATE.

ALL KNOWN OR SUSPECT DESIGNATED SUBSTANCES ARE NOT DEPICTED ON THIS FIGURE. REFER TO THE DSA REPORT FOR A COMPLETE LIST OF IDENTIFIED KNOWN AND SUSPECT DESIGNATED SUBSTANCES.

THIS FIGURE IS COLOUR DEPENDENT, PHOTOCOPIES MAY ALTER INTERPRETATION OF FIGURE. ALWAYS REFER TO ORIGINAL DRAWINGS AND DSA REPORT.

**Designated Substances and Hazardous Materials Legend**

- LP01 — Sample Identification
- 2 — Asbestos Containing Pipe Elbow Parging
- Asbestos Containing Vinyl Floor Tile and Associated Mastic
- Asbestos Containing Drywall Joint Compound on Ceiling


MTE
Engineers, Scientists, Surveyors
Ph. (905) 639-2552 www.mte85.com


CLIENT
Hamilton-Wenworth District School Board

PROJECT
DESIGNATED SUBSTANCE ASSESSMENT

DRAWING
**MAIN FLOOR HOSPITALITY/ SERVERY**
**200 DEWITT ROAD**
**HAMILTON, ONTARIO**

| | | | |
|---|---|---|---|
| Project Manager | G. OAKES | Date | JANUARY 2026 |
| Baseplan By | MTE | Project No. | 65621_001 |
| Figure By | SXS | Drawing No. | 2.0 |
| Scale | N.T.S. | | |


Project: 65621_001 CAD: P:\P\65621_001\65621_001- DSA.DWG
January 26, 2026 - 4:30 pm - Plotted By: SXS

# Appendix D

# Photographic Log

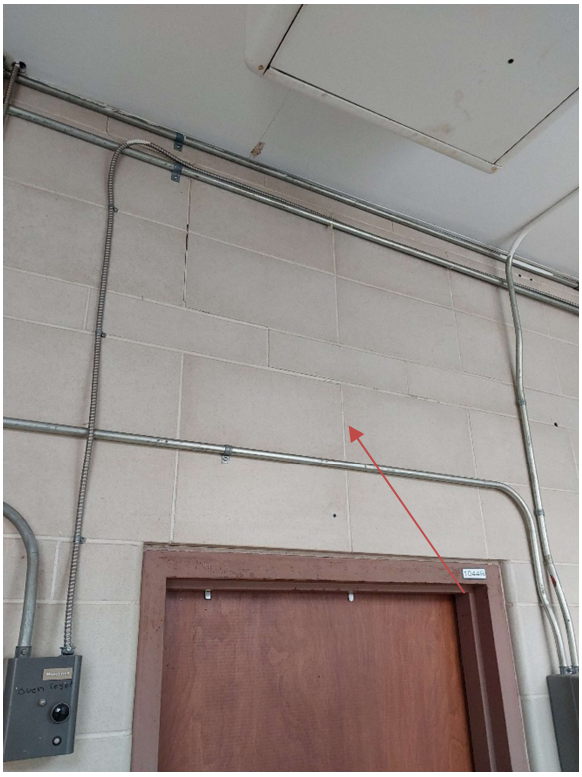
**Photograph No. 1 – Drywall joint compound was observed on interior ceilings within Rooms 1044, 1044A, and 1044B. The compound was sampled (S01A,B,C,D,E) and is confirmed asbestos-containing. The white paint was sampled (LP06) and is low level lead-containing.**

**Photograph No. 2 – 9”x9” Brown vinyl floor tile was observed in Room 1045. The floor tile and associated mastic were sampled (S02A,B,C) and confirmed asbestos-containing.**

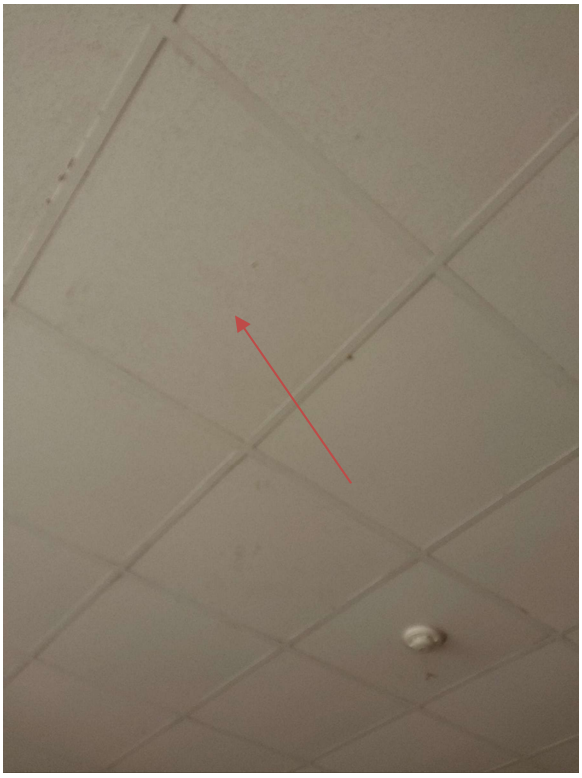
**Photograph No. 3 – Parging was observed on two fittings within Room 1044A. The parging was sampled (S08A,B,C) and is asbestos-containing. Additional fittings may also be present in concealed spaces. Pipe straight insulation was observed to be fiberglass and is non-asbestos.**

**Photograph No. 4 – Concrete block mortar was observed above the drop ceiling in Room 1045. The block mortar was sampled (S09A,B,C) and is confirmed asbestos-containing.**

**Photograph No. 5 – 12”x12” White with oat pattern vinyl floor tile was observed in Room 1045. The vinyl floor tile was sampled (S03A,B,C) and is non-asbestos; however, the associated mastic is asbestos-containing.**



**Photograph No. 6 – Ceramic wall tile grout was observed throughout the Subject Area. The grout was sampled (S04A,B,C) and is non-asbestos.**



**Photograph No. 7 – 2'x2' Textured pinhole pattern ceiling tile was observed in Room 1045. The ceiling tile was sampled (S05A,B,C) and is non-asbestos.**

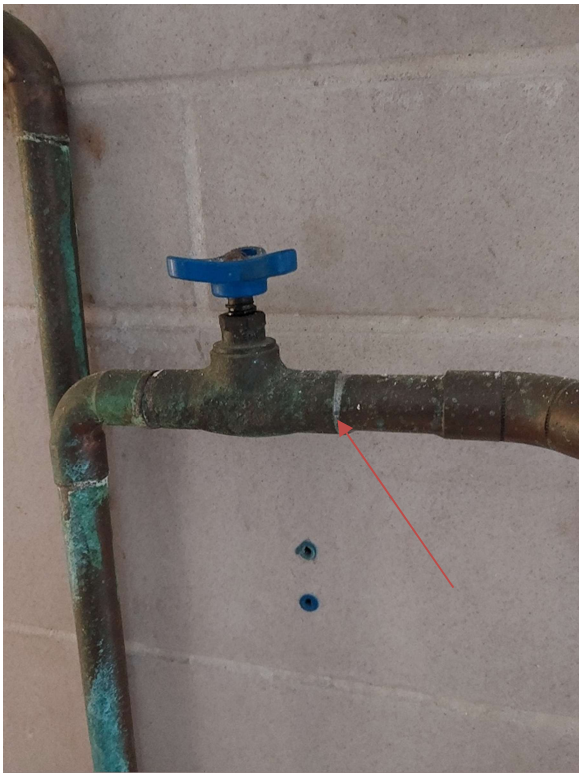
**Photograph No. 8 – Drywall joint compound was observed on the interior of Rrooms 1042A and 1042B. The compound was sampled (S07A,B,C) and is non-asbestos. The grey paint was sampled (LP04) and is low level lead-containing.**

**Photograph No. 9 – 2'x2' Small fissure random pinhole pattern ceiling tiles were observed in Room 1042. The ceiling tiles were sampled (S06A,B,C) and they are non-asbestos.**

**Photograph No. 10 – Foil wrapped fiberglass insulation was observed on ventilation within Room 1044A and does not contain asbestos.**

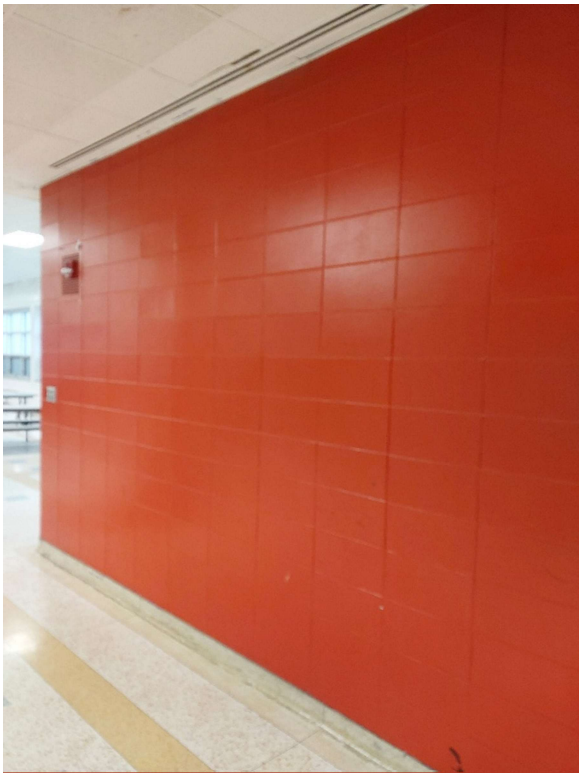
**Photograph No. 11 – Fiberglass insulation with fiberglass elbows was observed in Room 1045 and does not contain asbestos.**

**Photograph No. 12 – Mercury-containing fluorescent light tubes were observed throughout the interior. Associated light ballasts may contain PCBs.**

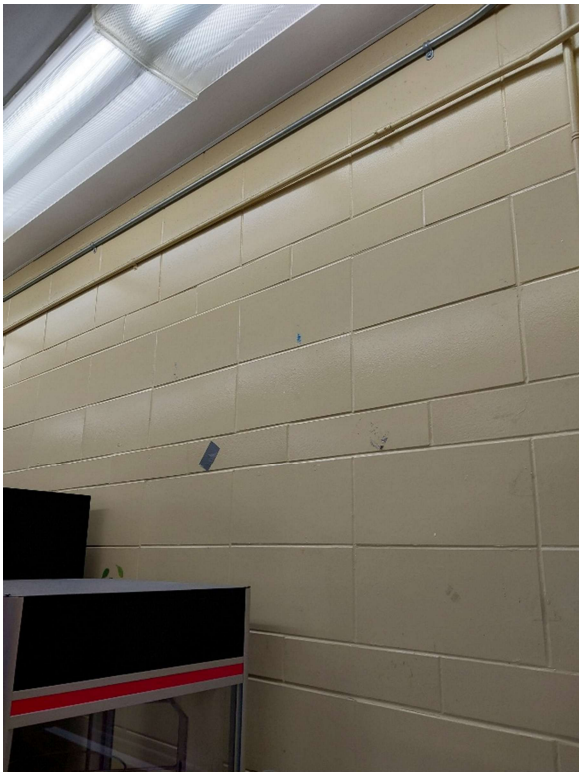


**Photograph No. 13 – Suspect lead-containing solder on pipe connects was observed within Room 1044 and may also be concealed beneath building finishes.**

**Photograph No. 14 – Beige paint was sampled from the walls of Room 1045 (LP01) and is low level lead-containing.**



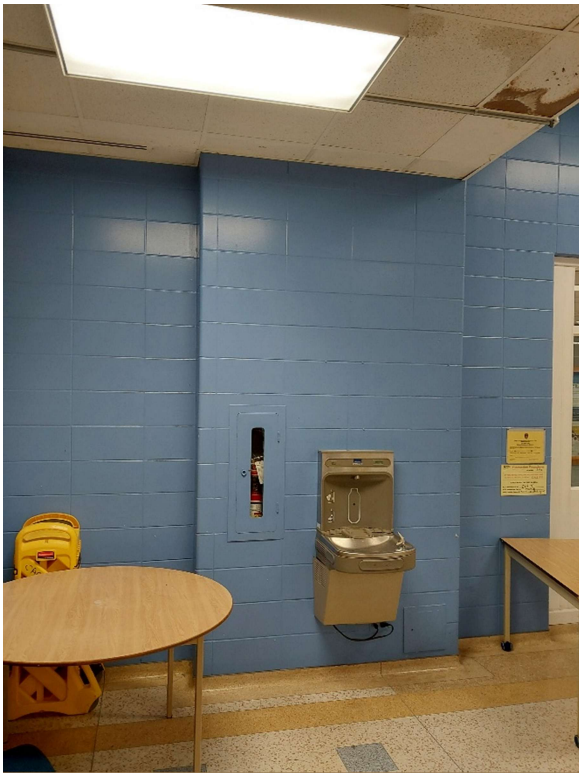
**Photograph No. 14 – Red paint was observed on the exterior walls and interior doors of Room 1044. The paint was sampled (LP02) and is lead-containing.**



**Photograph No. 15 – Yellow paint was observed on the interior walls of Room 1044 and was sampled (LP03). The paint is low level lead-containing.**

**Photograph No. 16 – Dark grey paint was observed on doors to Room 1044 and was sampled (LP05). The paint is low level lead-containing.**

**Photograph No. 19 – Drywall joint compound was observed on bulkheads above the doorway in Ccorridor 1043 leading into Room 1042. The compound was sampled (S10A,B,C) and does not contain asbestos. The light blue paint was also sampled (LP08) and is low level lead-containing.**



**Photograph No. 17 – Blue paint was observed in room 1042 and was sampled (LP07). The blue paint is low level lead-containing.**

## PART 1 - GENERAL

### 1.1 GENERAL REQUIREMENTS

.1 Read this section in conjunction with all other sections so as to conform to Division 1, and the General Requirements of the project.

.2 Inform all sub-trades of the presence of Asbestos Containing Materials identified in the documents.

.3 The Contractor involved directly or indirectly with the removal, handling, management, transportation and disposal of Asbestos Containing Materials and Asbestos Waste in any and all aspects shall take all reasonable precautions, due care and diligence to prevent asbestos from becoming airborne and shall take all reasonable precautions to control and prevent the spread of airborne asbestos in the event of an incident, accidental release or loss of containment. Cost of additional work by the Contractor and/or Consultant to rectify unsatisfactory conditions, shall be charged to the Contractor.

.4 No allowance will be made for any difficulties encountered or any expenses incurred on account of any conditions of the site or any item existing thereon that is visible or known or can be reasonably anticipated.

.5 The Contractor shall be prepared to respond throughout the duration of the project in order to repair, encapsulate remove or otherwise manage additional asbestos as required. The abatement contractor shall provide an emergency contact phone number and be on call to provide emergency services.

.6 The abatement contractor shall control all water migration (including leakage and spillage) from the abatement work area to areas below/adjacent. It is the responsibility of the contractor to protect all items from damage caused by water used in the abatement work area(s). The abatement contractor must immediately mitigate any and all damage to the satisfaction of the owner and Consultant resulting from water used in the abatement work area(s) at their own expense. No allowances shall be made as a result of lost time, resources, materials or equipment.

.7 It is the Contractor’s responsibility to ensure all construction aspects of the project are conducted in accordance with applicable construction safety legislation, regulations and general approved practice. This includes, but is not limited to; all means, methods, techniques, sequences, procedures, safety programs and precautions used.

### 1.2 DEFINITIONS

.1 Asbestos Containing Material: Materials that contain 0.5 percent or more asbestos by dry weight.

.2 Asbestos Waste: is material that contains asbestos in more than a trivial amount or proportion as defined by Ontario Regulation 347 as amended by Ontario Regulation 558/00 and includes the following:

.1 Solid or liquid waste that results from the removal of asbestos-containing construction or insulation materials and contains asbestos;

.2 Commercial waste and/or domestic waste that contains asbestos;

.3 Non-hazardous solid industrial waste that contains asbestos; and

.4 Materials determined or deemed contaminated with asbestos.

.3 Authorized Visitors: The Consultant or their representative, Architect, Owner's representatives, and persons representing regulatory agencies.

.4 Contractor: Contractors or Sub-Contractor performing work included in this specification.

.5 Consultant: Owner's Representative providing inspection and air monitoring.

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## PART 2 – SCOPE OF WORK

### 2.1 SUMMARY OF MATERIALS

.1 Refer to the following documents regarding Designated Substances within the work areas. The survey and documentation of Designated Substances is required by Section 30 of the Occupational Health and Safety Act and shall be read in conjunction with these specifications.

.1 "*Designated Substance Audit Report – Orchard Park Secondary School Hospitality Program Renovations, 200 Dewitt Road, Stoney Creek, ON*" dated February 3, 2026 prepared by MTE Consultants Inc.

.2 Removal and/or disturbance of asbestos-containing materials shall be performed in accordance with Ontario Regulation 278/05 – Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations.

.3 Removal and/or disturbance of lead-based and lead-containing materials shall be performed in accordance with the Environmental Abatement Council of Canada's Lead Guideline for Construction, Renovation, Maintenance and Repair (2014)

.4 Removal and/or disturbance of mercury-containing materials shall be performed in a manner which maintains the mercury intact, with no on-site crushing. Following removal, mercury-containing materials shall be safely stored on-Site until the Contractor can safely dispose of the materials at a licensed landfill.

.5 Removal and/or disturbance of silica-containing materials shall be performed in accordance with the Ministry of Labour's Guideline Silica on Construction Projects.

.6 Suspect PCB-containing equipment, including light ballasts, shall be assumed to contain PCBs and included for proper storage and disposal. All PCB-containing, equipment shall be appropriately stored and disposed of by the Contractor in accordance with SOR 2008-273 - PCB Regulations.

.7 Suspect ODS-containing equipment shall be assumed to contain ODS's and shall be drained, tagged and disposed of by a licensed technician in accordance with Ontario Regulation 463/10.

.2 ACM may be present in concealed locations and become apparent during construction, renovation, alteration, or maintenance activities. Should any suspect ACM be discovered during the course of regular construction, renovation, alteration, or maintenance activities,

work should cease and the materials should not be disturbed. Suspect ACM must be treated as asbestos-containing or sampled and proven to not contain asbestos. Any activities that require disturbance of ACM must be performed in accordance with Ontario Regulation 278/05. It is the responsibility of the constructor to provide supervision and training and undertake due care and diligence in situations where such discoveries can and would occur.

.3 Upon discovery of suspect or known ACM not identified or referred to in Section 2.0 or the reports referenced, the constructor shall immediately notify, orally and in writing; an inspector at the office of the Ministry of Labour nearest the workplace, the owner/representative, the Contractor and the joint health and safety committee or the health and safety representative, if any, for the workplace. The written notice shall include the following:

.1 The name and address of the person giving the notice;

.2 The name and address of the owner of the place where the work will be carried out;

.3 The municipal address or other description of the place where the work will be carried out sufficient to permit the inspector to locate the place, including the location with respect to the nearest public highway;

.4 A description of the work that will be carried out;

.5 The starting date of the work that will be carried out; and

.6 The name and address of the supervisor in charge of the work.

.4 No work that is likely to involve handling, dealing with or disturbing or removing the discovered materials shall be done unless it has been determined whether the material is asbestos-containing; or, the work is performed in accordance to Ontario Regulation 278/05 as though the materials were asbestos-containing materials and, in the case of sprayed-on friable material, as though it contained a type of asbestos other than Chrysotile.

## 2.2 ASBESTOS ABATEMENT

.1 Where required to complete the scope of the proposed renovations, disturbance of Asbestos-Containing Materials shall be performed as follows, in accordance with Ontario Regulation 278/05:

| Location | ACM | Operation | Notes |
|---|---|---|---|
| Confirmed in Room 1044A<br><br>May Also Be Concealed Above Ceiling Finishes | Insulation on Pipe Fittings (i.e. elbows, T's, valves, etc) | Type 2 Asbestos | Removal using a glove bag |
| Rooms 1044, 1044A and 1044B | Drywall Ceiling | Type 2 Asbestos | Removal of greater than 1 $m^2$ |

| Location | ACM | Operation | Notes |
|---|---|---|---|
| Room 1045 | 9” x 9” Vinyl Floor Tile and Associated Mastic | Type 1 Asbestos | Removal using non-powered hand tools in conjunction with dust suppression |
| | | Type 2 Asbestos | Removal using power grinder with HEPA-attachment |
| Throughout Interior of Subject Areas<br><br>Above Ceiling On Top of Walls Comprised of Glazed Blocks | Concrete Block Mortar | Type 1 Asbestos | Manual drilling and/or demolition using non-powered hand tools in conjunction with dust suppression |
| | | Type 2 Asbestos | Drilling and/or demolition using powered hand tools with HEPA-attachment |

## 2.3 SCHEDULING

.1 The Contractor shall schedule and perform work in accordance with the Contract Time established in the agreement.

## 2.4 INSPECTION

.1 From project set-up to completion of clean-up, the Asbestos Abatement Consultant will be present on both the inside and outside of the work area.

.2 Inspections will be conducted to confirm the Contractor’s compliance. Failure to comply with the specified requirements may result in a stoppage of work at no additional cost to the Owner.

.3 Promptly notify the Consultant of any ACM or potential ACM discovered during the work and not apparent in the audit, specifications or site meeting(s). DO NOT disturb such material until given direction by the Consultant. Assume such material to contain asbestos of a type other than Chrysotile until proven otherwise. Failure to notify the Consultant of ACM prior to removal will result in the dispute of payment of fees for any extra work performed.

.4 The following inspections will be conducted at the Owner’s cost. Provide Consultant with minimum of 24 Hours verbal notice:

.1 Pre Start Inspection: conducted after completion of work area set-up and prior to start of contaminated work.

.2 Contaminated Work Inspections: inspections and routine monitoring of the abatement will be conducted for the duration of the work.

.3 Final Inspection: conducted after removal of all ACM, and application of lockdown agent to confirm cleanliness. Additional labour or materials expended by the Asbestos Abatement Contractor to provide satisfactory performance to the level

specified shall be at no additional cost.

## 2.5 SUBMITTALS

.1 Submit to the Consultant upon request:

.1 AAW and AAS certification and relevant training for all workers/supervisors on-site and involved in the project.

.2 Names, credentials and contact information of Site superintendent and shift supervisors.

.3 All necessary permits, certificates, and documents for all aspects of the work to be completed.

.4 Ministry of Labour Notice of Project if applicable.

.5 Certificate of Approval for transportation of asbestos waste.

.6 Negative air unit performance leak tests.

.7 HEPA/P100 filtered vacuum performance leak tests.

.8 Any and all proposed changes, alterations, deviations intended to be made in scope, procedures and/or measures from these specifications or associated regulations, guidelines and standards.

.2 The contractor shall have all asbestos waste transported under a current and valid Certificate of Approval or Provisional Certificate of Approval that specifically authorizes the transportation of asbestos waste in bulk. A copy of the Certificate of Approval will be maintained on-site and within the transport vehicle(s) and will be provided to the Consultant upon request.

## 2.6 PERMITS AND REGULATIONS

.1 Comply with all federal, provincial and local requirements, Regulations and Acts as well as client/owner corporate policies and procedures pertaining to asbestos and health and safety, provided that in any case of conflict among these requirements or with these specifications the more stringent requirements shall apply.

.2 Comply will all aspects of the Occupational Health and Safety Act Revised Statues of Ontario, 2005.

.3 Comply with Ontario Regulation 278/05 “Asbestos on Construction Projects and in Buildings and Repair Operations”, made under the Occupational Health and Safety Act.

.4 Comply with “Handling, Transportation and Disposal of Asbestos Waste’ in accordance with Ontario Regulation 347 as amended by Ontario Regulation 558/00, under the Environmental Protection Act (General-Waste Management), June 1992.

.5 Before varying a measure or procedure described in Ontario Regulation 278/05, or these specifications, the contractor/constructor must ensure that the varied measure(s) and/or procedure(s), affords protection for the health and safety of workers and building occupants that is at least equal to the protection that would be provided by complying with Ontario Regulation 278/05. Written notice of the varied measure(s) and/or procedure(s) shall be given in advance to the joint health and safety committee and safety representative, if any,

for the workplace. Such notice shall also be provided to the Consultant.

## 2.7 INSTRUCTION AND TRAINING

.1 It shall be the responsibility of the Constructor to inform all workers involved in this project of the hazards in regard to the work to be performed and ensure appropriate training has been provided to all workers.

.2 Every worker shall be properly trained in accordance with Section 19 of Ontario Regulation 278/05 in the removal/management of asbestos as a Type 1, Type 2 and Type 3 Operation and have had instruction and training in:

.1 Asbestos awareness;

.2 The hazards of asbestos exposure;

.3 Personal hygiene and work practices;

.4 The use, cleaning, maintenance, selection and disposal of respirators and protective clothing; and

.5 The measures and procedures prescribed by Ontario Regulation 278/05.

.3 Instruction and training related to personal protective equipment and hygiene shall include but shall not necessarily be limited to:

.1 Limitations of the equipment;

.2 Inspection and maintenance of the equipment;

.3 Fitting of the equipment; and

.4 Disinfecting and decontamination of the equipment.

.4 The abatement contractor shall ensure that every worker/supervisor involved in a Type 3 operation meets the training and certification requirements of Section 20 of Ontario Regulation 278/05.

## 2.8 WORKER PROTECTION

.1 All personal protective equipment shall be used and maintained in accordance to the manufactures specifications and/or federal, provincial, local regulations and Acts and any corporate policies and procedures.

.2 All Personal protective equipment shall be of a nature that can be readily and effectively decontaminated or shall be of a disposable type.

.3 Damaged, deteriorated or defective personal protective equipment shall be repaired or replaced immediately and the worker shall not continue with their duties until such damages, deterioration or defects have been corrected.

.4 All personal protective equipment shall be durable enough and otherwise suitable to withstand the nature of the work being performed and the environmental conditions present within the work area(s).

.5 The contractor shall provide all workers with personally issued respirators suitable for protection against asbestos and acceptable to the Ministry of Labour.

.6 It shall be the responsibility of the contractor/constructor to ensure that all procedures for the use of respiratory equipment in accordance with Ontario Regulation 278/05 and manufacturers requirements are complied with. This shall include but shall not necessarily be limited to:

.1 The worker being physically able to perform the required duties while wearing the respirator;

.2 Respirators must be fit checked by qualitative or quantitative fit testing. Instruction must be provided as defined by the Occupational Health and safety Act;

.3 Air purifying respirators will be equipped with Ministry of Labour and NIOSH approved N 100, P 100, R 100 or HEPA hard exterior cassette style filters and shall be fitted so that an effective seal exists between the respirator and the workers face;

.4 Supplied air respirators will have supply air meet the Canadian Standards Association (CSA) standard Z180.1-00, Compressed Breathing Air and Systems (March 2000);

.5 Cleaning and disinfecting of respirator(s) after each use or more often if needed;

.6 Inspection of respirator(s) and/or respiratory equipment before each use;

.7 The proper storage in a clean, dry and sanitary location when respirator(s) are not in use; and

.8 The development of written procedures regarding selection, use and care of respirators.

.7 Protective Clothing: The contractor shall provide every worker who enters the work area with disposable coveralls and gloves which:

.1 Shall be made of a material that does not readily retain nor permit the penetration of asbestos fibres;

.2 Shall consist of head covering and full body covering that fits snugly at the ankles, wrists and neck, in order to prevent asbestos fibres from reaching the garment and skin under the protective clothing;

.3 Shall include suitable footwear; and

.4 Shall be repaired or replaced if torn or damaged.

.8 The contractor shall provide worker(s) with Canadian Standards Association approved head, hearing and foot protection for the work being performed and as required by applicable construction safety regulations.

## 2.9 AUTHORIZED VISITOR PROTECTION

.1 The contractor shall provide all prescribed personal protective equipment to authorized visitors to the work area(s).

.2 Ensure authorized visitors have received required training prior to entry to the work areas.

.3 Instruct authorized visitors in all relevant procedures to be followed while in and around the

work area(s).

## PART 3 - APPROVED PRODUCTS

### 3.1 MATERIALS AND EQUIPMENT

.1 Amended Water: Water with a surfactant agent added to reduce water tension for thorough wetting of fibres.

.2 Decontamination Shower: For the purpose of worker decontamination, a portable self-contained shower equipped with the following shall be utilized:

.1 Hot and cold water connections;

.2 Interior hot and cold fixtures that can be controlled by the person using the shower; or provide a constant water temperature of not less the 40 Celsius but not greater 50 Celsius;

.3 A containment basin of sufficient capacity to collect and contain the quantity of water required for at least one worker to properly decontaminate; and

.4 Shall be supplied with soap and clean towels.

.3 Drop Sheets: Fire retardant Polyethylene: 0.15mm (6mil) minimum thickness or Fire retardant Fibre Reinforced (FR) polyethylene: 0.15mm (6mil) minimum thickness. New Materials Only.

.4 Exhausted Ducting: For use with Negative Air Unit(s) shall be flexible reinforced heavy duty type duct and be free of tears, punctures and damage and be otherwise suitable for the conditions of the work area(s). The cross sectional area of the ducting shall be maintained during the operation of the Negative Air Unit(s). And reasonable care shall be taken to ensure the ducting does not become damaged.

.5 Micronic Water Filter: Shall be used to filter contaminated water that is to be discharged to local sanitary sewers. Contaminated water includes but is not necessarily limited to wash down water and decontamination shower water. The filter shall be equipped with a secondary 5 micrometer filter. As an alternative to filtration, contaminated water may be collected in appropriate waste containers for off-site disposal.

.6 Negative Air Units: Shall be equipped with HEPA/P100 filters and shall have performance leak testing to verify efficiency of filters. Copies of filter tests shall be provided to the consultant upon request.

.7 Power Tools: Used in the cutting, grinding, drilling, abrading, sanding, vibrating or removal of Asbestos Containing Material, as a Type 2 Operation, shall be equipped with an effective dust collection device with a HEPA/P100 filtration system capable of capturing all debris and dust generated by the tool. All tools and assemblies of dust collection and filtration equipment will be subject to approval and testing by the Consultant as seen fit prior to use.

.8 Pressure Differential Measuring Device: Shall be capable of measuring pressure differential of 0.02 inches of water column and shall otherwise measure pressure differential in an appropriate range and interval. The device shall be dedicated to the site/work area, properly calibrated, installed and maintained throughout the duration of work to measure pressure differential between the enclosed removal area and the

occupied area and shall be acceptable to the consultant. Daily records shall be kept by the contractor, on site, and made available to the consultant.

.9 Sealant: A suitable water based post-removal sealer appropriate for the lock-down and sealing of asbestos fibres to polyethylene sheeting and cleaned substrate.

.10 Sprayer(s): Shall be capable of delivering low velocity mist pattern spray of Amended water or sealant. Sprayers may be hand held reservoir type or powered airless units.

.11 Surfactant: A commercial or industrial agent that when added to potable water reduces surface tension.

.12 Tape: Shall be able to create and maintain a suitable seal on polyethylene and other materials within the work area under both wet and dry conditions and ambient temperatures for the duration of the work being performed and shall otherwise be suitable for the work being performed.

.13 Waste Containers: Waste shall be contained in two overlying dust tight containers impervious to asbestos fibres. The outer container shall be a minimum of 0.15mm (6mil.) thick sealable polyethylene waste bag.

.1 Should the waste material include sharp objects/materials, the inner container shall be a sealable metal, cardboard, fibre or plastic type suitable to resist puncturing of the containers;

.2 Containers shall be cleaned with a damp cloth or vacuum equipped with a HEPA filter immediately before being removed from the work area;

.3 Outer waste containers shall have a pre-printed cautionary asbestos warning identifying it as asbestos waste in both official languages clearly visible and legible in a colour which contrasts with the background on which it is printed; and,

.4 Be otherwise suited for the waste being contained.

.14 Vacuums: Shall be equipped with HEPA/P100 filters and shall have performance leak testing to verify efficiency of filters. Copies of filter tests shall be provided to the consultant upon request.

## 3.2 SIGNAGE AND PLACARDS

.1 Before beginning work, post a sufficient number of signs at each entrance/exit to the work area(s) warning of asbestos hazards and restricting access to authorized persons wearing personal protective equipment.

.2 On both sides of all containers and vehicles used in the transport of asbestos waste in large easily legible letters of a minimum of ten centimetres (10cm) in height which contrast in colour with the background of the container or vehicle the following words shall be clearly displayed:

.1 CAUTION: CONTAINED ASBESTOS FIBRES; Avoid Creating Dust and Spillage; and,

.2 Asbestos May be Harmful to Your Health; Wear Approved Protective Equipment.

## PART 4 - EXECUTION

### 4.1 GENERAL REQUIREMENTS – ALL PROCEDURES

.1 Before beginning work, post at each entrance/exit to the work area(s) a sufficient number of signs warning of asbestos hazards and restricting access to authorized persons wearing personal protective equipment.

.2 Eating, drinking, chewing or smoking shall not be permitted in the work area.

.3 Where wet removals are to take place de-energize and disable with proper lock-out tag-out procedures electrical systems.

.4 Temporary electrical distribution systems equipped with Ground Fault Circuit Interrupters (GFCI) shall be supplied and used by the Contractor during wet removals.

.5 Remove all items from the work area(s). If items are affixed or otherwise cannot be removed from the work area(s), ensure that they are pre-cleaned using a HEPA/P100 filtered vacuum or damp wiping and completely covered and sealed with polyethylene sheeting and otherwise adequately protected.

.6 Before commencing with work, disable and seal all ventilation to and from the work area and ensure ventilation remains disabled throughout the duration of activities. Seal any and all openings within the work area(s).

.7 Removal of Asbestos Containing Materials shall commence only after set-up is complete.

.8 Frequently and at regular intervals during the Work and immediately upon completion of the work clean up and place all asbestos dust, debris and waste in approved waste containers.

.9 Prevent the spread of dust from the Work Area.

.10 At completion of Work or at the end of the work day, remove from work area(s) all asbestos waste and in accordance with requirements of Ontario Regulations and these specifications dispose of asbestos waste off-site.

### 4.2 EXECUTION OF TYPE 1 OPERATION

.1 Set-Up

.1 Ensure adequate signage is posted restricting access to the work area to authorized personnel.

.2 Prevent the spread of dust from the work area using measures appropriate to the work to be done. Use single layer rip proof polyethylene drop sheets. In areas with carpeted or textured floors which cannot be readily cleaned use double layer rip proof polyethylene over flooring in work area(s).

.3 Provide facilities for washing hands and face.

.4 Allow for inspection by the Consultant to confirm that set-up is sufficient prior to the start of work.

.2 Asbestos Removal

.1 If a worker requests, the contractor shall supply a respirator in accordance with Ontario Regulation 278/05 Table 2 requirements, suitable for protection against asbestos and protective coveralls and the worker shall wear the respirator and coveralls.

.2 Perform removal of ACM in a manner to reduce dust creation to lowest level practicable by:

- Dust and waste shall not be permitted to fall freely from one work level to another
- Use of hand tools only for the removal of ACM
- Careful removal of ACM
- Continual wetting of Asbestos Containing Materials throughout the work
- Placing removed asbestos waste directly into approved waste containers

.3 All workers shall proceed to washing facilities and wash hands and face before leaving the work area.

.3 Clean-Up

.1 After completion of the removal; perform final thorough cleanup of polyethylene, barriers, drop sheets, tools, equipment, items, work area(s) and adjacent areas using HEPA/P100 filtered vacuum or damp wiping methods. Ensuring work area(s) and all items within the work area(s) are clean of visible asbestos dust, debris and waste. Place and seal asbestos dust debris and waste in approved waste containers.

.2 Allow for inspection by Consultant to determine abatement is complete and an acceptable level of cleanliness prior to application of sealant.

.3 Wet and fold polyethylene drop sheets and barriers in a manner which contains asbestos dust, debris and waste, place and seal in approved waste containers.

.4 If Personal Protective Equipment was requested and used by the worker prior to leaving the work area(s) clean all asbestos dust, debris and waste from clothing and personal protective equipment (PPE). Remove and place disposable PPE in approved waste container.

.5 Immediately before their removal from the work area, clean each filled waste container using HEPA/P100 filtered vacuum and place and seal in a secondary clean waste container.

## 4.3 EXECUTION OF TYPE 2 OPERATION

.1 Set-Up

.1 Construct an enclosure using polyethylene sheeting that extends from floor to ceiling and encompasses the entire work area were asbestos containing materials will be removed or encapsulated. The enclosure shall include the following:

- Double flap weighted air lock doors at all entrances, exits and doorways of the enclosure and rooms within the enclosure;
- Transparent windows for inspection purposes from outside the enclosure area;
- Sealed edges of the entire enclosure using tape or other suitable methods;

and
- Ensure all edges of enclosure are securely fixed.

.2 Construct a decontamination facility as close as practicable to the work area which shall include the following:

- A room suitable for changing into protective clothing and for storing contaminated protective clothing and equipment; and,
- A room suitable for changing into street clothes and for storing clean clothing and equipment.

.3 Arrange configuration of the above-mentioned rooms so that (a) person(s) entering/exiting the work area must pass through each room in the correct order.

.4 Allow for inspection by the Consultant to confirm that set-up is sufficient prior to the start of work.

.2 Asbestos Removal

.1 Workers entering the work area shall don all appropriate personal protective equipment including coveralls and respiratory protection prior to entering the work area.

.2 Before commencing with work and at the beginning and end of each work shift and at a minimum of at least once per day the enclosure shall be inspected for any defects of deficiencies.

.3 Any defects or deficiencies observed shall be repaired forthwith and no work other than such repairs shall be conducted until repair activities are completed

.4 Other than loose material which is pulverized, crumbled and or powdered and shall be removed by HEPA/P100 filtered vacuum, Asbestos Containing Materials to be removed or disturbed shall be thoroughly wetted with Amended Water before and during work unless wetting creates a hazard or causes damage.

.5 Perform removal of ACM in a manner to reduce dust creation to lowest level practicable by:

- Dust and waste shall not be permitted to fall freely from one work level to another;
- Use of hand tools only for the removal of ACM;
- Careful removal of ACM;
- Continual wetting of Asbestos Containing Materials throughout the work; and
- Placing removed asbestos waste directly into approved waste containers.

.6 All workers shall proceed to the washing facilities while wearing respirator and shall wash hands and face before leaving the work area.

.3 Clean-Up

.1 After completion of the removal; perform final thorough cleanup of polyethylene, barriers, tools, equipment, items, work area(s) and adjacent areas using HEPA/P100 filtered vacuum or damp wiping methods. Ensuring work area(s) and all items within the work area(s) are clean of visible asbestos dust, debris and waste. Place and seal all asbestos dust debris and waste in approved waste

containers.

.2 Allow for inspection by Consultant to determine abatement is complete and an acceptable level of cleanliness prior to application of sealant.

.3 Apply sealant to all vertical and horizontal surfaces, enclosures, drop sheets and items within the enclosure. Allow sufficient time for sealant to dry.

.4 Wet and fold polyethylene and barriers in a manner which contains asbestos dust, debris and waste, place and seal in approved waste containers.

.5 Prior to leaving the work area(s) workers shall clean all asbestos dust, debris and waste from Personal Protective Clothing Using HEPA/P100 filtered vacuum or damp wipe methods prior to removing the clothing. Remove and place disposable Personal Protective Clothing in approved waste containers.

.6 Immediately before their removal from the work area, clean each filled waste container using HEPA/P100 filtered vacuum and place and seal in a secondary clean waste container.

## 4.4 EXECUTION OF TYPE 2 OPERATION (GLOVE BAG)

.1 Set-Up

.1 The work area shall be separated from the rest of the workplace by walls, barricades, fencing or other suitable means.

.2 Surfaces directly below the work area shall be covered with drop sheets of Polyethylene.

.3 The glove bag shall be made of material that is impervious to asbestos and sufficiently strong to support the weight of material the bag will hold.

.4 The glove bag shall be equipped with,

- Sleeves and gloves that are permanently sealed to the body of the bag to allow the worker to access and deal with the insulation and maintain a sealed enclosure throughout the work period;
- Valves or openings to allow insertion of a vacuum hose and the nozzle of a water sprayer while maintaining the seal to the pipe, duct or similar structure;
- A tool pouch with a drain;
- A seamless bottom and a means of sealing off the lower portion of the bag; and,
- A high strength double throw zipper and removable straps, if the bag is to be moved during the removal operation.

.5 Provide facilities for washing hands and face.

.6 Allow for inspection by the Consultant to confirm that set-up is sufficient prior to the start of work.

.2 Asbestos Removal

.1 Workers entering the work area shall don all appropriate personal protective equipment including coveralls and respiratory protection prior to entering the work

area.

.2 A glove bag shall not be used to remove insulation from a pipe, duct or similar structure if:

- It may not be possible to maintain a proper seal for any reason including, without limitation: the condition of the insulation; or, the temperature of the pipe, duct of similar structure; and,
- The bag could become damaged for any reason including, without limitation: the type of jacketing; or, the temperature of the pipe, duct or similar structure.

.3 The glove bag shall be inspected for damage or defects:

- Immediately before it is attached to the pipe, duct or other similar structure; and,
- At regular intervals during its use.

.4 If damage or defects are observed at any time during the use of the glove bag:

- The use of the glove bag shall be discontinued;
- The inner surface of the glove bag and the contents, if any, shall be thoroughly wetted with Amended Water;
- The glove bag and the contents, if any, shall be removed and placed in a waste container, and,
- The work area shall be cleaned using a HEPA/P100 filtered vacuum before removal work is resumed.

.5 All workers shall proceed to the washing facilities while wearing respirator and shall wash hands and face before leaving the work area.

.3 Clean-Up

.1 When the removal work is complete:

- The inner surface of the glove bag and the waste inside shall be thoroughly wetted with Amended Water and the air inside the bag shall be removed through the elasticized valve, by means of HEPA/P100 filtered vacuum;
- The pipe, duct or similar structure shall be wiped down and a sealant applied;
- The glove bag, with the waste inside, shall be placed in a waste container, and,
- The work area shall be cleaned using a HEPA/P100 filtered vacuum or by damp wiping.

.2 Prior to leaving the work area(s) workers shall clean all asbestos dust, debris and waste from Personal Protective Clothing Using HEPA/P100 filtered vacuum or damp wipe methods prior to removing the clothing. Remove and place disposable Personal Protective Clothing in approved waste containers.

.3 Immediately before their removal from the work area, clean each filled waste container using HEPA/P100 filtered vacuum and place and seal in a secondary clean waste container.

**END**

# PART 1 - GENERAL

**1.1 Scope**

.1 Comply with Division 1: General Requirements.

.2 Provide materials, labour and equipment for demolition work shown on the drawings, described herein, or as necessary to complete the work.

.3 Before commencing demolition, contact utilities and authorities having jurisdiction. Carry out disconnections and cappings to their requirements employing tradesmen licensed for this work. Pay inspection and service fees.

.4 This includes co-ordinating the disconnection and capping of services, as follows:
- .1 Sanitary Sewers
- .2 Storm sewers
- .3 Water service
- .4 Electric power connections
- .5 Telephone connections
- .6 Cable TV connections
- .7 Gas service

**1.2 Related Work Under Other Sections**

None

**1.3 Standards**

.1 To Ontario Fire Code, Part 8, Demolition, including:
- .1 Shutting off and capping services
- .2 Providing fire watches as required
- .3 Management of combustible salvage, waste and rubbish
- .4 Protection of persons and properties
- .5 Maintenance of operable fire protection equipment
- .6 Maintenance of fire fighters access
- .7 Provision of fire extinguishing equipment
- .8 Maintenance of existing and/or temporary exits

.2 To CSA-S350-M1980 'Code of Practice for Safety in Demolition of Structures', the Ontario Occupational Health and Safety Act, WHMIS and regulations of authorities having jurisdiction.

**1.4 Recording Existing Conditions**

.1 After determining demolition methods, determine area of possible vibration. Carefully inspect beyond those adjacent areas. List potential damage spots [i.e. existing cracks, exposed glass, etc.] and photograph each for record purposes before starting work.

**1.5 Protection**

.1 Fully protect adjacent property and ensure free safe passage at all times.

.2 Provide necessary hoardings, braces, shoring, underpinning, railings, temporary covers, covered passageways, ramps, warning signs, visual and audible signals, as required to prevent movement, settlement or collapse of any adjacent services, sidewalks, driveways, trees, building or building parts.

.3 Protect the public and others at all times. Be liable for any damage and replace, repair, or make good immediately.

.4 Where sheet, trowelled or sprayed-on asbestos is being disturbed, provide protective equipment and use protective measures required by the Ontario Occupational Health and Safety Act, latest regulations and owner's requirements see instructions to bidder's.

## PART 2 - PRODUCTS

N/A

## PART 3 - EXECUTION

**3.1 Standards**

.1 Carry out demolition and reconstruction operations in accordance with the Canadian Construction Safety Code. Obtain and pay for any special permits. Do not use explosives or smashing type of mechanical wrecking devices without the Architect's written approval.

**3.2 Preparation**

.1 **Salvage Items:**

.1 Carefully remove the following materials and equipment; store and protect as directed by the Owner.

.1 See Drawings.

.2 Stack whole reusable items separately and clear of demolition operations. The Architect retains ownership of these items until inspected. Dispose of these items as directed by the Architect. Remove materials declared surplus from site and deliver balance as directed.

.3 Dispose of demolished, broken and non-reusable materials immediately from the site of operations. Remove contaminated and dangerous materials from the site immediately and dispose in a safe manner to minimize all dangers at the site or at disposal locations.

.4 Disconnect, cap and seal electrical, telephone, cable TV, sewage, drainage, water and gas lines in accordance with the rules and regulations of the authorities having jurisdiction; employ tradesmen licensed to carry out this work.

.5 Clearly paint, mark and post warning signs on lines to remain in service and promptly repair any damage to maintain active service.

**3.3 Demolition Operations**

.1 Carry out demolition work shown on the drawings in a systematic manner from roof to final grade as necessary to accommodate remedial, reconstruction or new work. Ensure work is supervised by an experienced, competent foreman at all times. Work on each floor level must be complete before commencing work on the supporting structure. If any part of the work becomes unstable, temporarily shore and support to prevent collapse.

.2 Demolish foundations and piers, to a minimum of 150 mm (6") below finish floor slab and make good floor slab flush with existing finished slab.

.3 Small pieces of concrete and masonry may not be used to back fill. Do not use organic or metallic materials for back fill.

.4 At the end of each days work, leave site in a safe condition so that no part is in danger of collapse. Do not stack salvaged materials or debris liable to overload any part of the structure.

.5 Minimize dust during demolition. Keep dust dampened at all times.

.6 Withdraw or flatten projecting nails as work proceeds.

.7 Do not sell or burn materials on site.

.8 Remove organic, metallic, contaminated or dangerous materials from the site and ensure safe disposal.

**3.4 Completion**

.1 Remove debris daily; use approved transport vehicles only to their safe load capacity and clean away spillage immediately. On completion, clean exposed surfaces and adjacent areas ready for reconstruction operations. Remove tools, equipment, trash, dust and dirt from the site of operations and leave in a broom-clean condition.

-END-

# PART 1 - GENERAL

**1.1 Scope**

.1 Comply with Division 1: General Requirements.

.2 Provide materials, labour and equipment for cast-in-place concrete as shown on the drawings, described herein, or as necessary to complete the work.

**1.2 Related Work Under Other Sections**

.1 Section 03350: Concrete Finishing, [co-ordinating work with this section.]

.2 Section 06100: Rough Carpentry, [co-ordinating work with this section.]

.3 Division 15: Mechanical, [install all mechanical inserts.]

.4 Division 16: Electrical, [install all electrical inserts.]

**1.3 Applicable Codes and Standards**

.1 Comply with requirements of Ontario Building Code, Ontario Occupational Health and Safety Act and municipal building By-laws and Regulations.

.2 Except where modified by the drawings, conform to the following:

| STANDARD | TITLE |
|---|---|
| ACI 301 | Tolerances of Concrete Construction. |
| CAN/CSA-A23.1 | Concrete Materials and Methods of Concrete Construction. |
| CAN3-A23.1-1S1 | |
| CAN3-A23.1-1S2 | |
| CAN/CSA-A23.2 | Methods of Test for Concrete. |
| CAN3-A23.3 | Design of Concrete Structures for Buildings. |
| CSA -G30.12 | Billet-Steel Bars for Concrete Reinforcement. |
| CAN/CSA-A5 | Portland Cements. |
| CAN3-A266.1 | Air-Entraining Admixtures for Concrete. |
| CAN3- A266.2 | Chemical Admixtures for Concrete. |
| CAN3- A266.4 | Guidelines for the use of Admixtures in Concrete. |
| CRSI | Manual of Standard Practice. |

**1.4 Inspection and Testing**

.1 Owner will arrange and pay for material testing and compaction tests of subgrade and granular base courses in accordance with Division 1: General Requirements.

.2 Notify testing agency of concreting schedule.

**1.5 Certificates**

.1 Submit to Architect certification showing that plant, equipment, and all materials to be used in concrete are in accordance with CAN/CSA-A23.1, Concrete Materials and Methods of Concrete Construction, CAN3-A23.1S1, CAN3-A23.1S2 and that mix design is adjusted to prevent alkali aggregate reactivity problems.

**1.6 Co-ordination and Co-operation**

.1 Co-operate with other trades on concrete related work. Give other trades all information regarding materials or items supplied by this trade and affecting work of other trades.

.2 Leave chases, openings and slots as required. Build in hangers, anchors, sleeves and accessories supplied by others.

.3 If not noted on the structural drawings, obtain the Architect's approval for cutting holes in concrete for pipe or duct passage.

.4 To ensure proper levelling, provide dry-pack concrete grout under beam and column bearing plates.

.5 Prior to placing concrete footings or skim slabs, give the Architect's timely notice for inspection of sub-soil by a soils engineer. Do not place concrete until approval received.

.6 Give the Architect minimum 24 hours notice of time when reinforcement will be completed and ready for inspection.

**1.7 Delivery, Storage and Handling**

.1 Deliver and store materials undamaged in dry area, stacked to allow free air circulation. Store materials in accordance with CAN/CSA-A23.1.

.2 Deliver items to site in the largest practical sections and tag or mark (chalk only) items for identification.

.3 Store reinforcing steel on racks or skids. Protect from dirt or other materials. Maintain steel in the fabricated form.

.4 Store forms off ground and provide adequate support to prevent warping or distortion. Protect from contamination by oil, grease, water, earth, etc.

.5 Replace all items received in damaged condition and/or as deemed to be defective by the Architect.

**1.8 Examination**

.1 Examine all surfaces and conditions upon which the work of this section depends. Report all discrepancies to the Architect.

.2 Examine all drawings, showing work of other trades on which this work is in any way dependent, and report to the Architect any errors or discrepancies affecting this work.

**1.9 Cold Weather Concreting**

.1 Comply with CAN/CSA-A23.1. Take necessary precautions when air temperature is at or is likely to drop below 5 degrees C (41 degrees F). Provide

temporary plant and equipment for heating concrete materials and forms. Maintain the proper temperature and humidity of the concrete during curing.

**1.10 Hot Weather Concreting**

.1 Comply with CAN/CSA-A23.1. Take necessary precautions when air temperature exceeds 26 degrees C (78 degrees F).

**1.11 Special Protection**

.1 Provide temporary protection to interior of building during all times that the existing weatherproof surface has been disturbed prior to installing concrete.

.2 Prevent damage to building surfaces, landscape, asphalt paving, curbs, etc.

.3 Keep traffic off newly concreted areas until concrete has fully cured.

**1.12 Shop Drawings**

.1 Submit [ 4 ] copies of shop drawings, placing diagrams, bar lists and erection drawings, clearly showing the signed stamp of a professional structural engineer registered in Ontario.

## PART 2 - PRODUCTS

**2.1 General**

.1 **Strength:** Concrete shall have minimum 28 day compressive strengths as follows:

.1 30 MPa for all column footings, structural slabs, beams, columns and piers.

.2 25 MPa for wall footings, slabs on grade.

.2 **Air Entrainment:** Concrete shall have percentages of air entrainment as follows:

.1 5%-8% for all concrete subject to de-icing chemicals.

.2 3%-6% for exterior concrete subject to freezing and thawing.

.3 3% maximum for interior concrete subject to freezing and thawing.

**2.2 Materials**

.1 **Portland Cement:** To CAN/CSA-A5, Type 10, Normal.

.2 **Mixing Water:** To CAN/CSA-A23.1.

.3 **Fine aggregate:** To CAN/CSA-A23.1, graded within to following limits.

.1 100% by weight passing a 10 mm ($^3/_8$") sieve.

.2 90% by weight passing a #4 sieve and not more that 8 - 30% by weight passing a No. 50 sieve.

.4 **Coarse Aggregate:** Crushed stone or gravel: To CAN/CSA-A23.1. Maximum size 19 mm ($^3/_4$") ; for delamination repairs, maximum size 10 mm ($^3/_8$").

.5 **Air-Entraining Agent:** To CAN3-A266.1.

***Acceptable Products:*** Or Approved Equal

| | |
|---|---|
| Conchem | 'PROTEX AES' |
| Grace | 'Darex AEA' |
| Master Builders | 'MBVR' |
| Sika | 'Sika AER' |
| Sternson | 'NVR' |
| W. R. Meadows | 'Sealtight AEA' |

.6 **Water-reducing Agent (Superplasticiser), Non-retarding:** To CAN3- A266.2, Type WN, CSA-A266.5 and CAN3- A266.6.

***Acceptable Products:*** Or Approved Equal

| | |
|---|---|
| Conchem | 'PDA 25XLR' |
| Grace | 'WRDA-82' |
| Master Builders | 'Pozzolith' (N) |
| Sika | 'Sikament 300' |

.7 **Curing Compounds:** To Section 03350: Concrete Finishing.

.8 **Epoxy Materials:** Reinforcement coating and new concrete bonding.

***Acceptable Products:*** Or Approved Equal

| | |
|---|---|
| Cappar | 'Capbond E' |
| Conchem | 'Pro Bond' |
| CPD Services | '2C Polysulphide Epoxy Adhesive' |
| Sika | 'Sikudur 35 Hi Mod LV' |

.9 **Polymer Materials:** Or Approved Equal

.1 Pre-packaged, pre-mixed polymer bonding material.

***Acceptable Products:***

| | |
|---|---|
| Cappar | 'Acrylic Latex No. 12' |
| CC Chemicals | 'Acrylic conc Adhesive' |
| Conchem | 'XL Bond' |
| CPD Services | 'Styrene Butadiene & 20 min. set |
| Master Builders | 'Acryl-Set' |
| Sika | 'Sikatop 122' |

.2 Use one of the foregoing and include oven dried aggregates in accordance with the manufacturer's directions. Use products of one manufacturer only.

.10 **Pre-mixed Non-shrink Grout:** Minimum strength 40 MPa at 28 days. Maximum allowable shrinkage 0.4 percent. [If required in this section].

***Acceptable Products:*** Or Approved Equal

| | |
|---|---|
| CC Chemicals | 'In Pakt' or 'Supertop' [no forms] |
| Conchem | 'Super Grout 1000' |
| CPD Services | 'Non-shrink Construction Grout' |
| Master Builders | 'Master Flow 713' |
| Sternson | 'Ferrogrout 939' |
| W. R. Meadows | 'V-3 Grout' |

.11 **Premoulded Joint Filler (Isolation/Expansion Joints):** Bituminous impregnated fibre to ASTM D1751, thickness and depth, indicated in this division and/or as shown on drawings.

***Acceptable Products:*** Or Approved Equal

| | |
|---|---|
| CPD Services | 'Asphalt Fibre Board' |
| Sternson | 'Sternboard' |
| W. R. Meadows | 'Sealtight Fibre Joint' |

.12 **Waterstops:** Extruded poly vinyl chloride waterstops to CGSB 41 GP 35M Type I and III, thickness and depth, indicated in this division and/or as shown on drawings.

***Acceptable Products:*** Or Approved Equal

| | |
|---|---|
| Sternson | 'Durajoint' |
| W. R. Meadows | 'Sealtight P.V.C.- Premium Grade' |

.13 **Absorptive Cover:** Burlap cloth made from jute or kenaf, weighing approximately 300g/$m^2$ (9 oz/sq yd), complying with AASHTO M 182.

.14 **Curing Membrane:** To CAN/CSA 51.34, Type 1 and ANSI/ASTM C171.

***Acceptable Products:*** Or Approved Equal

Waterproof Paper

| | |
|---|---|
| CIL [Plastics] | '0.15 mm(6 mil) polyethylene film' |

Burlap-Polyethylene Sheet

.15 **Dampproof Membrane:** 0.152 mm (6 mil) black polyethylene sheet.

.16 **Vapour Barrier Film:** To CAN/CSA 51.34, Type 1.

***Acceptable Products:*** Or Approved Equal

| | |
|---|---|
| CIL [Plastics] | '0.15 mm(6 mil) polyethylene film' |

.17 **Vapour Barrier Tapes:**

***Acceptable Products:*** Or Approved Equal

| | |
|---|---|
| Kendall | 'Polyken No. 827' |
| 3M | 'Scotch Brand 483' |

.18 **Steel Reinforcing Bars:** To applicable CSA-G30.12 series. Use deformed bars, unless noted otherwise on the drawings. Provide bar supports as required by Manual of Standard Practice of the Reinforcing Steel Institute of Ontario. For exposed concrete locations, use plastic, precast concrete or plastic protected steel supports. Fabricate reinforcing to CAN/CSA- A23.1.

.19 **Welded Steel Wire Fabric:** To CSA-G30.12 for bars, CSA-G30.5 for welded steel wire mesh, 152 x 152 mm (6" x 6"), MW18.7/MW18.7 (6/6), and CSA-G30.15 for deformed steel wire mesh, chairs, bolsters, bar supports spacers, adequate for strength and support of reinforcing construction conditions.

.20 **Welded Deformed Steel Wire Fabric:** To CSA-G30.14-M1983 [for thin slab use].

.21 **Formwork:**

.1 Use new materials at start of work except where forms are required for rough unexposed concrete such as foundations when sound used materials may be substituted.

.2 **Plywood:** To CSA-O121-M1978 carrying COFI exterior stamp, Douglas fir, SIS with sealed edges.

.3 **Tubular Column Forms:** Round, spirally wound laminated fiber forms, internally treated with release material. Spiral of form must not show in hardened concrete surface.

.4 **Form Release Agent:** Chemically active release agents containing compounds that react with free lime present in concrete to provide water insoluble soaps, preventing concrete from sticking to forms.

***Acceptable Products:*** Or Approved Equal
W.R. Meadows 'Sealtight-Duogard'

.5 **Ties for exposed concrete:** Threaded, internal snap-off disconnecting type fitted with plastic cones 25 mm (1") dia. x 50 mm (2") deep.

.6 **Plugs for holes left by disconnecting type ties:** PVC plastic with 6 mm ($^1/_4$") set back and of same colour as concrete.

.22 **Falsework:**

.1 Use new materials to CAN/CSA-S269.1-1975 at start of work except where forms are required for rough unexposed concrete such as foundations when sound used materials may be substituted.

.23 **Dovetail Channel Reglets:**

.1 Use new materials at start of work except where forms are required for rough unexposed concrete such as foundations when sound used materials may be substituted.

***Acceptable Products:*** Or Approved Equal
Acrow-Richmond 'Dovetail Anchor Slot'

## PART 3 - EXECUTION

**3.1 Rejected Work**

.1 Deliver only materials conforming to specified requirements. Remove immediately if rejected after delivery.

**3.2 Formwork and Falsework Construction**

.1 All formwork to comply to CAN/CSA-A23.1.

.2 All falsework to comply to CAN/CSA-S269.1.

.3 Construct formwork and falsework to obtain concrete surface specified.

.4 Make forms tight and flush faced to prevent mortar leakage, fins or panel outlines.

.5 Apply form coating and release agent to contact surface of formwork panels before first use and before each reuse. Seal lumber in forms for architectural concrete prior to use. Apply form coating uniformly to surfaces.

.6 Use internal form ties. Locate ties in a uniform pattern to the Architect's approval.

**3.3 Removal of Formwork**

.1 Be responsible for structural safety before placing, during placing and after approval of forms. Retain forms and supporting shores in place until members are self-supporting and superimposed construction loads may be applied without excessive deflection or distortion. Retain formwork, exclusive of shoring, until concrete attains 75% of the specified 28 day strength.

**3.4 Isolation/Expansion Joints**

.1 Install isolation (expansion) joints in new concrete at 9 m (30 ft) on centre in each direction, between walls/footings/columns/piers and slabs-on-grade and/or as shown on drawings. Cast joints in place. Sawcut joints are not acceptable.

.2 Install premoulded joint filler for each joint in single piece for depth and width required for joint, unless otherwise required by Architect. When more than one piece is required for a joint, fasten abutting ends and hold securely to shape by stapling or other method of positive fastening.

.3 Locate and form isolation joints as indicated. Install premoulded joint filler.

.4 Use 12mm ($^1/_2$") thick premoulded joint filler to separate slabs-on-grade from vertical surfaces and extended joint filler from bottom of slab to within 12mm ($^1/_2$") of finished slab surface unless otherwise noted.

**3.5 Control Joints** To Section 03350: Concrete Finishing.

**3.6 Waterstops**

.1 Install waterstops to provide a continuous water seal. Do not distort or pierce waterstop in such a way as to hamper performance. Do not displace

reinforcement when installing waterstops. Use equipment to manufacturer's requirements to field splice waterstops. Tie waterstops ridgidly in place.

.2 Use only straight heat sealed butt joints in the field. Field weld all corners and intersections.

**3.7 Epoxy Materials**

.1 Mix and apply epoxy materials for reinforcing in accordance with the manufacturers printed instructions.

.2 Brush or spray application is acceptable.

.3 Ensure pot life and tack free times at various temperatures is strictly observed. Mix and apply materials in quantities that can be applied within the specified pot life and follow by concreting while the epoxy is in the proper condition.

**3.8 Placement of Reinforcing**

.1 Store reinforcement on racks and skids to protect from dirt and to retain the fabricated form.

.2 Do not field bend reinforcing.

.3 Before placing, remove loose scale, dirt, oil or other coatings liable to impair bond. Place reinforcement within specified tolerances and secure in position with chairs, spacers and hangers.

.4 Fabricate, place and cover reinforcing steel to CAN/CSA-A23.1, Section 12.

**3.9 Inserts**

.1 Set sleeves, ties, anchor bolts, pipe hangers, inserts, and form openings in concrete floors and walls, as required by other trades. Sleeves, openings, etc., greater than 100 x 100 mm (4" x 4") and not indicated on structural drawings require the Architect's approval.

.2 Ensure sleeves, ducts, pipes or openings do not pass through joists, beams, or columns; except where expressly detailed on structural drawings or as approved by the Architect.

.3 Do not eliminate or displace reinforcement to accommodate hardware. If inserts cannot be located as specified, obtain the Architect's approval of modifications before placing concrete.

.4 Check locations and sizes of sleeves, openings, etc., shown on structural drawings against architectural, mechanical and electrical drawings.

.5 Set inserts according to design drawing as required by non-destructive method for testing concrete.

.6 **Anchor Bolts:**

.1 Place anchor bolts to templates provided by trade supplying anchors prior to placing concrete.

.2 Grout anchor bolts in preformed holes or holes drilled after concrete has set. Formed holes to be at least 100mm (4") in diameter. Drilled holes to be at least 25% larger than diameter of bolts used.

.3 Protect anchor bolts from water accumulations.

.4 Set bolts and fill with approved shrinkage compensating grout.

.7 **Drainage and Weep Holes:**

.1 Form drainage and weep holes.

.2 Install all drainage and weep hole tubes as indicated.

.6 **Dovetail Anchor Slots:**

.1 Install continuous vertical anchor slots with dovetail channel reglets attached to forms where masonry abuts concrete wall or columns.

.2 Install continuous vertical anchor slots with dovetail channel reglets attached to forms at 800mm (2'-8") o.c. where concrete walls are masonry faced.

**3.10 Grouting**

.1 Grout under steel column and beam bearing plates with non-shrink grout to manufacturer's instructions which result in 100% contact over grouted area. Neatly trowel exposed grout edges.

**3.11 Dampproof Membrane/Vapour Barrier Installation**

.1 Install polyethylene film on top on compacted granular fill to underside of slab on grade.

.2 Lap joints 150 mm (6") minimum and seal with tape and acoustic sealant.

.3 Extend dampproof membrane/vapour barrier tight to perimeter of foundation walls and other components interrupting continuity of membrane/barrier, lap up membrane/barrier at edge of walls full thickness of slab, seal with tape and sealant.

**3.12 Proportioning Concrete**

.1 To CAN/CSA-A23.1, Section 14, Alternative 1 Table 11. Design mixes to produce concrete properties designated.

.2 Concrete surfaces subject to foot traffic only; minimum cement content 320 $kg/m^3$.

.3 Concrete surfaces subject to vehicular traffic; minimum cement content 360 kg/$m^3$.

.4 Exterior concrete surfaces subject to de-icing and chemical materials: Class A exposure.

.1 Maximum water/cement ratio: 0.45.

.2 Maximum slump at point of discharge: 75 mm ±25 mm (3" ±1").

.3 Maximum nominal aggregate size: 20 mm ($^3/_4$").

.4 Minimum compressive strength: 30 MPa.

.5 Minimum compressive strength for delamination repairs: 30 MPa.

.6 Range in total air content:

.1 7 percent to 10 percent for concrete with 10 mm ($^3/_8$") maximum aggregate

.2 5 percent to 8 percent for concrete with 19 mm ($^3/_4$") maximum aggregate

.5 Use water reducing agent and air entraining agent as directed. If other admixtures are required to produce specific properties, obtain the Architect's written approval before using. Do not use calcium chloride or other admixtures containing chloride.

**3.13 Production of Concrete**

.1 Use mixed in transit concrete wherever possible.

**3.14 Concrete Placement**

.1 Thoroughly clean forms before placing concrete.

.2 Cast slabs with top surface level or sloped for drainage as indicated.

.3 Prior to placing concrete, obtain the Architect's approval of form work, placement of reinforcing steel, consolidation of subgrade, placement and consolidation of granular base and finished grades. Notify Architect 24 hours before placing concrete.

.4 Do not pump concrete, unless obtaining approval of equipment and mix.

.5 Convey concrete from mixer to place of deposit so as to prevent separation or loss of materials. Maximum time for the operation is 60 minutes. Deposit concrete as close as possible to the final position. Once started, placing must proceed as a continuous operation until the full section is complete.

.6 Place concrete in the final position ensuring that it remains plastic, flows readily between reinforcement, fills forms and surrounds embedded fixtures.

.7 Place in a continuous operation between expansion joints. Clean equipment used for mixing or transporting concrete prior to use. Avoid contamination of concrete with foreign materials.

.8 Consolidate concrete using vibrators or by other approved methods during placing operations. Do not operate a vibrator for longer than 10 seconds in any one location. Work around reinforcement, embedded items, into corners and eliminate air and stone pockets. Ensure that an adequate number of workers are available for this operation.

.9 Ensure finished concrete is dense, uniform, free of air holes or honeycombs and that no segregation of aggregate and cement paste occurs.

.10 Ensure reinforcement and inserts are not distured during placement of concrete.

.11 In locations where new concrete is dowelled to existing work, drill holes in existing work. Place steel dowels of deformed steel reinforcing bars and pack solidly with shrinkage compensating grout to positively position and anchor dowels.

.12 For slab-on-grade pour concrete, and work into mesh and around reinforcing. Lift reinforcing as required to ensure proper location.

.13 Accurately form all openings in concrete required by Division 15: Mechanical and Division 16: Electrical. Refer to those Divisions and the Mechanical and Electrical drawings for sizes and locations. Confirm with those trades the specific methods of forming. If required make allowance in size of openings for future insulation of items.

**3.15** **Finishing** To Section 03350: Concrete Finishing

**3.16** **Curing** To Section 03350: Concrete Finishing.

**3.17** **Surface Patching** To Section 03350: Concrete Finishing.

**3.18** **Clean-up**

.1 Daily: scrape up and remove concrete droppings and debris.

.2 At completion: remove formwork, accessories, equipment and debris. Leave premises in a 'broom-clean' condition.

-End-

# PART 1 - GENERAL

**1.1 Scope**

.1 Comply with Division 1: General Requirements.

.2 Provide materials, labour and equipment for all concrete finishing as shown on the drawings, described herein, or as necessary to complete the work.

**1.2 Related Works Under Other Sections:**

.1 Section 03300: Cast-in-Place, [provide concrete finishing]

**1.3 Standards**

.1 Comply with requirements of Ontario Building Code, Ontario Occupational Health and Safety Act and municipal building By-laws and Regulations.

.2 Except where modified by the drawings, conform to the following:

| STANDARD | TITLE |
|---|---|
| ACI 301 | Tolerances of Concrete Construction. |
| CAN/CSA-A5-M88 | Portland Cements. |

**1.4 Qualifications**

.1 Work under this section to be carried out by a company with minimum (5) years experience on projects of similar size and character and must be a member of the Concrete Finishing Contractors Association of Canada.

**1.5 Examination**

.1 Examine all surfaces and conditions upon which the work of this section depends. Report all discrepancies to the Architect.

**1.6 Co-ordination and Co-operation**

.1 Co-operate with other trades on concrete related work. Give other trades all information regarding materials or items supplied by this trade and affecting work of other trades.

.2 Examine all drawings, showing work of other trades on which this work is in any way dependent, and report to the Architect any errors or discrepancies affecting this work.

**1.7 Special Protection**

.1 Protect work of other sections while work of this section is being performed.

.2 Do not pile or store materials on slabs, nor wheel or handle materials thereover until design strength of concrete is verified.

.3 Protect finished floors as soon as possible against damage by traffic and other trades.

## PART 2 - PRODUCTS

**2.1 Materials**

.1 **Portland cement:** To CAN/CSA-A5, Type 10, Normal.

.2 **Fine aggregate:** To CAN/CSA-A23.1, graded within to following limits.

.1 100% by weight passing a 10 mm ($^3/_8$") sieve.

.2 90% by weight passing a #4 sieve and not more that 8 - 30% by weight passing a No. 50 sieve.

.3 **Mixing water:** To CAN/CSA-A23.1.

.4 **Saw Cut Control Joint Sealant:** Two component epoxy urethane, catalyst cured self-leveling sealant. Prime damp joints with recommended primer.

***Acceptable Products:*** Or Approved Equal

| | |
|---|---|
| Grace | 'Daraweld-C' |
| Master Builders | 'Embeco Mortar' |
| W. R. Meadows | 'Bonoflex' |
| Sternson | 'Loadflex' |

.5 **Interior Curing Compounds:** Clear liquid chlorinated rubber to ASTM C309, Type 1. No darkening or discolouration of concrete surfaces acceptable; compatible with, and not impairing bond of, superimposed material.

***Acceptable Products:*** Or Approved Equal

| | |
|---|---|
| Conchem | 'Triple Seal' |
| CPD Services | 'Cure and Seal' |
| Master Builders | 'Master-Kure CR' [clear] |
| Sternson | 'Florseal' (exceeds ASTRA C-309) |
| Meadows | 'CR-26' |
| CC Chemicals | 'Acrylic curing compound' |

.6 **Special Sealing Compounds:** Clear liquid concrete surface hardware as indicated drawings and/or specified within.

***Acceptable Products:*** Or Approved Equal

| | |
|---|---|
| W.R. Meadows | 'Curehard' |
| Sternson | 'Sealhard 400' |

.7 **Resurfacing Bonding Agents:** Latex emulsion for use as a bonding agent for patch and crack repairs to concrete slab.

***Acceptable Products:*** Or Approved Equal

| | |
|---|---|
| W. R. Meadows | 'Sealtight - Bodlok' |
| Sternson | 'Surfacrete Concentrate' |

.8 **Grout Mixes:**

.1 Patching and Crack Filler [for repairs] to same colour, texture, strength and finish as adjacent surfaces.

1 part portland cement
2 parts fine concrete sand
recommended latex water additive.

.9 **Curing Membrane:** To ANSI/ASTM C171, CAN/CSA 51.34, Type 1 .

***Acceptable Products:*** Or Approved Equal
Waterproof paper
CIL [Plastics] '0.15 mm(6 mil) polyethylene film'
Polyethylene coated burlap

## PART 3 - EXECUTION

**3.1 Finishing Interior Concrete Slabs**

.1 Conform to CAN/CSA-A23.1, and applicable specifications of the Concrete Floor Contractors Association. Co-ordinate with Section 03300: Cast-in-Place Concrete for finishing of interior concrete floor slabs.

.2 After rough levelling of monolithically placed concrete floors, fine grade concrete to screed lines using straight edge, strike off, darbys, mechanical floats, trowels before free moisture (bleeding) rises to the surface. Finish, supply and apply all specified curing compound and hardness where indicated on drawings and/or specified herein.

.3 This section to be responsible for control and supervision of placing and finishing of the work.

.4 Screed concrete to correct elevations, slopes, and recesses, etc. as shown on drawings.

.5 Complete all required edging prior to floating. Ensure all coarse aggregates are covered and that edger does not leave too deep an impression in top of slab. Do not use edging tool at control joints.

.6 Darby or bull float surface, smoothing and leveling, concrete. Allow bleed water and sheen to disappear.

.7 Float surface with steel trowel to a smooth even finish, when concrete has hardened enough for a man to leave only slight foot prints on surface.

.8 Do not bring water and fines to surface by over floating. Where longer floating is required, repeat floating operation after sheen has disappeared and concrete has further hardened.

.9 Unless otherwise specified do not apply water to the concrete surface to assist in finishing operations.

.10 Apply hardener/sealing/curing compounds where specified and to manufacturer's printed directions.

.11 Where floor drains occur, floor shall be level around walls and have minimum 6 mm per 300 mm ($^1/_4$" per foot) uniform pitch to drains, unless indicated otherwise.

.12 Finish floors to a hard, dense, level surface free from pinholes, imperfections and trowel marks.

**3.2 Curing Interior Concrete**

.1 Cure concrete surfaces not in contact with forms by applying curing-sealing compound according to manufacturers printed instructions immediately after disappearance of surface water sheen. The applied material must not discolour surfaces and be compatible with and not impair level of any material laid on the surface.

.2 Immediately after placing, protect concrete from premature drying, sunshine exposure, excessively hot or cold temperature during proper hydration of cement in the concrete. Keep moisture loss to a minimum.

**3.3 Isolation Joints**

.1 **Interior Concrete:** To Section 03300: Cast-in-Place Concrete.

**3.4 Control Joints**

.1 Provide all sawcut and/or tooled control joints as indicated on drawing and/or specified herein.

.2 Continue reinforcing uninterrupted through joints at 3 m (10 ft) on centre in each direction and or as shown on drawings.

.3 Commence sawing as soon as concrete has hardened sufficiently to prevent excessive ravelling. Ensure that saw does not touch or disturb reinforcing steel. Sawcuts shall not vary more than 12 mm ($^1/_2$") from true joint alignment. Power saw cut 6 x 12 mm ($^1/_4$" x $^1/_2$") deep control joints directly along centre line of construction joints in floor slabs-on-grade. Power saw cut control joints of from 3 m ($^1/_8$") to 5 mm ($^3/_{16}$") wide x depth equivalent to from $^1/_4$ to $^1/_3$ slab thickness, but no less than 32 mm ($1^1/_4$") deep in slabs-on-grade. Clean joints after cutting. Fill to within 6 mm ($^1/_2$") of surface with dry silica sand. Fill remaining voids of following exposed joints with saw cut joint sealant;

.1 Joints in floor surfaces to remain exposed.

.2 Joints in floor surfaces to receive thin film type coatings.

**3.5 Crack and Patch Repair**

.1 Repair with specified products to satisfaction of Architect.

**3.6 Clean-up**

.1 Daily: scrape up and remove concrete droppings and debris.

.2 At completion: remove formwork, accessories, equipment and debris. Leave premises in a 'broom-clean' condition.

-End-

# PART 1 - GENERAL

**1.1 Scope**

.1 Comply with Division 1: General Requirements.

.2 Provide materials, labour and equipment for installation of unit masonry, reinforcing and other components as shown on the drawings, described herein, or as necessary to complete the work.

**1.2 Related Work Under Other Sections**

.1 Section 05120: Structural Steel, [co-ordinating work with this section.]

.2 Section 6101: Rough Carpentry (Roofing), [co-ordinating work with this section.]

**1.3 Applicable Codes and Standards**

.1 Technical Builders Bulletins, Section 20 'Above Grade Masonry'.
.2 Ontario Building Code 'Plain and Reinforced Masonry'.
.3 CAN3-S304 'Masonry Design for Buildings'.
.4 CAN3-A370 'Connectors for Masonry'.
.5 CAN3-A371 'Masonry Construction for Buildings'.
.6 CAN/CSA-A405 and Brick Institute of Americas Standards "Design and Construction of Masonry Chimneys and Fireplaces"
.7 ULC fire-rated assemblage requirements.

**1.4 Co-ordination and Co-operation:**

.1 Co-ordinate and co-operate with all other trades to ensure satisfactory and expeditious completion of the work.

**1.5 Inspections and Tests**

.1 Inspect previously prepared bearing surfaces. Reject unsatisfactory surfaces upon which masonry depends. Commencement of work implies acceptance of the bearing surface.

.2 If suppliers or manufacturers cannot provide an acceptable recent independent test report [i.e. within the last three [3] years] attesting to the materials specification, obtain and pay for the required tests.

.3 The Architect shall be the sole judge as to acceptability of work. If any work is rejected, promptly remove from site and replace with proper materials and workmanship as required. Pay for any tests required to determine cause of failures.

**1.6 Delivery Storage and Handling**

.1 Handle and store mortar materials to CAN3-S304 in a dry state with manufacturer’s seals and labels intact.

.2 Stack units, strapped to delivery pallets, clear of ground and under clean and dry weathertight cover.

**1.7 Protection**

.1 Protect stored materials against damage. Remove rejected or damaged materials from site.

.2 Protect surrounding surfaces and work of others. Install temporary protective covers, nosings, etc. Remove before final inspection.

.3 During construction and until completed and protected by flashings or caps, keep masonry work, particularly cavities, dry by using waterproof, non-staining coverings extending over and down side surfaces to protect walls and mortar cure from wind-driven rain. Maintain wall cavities free of mortar droppings to prevent bridging and to ensure drainage. Leave temporary clean out openings at base of cavity and afterwards reinstate when mortar cleaned.

.4 Protect completed work from marking or other damage, particularly from overhead mortar droppings.

.5 Provide temporary protection to interior of building existing weatherproof surface disturbed prior to installing new masonry.

.6 Provide adequate temporary bracing of new and existing masonry work during construction until permanent lateral support in place.

## PART 2 - PRODUCTS

**2.1 Materials**

.1 **Mortars:**

.1 **Cement** - CAN/CSA-A5 - 'Portland Cement'.

.2 **Cement -** CAN/CSA-A8 - 'Masonry Cement'

.3 **Sand** - CSA -A82.56 - 'Aggregate for Masonry Mortar'.

.4 **Water** - Drinking quality.

.5 **Lime -** Hydrated Lime to ASTM C207 and ASTM C5

.6 **Lime Putty -** Soak Hydrated Lime not less than 12h in water.

.7 **Plasticizer:** (for structural purposes)

***Acceptable Products:*** Or Approved Equal

Master Builders 'Omicron'
Sternson 'Sterad 300'

.8 **Mortar Colours** - Non-fading, non-staining, lime-proof metallic oxide pigments.

***Acceptable Manufacturers:*** Or Approved Equal

Northern Pigment

.2 **Mortar Mixes:**

.1 **Non-staining Mortar [for above grade-grey]**
**Type 'S':** to CSA -A179 [12.5 MPa]
1 part cement
$^1/_2$ part lime putty
4-$^1/_2$ parts sand
Plasticizer to manufacturers directions

.2 **Pointing Mortar [for repairs]:**
1 part cement
$^1/_8$ part lime putty
3 parts sand [carefully selected to match existing colour]

.3 **Non-shrink Grout [for inserts, bearing plates, etc.]:** Pre-mixed, minimum strength 4 MPa at 28 days.

***Acceptable Products:*** Or Approved Equal

| | |
|---|---|
| C.C. Chemicals | 'In Pakt' |
| CPD Services | 'Non-shrink Grout' |
| Master Builders | 'Masterflow 713' |
| Sternson | 'Ferrogrout' |
| Meadows | 'U-3' |

.3 **Handling Mortar:** Prepare only sufficient mortar usable within one hour of mixing. Wash out mixing box, transport boards, mixing and handling tools between each load. Add only enough water to maintain mix at a stiff workable consistency.

.4 **Masonry Reinforcement, Ties and Concrete Block Ties:**

.1 **Single Wythe Concrete Block Reinforcement:** To CAN3-A370 and A371-M84; hot dipped galvanized ladder type 4.76 mm ($^3/_{16}$") side rods and 4.76 mm ($^3/_{16}$") cross rods, with preformed corner pieces.

***Acceptable Products:*** Or Approved Equal

| | |
|---|---|
| Blok-Lok | 'Blok-Lok BL30 Extra Heavy Duty' |
| Dur-O-Wal | 'Ladur DW200 Extra Heavy Duty' |

.2 **Composite Brick Concrete Block Reinforcement:** To CAN3- A370 and A371: hot dipped galvanized truss type 4.76 mm ($^3/_{16}$") side rods and 4.76 mm ($^3/_{16}$") cross rods, with preformed corner pieces.'

***Acceptable Products:*** Or Approved Equal

| | |
|---|---|
| Blok-Lok | '4 wire Blok-Trus BL32 Extra Heavy Duty' |
| Dur-O-Wall | 'Truss Double DW120 Extra Heavy Duty' |

.5 **Concrete Block:**

.1 To CAN3-A165.1 with units to match existing including all specialty shapes, from one manufacturer for patching; uniform in colour, shade and texture; test-rated at:

.1 **S/15.0/A:** 75 percent solid for exposed interior block walls.

.2 Provide test reports attesting to the requirements of the specified material.

***Acceptable Products:*** Or Approved Equal

Day and Campbell 'Ty-lon (Limestone Finish)'

Imperial Concrete Block for all patching and matching existing by Santerra Stonecraft, Windsor , ON, 1-888-369-3449

.6 **Face Brick:**

.1 To CAN/CSA-A82.1, Grade SW, Type FBS maximum water absorbtion of 8 percent in 24 hour cold water submersion test and complying with the freeze-thaw test in CAN3-A82.2. Provide a recent or new test report altesting to these requirements. To match existing size, colour, type and texture.

.7 **Weep Hole Vents:** Purpose-made plastic or galvanized steel, designed to drain cavities to exterior by means of a 10 mm ($^3/_8$") sloped tube, spaced horizontally at 600 mm oc (2 ft) in vertical joints at bottom of cavities [i.e. at bearing courses, at shelf angles, and at lintels].

***Acceptable Products:*** Or Approved Equal

Dur-O-Wall 'Weep Holes'
Goodco 'Goodco 'Vents'

Guenette 'No. 20'

.8 **Sheet Membrane Flashing:** 1.5 mm thick, self stick membrane .

***Acceptable Products:*** Or Approved Equal

Henry/Bakor 'Blue Skin TWF'

## PART 3 - EXECUTION

**3.1 Preliminary Work**

.1 Give at least [ 5 ] days notice to the Architect before starting work.

**3.2 General**

.1 Do all work in accordance with CAN3-A371, Masonry Construction for Buildings and CAN/CSA-A405 (see #6 in 1.3).

.2 Use lightweight concrete blocks for exposed interior surfaces of walls or partitions. Regular weight blocks may be used for concealed surfaces. Lay and point exposed masonry with extreme care as to evenly distribute masonry units

to prevent patches and streaks and to produce a homogeneous surface for painted finish.

**3.3 Co-ordination**

.1 Co-ordinate masonry work with work of other trades. Obtain and build in fittings supplied by others. Instruct masonry trade to fit work of others, as required.

.2 Distribute units of varying colours and/or textures throughout the wall surface to avoid spottiness in finished surface. Do not use units with colours or textures excessively contrasting with the overall range. Reject chipped, blemished, cracked or defective units.

**3.4 Grades, Lines and Levels**

.1 Ensure grades, lines and levels are accurate, plumb, square and true to line.

**3.5 Coursing**

.1 Match existing coursing pattern.

.2 Erect masonry with level, accurately spaced courses.

.3 Align coursing horizontally and vertically.

.4 Take particular care at corners and reveals.

.5 Construct masonry evenly in maximum lifts of 1.5 m (5 ft) per day.

**3.6 Tolerances** To CAN3-A371, Clause 5.3.1:

.1 **Plumb:** Maximum tolerance of 6 mm in 3 m ($^1/_4$" in 10 ft).

.2 **Level:** Maximum tolerance of 6 mm in 6 m ($^1/_4$" in 20 ft).

.3 **Line:** Maximum tolerance of 6 mm in 6 m ($^1/_4$" in 20 ft).

**3.7 Cutting**

.1 Lay out masonry work to ensure a minimum of cut units.

.2 Where necessary cut units with approved masonry saw.

.3 Make cuts straight, square and free from chips or breaks.

.4 Reject cuts with fractures on face edge.

.5 Do not install cut units at corners or reveals.

**3.8 Beds**

.1 Place units on full mortar beds.

.2 Butter ends of units for full vertical joints.

.3 Partially filled beds or partially filled vertical joints are not acceptable.

.4 At end of each days work, securely cover exposed and curing work.

.5 Concrete masonry units to have face shells and their end joints fully filled with mortar, and joints squeezed tight together. Fill webs at cores; to be reinforced and grouted and strike flush at core taking care to prevent mortar from falling into core.

**3.9 Joints**

.1 As the work proceeds, wipe surface with a rough cloth to remove unsightly mortar stains.

.2 Unless otherwise specified, when mortar is 'thumb-print' hard, tool joints evenly, concave, smooth and straight where exposed to view, strike flush elsewhere or where indicated on drawings or specified herein. Press mortar tight against masonry units on both sides of joints. Remove excess material or burrs left after jointing. Use trowel or rub with burlap bag.

.3 Ensure vertical joints form smoothly into horizontal joints, all uniformly concave approximately 10 mm ($^3/_8$") high.

.4 Throwing mortar droppings into joints, deep or excessive furrowing of bed joints, using mortar that has taken initial set is strictly prohibited. Where adjustment must be made after mortar has started to set, remove mortar and replace with fresh supply.

**3.10 Lintels, Sleeves, etc.**

.1 Accurately build in lintels, sleeves, ties, frames, plugs, hangers, anchors, plates and other fitments.

**3.11 Expansion Joints**

.1 As shown on the drawings and as required by CAN3-S304-M84 and OBC.

.2 Accurately construct weather barred reveals with vertical joints plumb and true and as detailed on drawings.

.3 Build horizontal expansion joints to proper clearances.

**3.12 Control Joints**

.1 As required by CAN3-S304 and OBC: material to suit size and shape of joint as detailed on drawings.

.2 Construct joints in a toothed staggered pattern as detailed on drawings.

.3 As wall is being constructed place soft control joint backer pad into joint (see 2.6) in the longest continuous available lengths.

.4 Clear mortar from joint and prepare for sealing with specified control joint back up rod (see 2.7).

**3.13 On Completion**

.1 After mortar has cured and if staining has occurred, wash down surfaces as follows. Protect other work during washdown operations.

.1 **For Concrete Block, Brick and Concrete Faces:** Wet surface with clear water. Scrub in a zinc sulphate solution [i.e. zinc sulphate 200 g. to 1 L water] and remove stains with a fibre brush. Thoroughly flush with clean water.

**3.14 Clean-up**

.1 Carefully rub down finish surfaces and remove stains using a rough cloth and/or fibre brushes. Remove mortar droppings, debris and broken or chipped units.

**3.15 Maintenance**

.1 Replace or repair any work damaged during construction or warranty period, including removing and neutralizing efflorescence.

-End-

# PART 1 - GENERAL

**1.1 Scope**

.1 Comply with Division 1: General Requirements.

.2 Provide materials, labour and equipment for the installation of structural steel framing, anchors, support angles, brackets, loose lintels, etc., as shown on the drawings, described herein or as necessary to complete the work.

**1.2 Related Work Under Other Sections**

None

**1.3 Applicable Codes and Standards**

.1 Comply with requirements of Ontario Building Code, Ontario Occupational Health and Safety Act and municipal building By-laws and Regulations.

.2 **Structural steel and joists:** To CAN/CSA-G40.21, as listed in CISC Handbook, 'Code of Standard Practice of Steel Construction'.

.3 **Connections, details and bolting:** To CAN/CSA-S16.1.

.4 **Welding:** To CSA-W59

.5 **Welders:** Approved by the Canadian Welding Bureau under CSA-W47.1.

**1.4 Co-ordination and Co-operation:**

.1 Co-ordinate and co-operate with all other trades to ensure satisfactory and expeditious completion of the work.

.2 Provide all necessary anchors, templates, sleeves, inserts and accessories required to be fixed to or inserted in the work of other sections and set in place. Inform related sections as to their locations.

**1.5 Examination**

.1 Examine all surfaces and conditions upon which the work of this section depends. Report all discrepancies to the Architect.

**1.6 Delivery, Storage and Handling:**

.1 Deliver and store materials undamaged in dry area, stacked to allow free air circulation.

.2 Deliver items to site in the largest practical sections and tag or mark (chalk only) items for identification.

.3 Replace all items received in damaged condition and/or as deemed to be defective by the Architect.

**1.7 Shop Drawings**

.1 Submit [ 4 ] copies of shop drawings, schedules and erection diagrams, clearly showing:

.1 The signed stamp of a professional structural engineer registered in Ontario.

.2 Shop details, cuts, bracing, copes, moment connections, connections, holes, threaded fasteners, rivets and welds. Indicate welds using welding symbols to CSA-W59-M1989. Show type, size, spacing, doubled units, bridging, plates, anchors, anchor bolts, and other fitments.

.3 Erection details, methods, sequence of erection and type of erection equipment and to show correlated erection marks.

.4 Indicate all hot dipped galvanizing.

.5 Requirements by all authorities having jurisdiction, submit calculations and such further proof required to conform to the regulations, codes and by-laws.

## PART 2 - PRODUCTS

**2.1 Materials**

.1 **Structural Steel:** To CAN/CSA-G40.21. Grade 300W for rolled shapes and plates. Grade 350W for hollow structural sections. Steel pipe columns to ASTM A53-77a, Type E or S Grade B, schedule 40 and 80.

.2 **Connectors:**

.1 **Bolts, nuts, and washers:** To ASTM A325.

.2 **Rivets:** To CAN/CSA -G40.21.

.3 **Weld materials:** To CSA -W59.

.4 **Weld Electrodes:** To CSA-W48.1.

.5 **Anchor Bolts:** To ASTM A307.

.3 **Primer:**

.1 **General Primer:** To CAN/CSA-1.40 'Primer, Structural Steel, Oil Alkyd Type.'(*for interior steel surfaces*) and/or to CAN/CGSB-1.140-M89 'Oil Alkyd type Red Lead, Iron Oxide Primer' (*exterior steel surfaces*).

.2 **Zinc Rich Primer (hot dipped galvanized touch-up work and work specified):** To CAN/CSA-1-GP-181M 'Coating, Zinc Rich, Organic, Ready Mixed'.

.4 **Non-Shrink Grout**: Pre-mixed compound; non-metallic aggregate to Section 04211 Paragraph 2.2.6.

***Acceptable Products:*** Or Approved Equal

| | |
|---|---|
| CC Chemicals | 'In-Pakt' |
| Conchem | 'Super Grout 1000' |
| CPD Services | 'Non-Shrink Construction Grout' |
| Master Builders | 'Masterflow 713' |
| Meadows | 'V-3 Pre-Mixed' |
| Sternson | 'M-Bed Standard' |
| Webster | 'Tartan No-Iron' |

**2.2 Design Criteria**

.1 All components to be designed in accordance with CAN/CSA-S16.1 and to design loads indicated on drawings.

.2 Use high strength bolts for structural connections between members which are subject to stress reversal or which carry horizontal or axial forces to their supporting columns or beams (friction type connection), unless otherwise shown on drawings.

.3 Welding maybe used to attach connection angles to beam webs, unless otherwise indicated.

**2.3 Fabrication**

.1 Fabricate structural steel to CAN/CSA-S16.1, and to reviewed shop drawings, with Structural Engineers seal and to field dimensions.

.2 Provide loose lintels, wall plates, bearing plates and anchors to relate to other sections as required.

.3 Provide punched hole connectors and anchors as required for attachment to other work.

.4 Reinforce openings in members to maintain full design strength.

.5 Connections shall be bolted or shop welded or field welded.

.6 Fabricate work complete with components required for anchoring, bolting or welding to structure; standing free or resting in frames by welding.

.7 Fabricate items in largest possible sections. Form joints in field by welding.

.8 Fabricate work true to dimensions, square, plumb and level. Joints and intersecting members shall be securely fitted with adequate fastenings. Make finished work with true places set to receive related work of other sections and/or subsequent work of this section.

.9 Fabricate, fit and assemble work in shop where possible.

.10 Fill or Grind exposed welds, smooth and flush. Fill all grind marks and other imperfections ready for prime painting. Finish work free of weld splatter.

.11 Fill open joints, depressions and seams with metallic paste filler or by continuous brazing or welding and grind smooth to true, sharp arises and profiles.

.12 Beam connections shall be adequate to resist the reactions produced by the framing and/or load connections.

.13 Mill bearing plates unless plate is sufficiently flat to give contact bearing between surfaces.

.14 Fabricate structural steelwork which will be architecturally exposed to ensure uniform surfaces and neat joints. Continuously seal as weld connections exposed to exterior conditions. Grind smooth all trade manes and identification marks.

**2.4 Finishing**

.1 **Primed Finish:**

.1 After fabrication thoroughly clean, scrape and remove rust, mill scale, grease and other extraneous material. Solvent clean to SSPC-SP1-63.

.2 Apply full smooth coat of primer, work primer into corners and open spaces such that all visible and accessible surfaces are fully covered.

.3 Deliver all items to site with primed surfaces undamaged to satisfaction of the Architect.

.4 Do not prime surfaces and edges to be field welded, and friction type connections.

## PART 3 - EXECUTION

**3.1 Preliminary Work**

.1 Give at least [ 5 ] days notice to the Architect before starting work.

**3.2 Erection**

.1 Erect, connect and secure members to CAN/CSA-S16.1 and in accordance with reviewed shop drawings and O.B.C.

.2 Provide all necessary temporary supports and bracings.

.3 Pay for all hoisting and lifting of steel members.

.4 Do drilling, cutting and fitting necessary to attach work to adjoining components and surfaces and make it complete.

.5 Use bituminous point, butyl tape or other suitable and approved means, to prevent electrolytic action between, dissimilar metals, metal and concrete or masonry.

.6 Do not oil, soak in oil, grease or lubricate in anyway; high strength bolts, nuts and washers prior to use.

.7 Erect individual members to a tolerance of 1:500.

**3.3 Field Changes**

.1 Obtain Structural Engineers written permission prior to field cutting or alteration of any member, connector, or altering a detail.

**3.4 Completion**

.1 Touch up with primer over field-installed items, such as bolts, rivets, welds, burned, scratched or abraded surfaces to Primer sections 2.1.3 and 2.5 above.

.2 Immediately after erection, remove loose scale, rust, oil, dirt, etc., from exposed steel, grind smooth all welds and apply a full bodied coat of primer to same or heavier thickness than shop primer.

.3 Do not remove erection equipment from site until installation has been inspected and accepted in writing by the Structural Engineer.

.4 Remove or conceal trade marks or disfiguring marks on exposed steel surfaces.

**3.5 Clean-up**

.1 Remove tools, equipment, trash, debris and waste materials from site. Leave 'broom-clean'.

-End-

# PART 1 - GENERAL

**1.1 Scope**

.1 Comply with Division 1: General Requirements.

.2 Provide materials, labour and equipment for the installation of cold-formed lightweight load-bearing steel framing as shown on the drawings, described herein or as necessary to complete the work.

.3 This includes for exterior wall framing:
- .1 Cold-formed load bearing steel studs, girts, channels and special shapes.
- .2 Accessories, attachments and fastenings.

**1.2 Related Work Under Other Sections:**

.1 Section 04211: Basic Unit Masonry, [co-ordinating work with this section.]

.2 Section 06100: Rough Carpentry, [co-ordinating work with this section.]

.3 Section 06200: Finish Carpentry, [co-ordinating work with this section.]

.4 Section 07214: Fibre Insulation, [co-ordinating work with this section.]

.5 Section 08131: Steel doors and Frames, [co-ordinating work with this section.]

.6 Section 09111: Steel Stud Framing, [installation of all studs, accessories, etc.]

.7 Section 09250: Gypsum Board, [co-ordinating work with this section.]

**1.3 Applicable Codes and Standards**

.1 Comply with requirements of Ontario Building Code, Ontario Occupational Health and Safety Act and municipal building By-laws and Regulations.

.2 **Design:** To National Association of Architectural Metal Manufacturers [NAAMM] standards.

.3 **Materials:** To CAN/CSA-S136 'Cold-Formed Steel Structural Members'.

.4 **Welding:** To CAN/CSA -W47.1, and W59

.5 **Connectors:** To CAN/CSA-S16.1.

.6 **Assemblies:** To CAN/ULC requirements.

.7 **Galvanizing:** To ASTM A446.

.8 **Deflection Limits:** To sizes, spans and spacings for maximum deflection of l/360 of the clear spans for live, dead and dynamic loads.

**1.4 Samples**

.1 Submit a copy of the successful manufacturer’s product catalogue clearly marked and related to the shop drawings. For custom-formed members, submit a 300 mm (12") length, tagged with structural calculations defining its design limits.

**1.5 Co-ordination and Co-operation**

.1 Co-ordinate and co-operate with all other trades to ensure satisfactory and expeditious completion of the work.

**1.6 Examination**

.1 Examine all surfaces and conditions upon which the work of this section depends. Report all discrepancies to the Architect.

**1.7 Delivery, Storage and Handling**

.1 Deliver and store materials undamaged in dry area, stacked to allow free air circulation.

.2 Deliver items to site in the largest practical sections.

.3 Replace all items received in damaged condition and/or as deemed to be defective by the Architect.

**1.8 Shop Drawings**

.1 Submit [ 6 ] copies of shop drawings, schedules and erection details, clearly showing:

.1 Signed stamp of a professional structural engineer registered in Ontario.

.2 Erection details, joist spacing, stud spacing, bearing and anchorage details, framed openings, bridgings, bracings, accessories, schedule of materials, gauges, depths, thicknesses, forms, cambers, coatings, fasteners and loadings.

.3 Calculations and engineering data to verify that assemblies are capable of meeting or exceeding design criteria and are as required by the Architect.

## PART 2 - PRODUCTS

**2.1 Framing Sections:**

.1 **Cold-formed steel members:** Bearing tracks, joists, studs, girts, bracings, bridgings, special shapes and accessories manufactured to ASTM C955 and to CAN/CSA-S136, galvanized to ASTM A-446 with minimum G.60 coating. To 18 gauge (0.0478") thickness, minimum yield strength 230MPa (33ksi), sizes, and spacings as detailed and as shown on approved shop drawings.

***Acceptable Manufacturers:***
Bailey
Canadian Rolling Mills
CGC

**2.2 Isolating Strips:** Rubberized, moisture resistant, 3 mm ($^1/_8$")thick EPDM strip with self-adhesive surfaces, to widths required to isolate steel bearing tracks from un-insulated or dissimilar materials.

**2.3 Accessories:** Anchors and fastenings to manufacturers requirements.

**2.4 Field Primer:** To CAN/CGSB 1-GP-198M; cementitious, for galvanized surfaces.

**2.5** **Weld materials:** To CSA -W59

**2.6** **Weld Electrodes:** To CSA-W48.1

**2.7** **Special Anchors:** Used for anchoring to existing 'Siporex' roof deck material use TUP4 nylon expansion anchor c/w stainless steel A4 screw or lag bolt with washer size to suit application by Friulsider as supplied by Profast Fastening Solutions 1-877-654-7799.

## PART 3 - EXECUTION

**3.1 General**

.1 Install steel framing to NAAMM standards, including:

.2 Piece-by-piece, stick built or fabricated panels assembled on or off-site are acceptable.

.3 Self-tapping machine screws or calculated weld connections are acceptable.

.4 Make cuts with saw or machine shear. Do not torch cut any member.

.5 Touch up steel surfaces or edges exposed by welding or cutting.

**3.2 Anchorage**

.1 Install bearing tracks with continuous isolating strips and anchors of size, penetration, type and spacing shown on the reviewed shop drawings. Butt track intersections evenly and securely.

.2 Use special punch bits to install special anchors into 'Siporex' material. Perform pull out tests to an average of 250kg (550lbs) strength. All screws and bolts shall achieve a min shear strength of 280kg (625lbs).

**3.3 Stud System**

.1 Locate studs of sizes, gauges, type and spacings shown on reviewed shop drawings.

.2 Double studs at intersections, corners, openings.

.3 Secure studs plumb, square, fully seated in bearing tracks and accurately spaced.

.4 Provide bracing as required.

.5 Do not splice bearing studs.

.6 Machine screw or field weld components to form a complete bearing wall panel system, plumb, square and secure.

**3.4 Field Tolerances**

.1 **Vertical alignment [plumb]:** Within l/960 of length.

.2 **Horizontal alignment [level]:** Within l/960 of span.

.3 **Spacing of studs and joists:** Within 3 mm ($^1/_8$") of design spacing.

.4 **Squareness of any panels:** Within 3 mm ($^1/_8$") of design dimensions.

**3.5 Clean-up**

.1 Remove tools, equipment, trash, debris and waste materials from site. Leave 'broom-clean'.

-End-

# PART 1 - GENERAL

**1.1 Scope**

.1 Comply with Division 1: General Requirements.

.2 Provide materials, labour and equipment for the installation of rough carpentry shown on the drawings, described herein or as necessary to complete the work.

**1.2 Related Work Under Other Sections:**

None

**1.3 Applicable Codes and Standards**

.1 Comply with requirements of Ontario Building Code, Ontario Occupational Health and Safety Act and municipal building By-laws and Regulations.

.2 **Lumber:** Identifiable by the NLGA grade stamp of an agency certified by The Canadian Lumber Standards Accreditation Board.

.3 **Pressure treated wood:** To CAN/CSA -O80 Series. Identifiable by the ULC classification label.

.4 **Lumber fastenings:** To OBC Section 4.3.1 and Part 9.

**1.4 Delivery, Storage and Handling**

.1 Delivery all materials as specified any defective, damaged, warped material or material deemed to be inferior to the specification by the Architect will be promptly replaced.

.2 All materials shall be storaged and stacked in order to prevent damage from exposure to moisture.

**1.5 Samples**

.1 Provide 300 mm (12") long sample pieces of all pressure preserved wood components to be exposed to view. The samples will be reviewed by the Architect for colour and quality, the samples will be adjusted until the Architect is satisfied. The accepted samples will serve as a standard for all other work.

**1.6 Co-ordination and Co-operation:**

.1 Co-ordinate and co-operate with all other trades to ensure satisfactory and expeditious completion of the work.

.2 Provide and install all necessary components specified under this section, required to be fixed to or inset in the work of other sections. Inform related sections as to their locations.

# PART 2 - PRODUCTS

**2.1 Materials**

.1 **Lumber Materials:**

.1 **Lumber:** [Eastern White Spruce], [Eastern Red Pine] [Douglas Fir] [grade stamped] softwood S4S, kiln dried to maximum 19 percent

moisture content, to CAN/CSA-O141 and NLGA Standard Grading Rules for Canadian Lumber [1984], unless shown otherwise.

.2 Lumber for each type of structural component; of same species and grade.

.3 Use machine stress-rated lumber wherever possible to CAN/CSA-O86, Table 53; do not use glued end or finger-jointed lumber for framing.

.4 **Lumber:** To OBC Subsection 9.3.2 and as follows:

| LUMBER | MINIMUM GRADE |
|---|---|
| Framing [Studs, joists, beams, columns] | Structural No. 1 |
| Board [Floor, wall, roof supports] | Standard No. 2 |
| Backing [Furring, blocking, grounds, bucks] | Standard No. 2 |
| Roof [Cants, curbs, nailers, sleepers, pressure treated] | Standard No. 2 |

.2 **Plywood Blocking:** Exterior grade Douglas Fir Plywood, To CSA-O121, sheathing grade.

.3 **Building Paper:** To CAN/CGSB 51.32-M77 laminated type.

.4 **Vapor Barrier:** Polyethylene Film; to CAN/CSA-51.34, Type 2, 6 mil thick.

.5 **Adhesive:** To CAN/CSA-71.26, cartridge loaded.

.6 **Fastenings and Hardware:**

.1 Spiral or annular grooved nails, spiral spikes or heavy duty staples; to OBC Subsection 9.23.3.

.2 For exterior applications, interior high-humidity areas and in preservative treated applications; hot dip, galvanized fastenings to CAN/CSA-G164.

.3 For other sight-exposed fasteners and hardware; primer paint coating to CAN/CSA-1-GP-181M.

.4 **Specialty hardware types:**

.1 **To hollow masonry and gypsum board walls:** Toggle type bolts.

.2 **To solid masonry and concrete surfaces:** Expansion shield with lag screw, or lead plug with wood screw.

.3 **To structural steel:** Bolts through drilled holes,
OR

.3 **To structural steel:** Welded stud bolts,
OR

.3 **To structural steel:** Power driven, self-tapping screws.

.5 **Screws:** To be stainless steel and/or brass with flat countersunk heads, of length and size to ensure positive fastening or as noted on drawings.

.6 **Expansion Shields:** Lead shield type.

.7 **Surface-applied Wood Preservatives (for exposed cut surfaces):** To be copper naphthenate solutions containing a minimum of 2% copper. Use all manufacturers precautions in using the products.

.1 **For exterior paint, stained or natural finishes on air exposed lumber:** To manufacturers recommendations.

***Acceptable Products:***

| | |
|---|---|
| Hickson | 'Wolman (Cedar tone)' |

.2 **For interior and/or exterior concealed or covered lumber as specified:** To manufacturers recommendations.

***Acceptable Products:***

| | |
|---|---|
| Osmose | 'Pentox Green' |
| Solignum | '1-4-2, 1.35' |

.8 **Pressure Preservatives:** To CAN/CSA-O80 P5 Series-M89, water-borne preservatives vacuum pressure impregnated and CAN/CSA-O80 Series in general.

.1 Lumber used for structural decking, beams, purlins, braces, columns, fascias, trim, blocking, timbers etc. To CAN/CSA-O80.1, .2, .5, .9 Series. To an average net retention of 6.4 kg/$m^3$ (0.040 pcf).

***Acceptable Products:***

| | |
|---|---|
| Hickson | 'Cedar Tone Plus' |

.2 For all concealed exterior lumber (other than items specified under 2.1.8). Lumber used for roof cants, curbs, nailers, sleepers, sheathing, plywood decking, and interior lumber in contact with concrete block or poured concrete surfaces. To CAN/CSA-O80.1, .2, .5, .9 Series water borne preservative chromated copper arsenate (CCA) to an average net retention of 6.4 kg/$m^3$ (0.40pcf).

## PART 3 - EXECUTION

**3.1 Preliminary Work**

.1 Give at least [ 5 ] days notice to the Architect before starting work.

.2 Drill all holes in steel members required unless steel members have been predrilled.

**3.2 Framing**

.1 Comply with OBC, Section 9.23.

**3.3 Erection**

.1 Install members plumb, true to line, levels and elevations and uniformly spaced.

.2 Form continuous members from pieces of longest practical length.

.3 Install spanning member with 'crown-edge' up.

.4 Do not use material which is warped, split, checked, twisted, or cupped unless otherwise directed.

.5 Fabrication and installation methods to allow for expansion and contraction of the specified materials.

.6 Install all rough hardware including nails, screws, bolts, washers, brackets, hangers, and fastening devices of all types.

.7 Fasten to hollow units and drywall with toggle bolts; to solid masonry or concrete with lead expansion shields and lag screws; and to structural steel with bolts through drilled holes, or welded stud-bolts or power driven self-drilling screws. Do NOT use organic fibre or wood plugs.

.8 Cast in anchors or inserts as specified, or drill concrete and use expansion shields and bolts.

.9 Set or countersink all fastening devices flush with surface of framing members. all fastenings shall be drawn up tight. Countersink bolts where necessary to provide clearance for other work. Use 10 mm ($^3/_8$") bolts for 50 mm (2") nominal bucks and blocking. Locate fasteners within 300 mm (12") of ends and uniformly spaced between. Space bolts at 800 mm (2'-8") oc.

**3.4 Appearance Grade Materials**

.1 Install lumber and panel members and finish with translucent or transparent stain type coatings with grade-marks, labels and other defacements concealed. Do not surface cut or sand to remove these marks.

**3.5 Furring and Blocking**

.1 Install furring and blocking accurately located and secured to provide support bases for surface-applied fitments [e.g. cabinets, plumbing fixtures, accessories, electrical fitments, etc.].

.2 Align and plumb faces of furring and blocking to a tolerance of 1:600.

.3 Install miscellaneous wood members. Do not regard furring, blocking or strapping indicated as exact or complete. Locate and secure these pieces to suit site conditions. Provide adequate fastenings and support required for attaching work of other sections.

.4 Fasten wood to masonry where required using approved nails.

.5 Install all wood blocking and plywood back-up required. Shape as necessary, and securely fix to steel where indicated.

.6 Install wood strapping behind all plywood panels to receive electrical, communication or mechanical devices, switches, controls and similar components. Strapping shall be nominal 25 x 50 mm (1" x 2") material located at 400 mm (16") oc. Recess vertical edge of furring of member adjacent to edge of panel 25 mm (1"). Cut ends of vertical furring 16 mm ($^5/_8$") back from top and bottom edges of panels.

**3.6 Rough Bucks and Nailers**

.1 Securely install wood bucks and nailers as required.

.2 Unless otherwise detailed, use material minimum 38 mm ($1^1/_2$") thick fastened with 9 mm ($^3/_8$") bolts located minimum 300 mm (12") from ends of members and uniformly spaced at minimum 800 mm (32").

**3.7 Clean-up**

.1 Remove debris and waste from site and leave 'broom clean'.

-End-

# PART 1 - GENERAL

**1.1 Scope**

.1 Comply with Division 1 :General Requirements.

.2 Provide materials, labour and equipment for the installation of site-applied wood trim, moldings, millwork, door frames and screens, shelving, and tack boards as shown on the drawings, described herein, or as necessary to complete the work.

**1.2 Related Work Under Other Sections**

.1 Section 06100: Rough Carpentry, [co-ordinating work with this section.]

.2 Section 07900: Sealants, [co-ordinating work with this section.]

**1.3 Applicable Codes and Standards**

.1 Comply with requirements of Ontario Building Code, Ontario Occupational Health and Safety Act and municipal building By-laws and Regulations.

.2 Millwork to the Quality Standards of the Architectural Woodwork Manufacturers Association of Canada, AWMAC-2009, Custom Grade.

**1.4 Qualifications**

.1 All work of this section must be performed by carpenters having a minimum of (5) years experience in work of similar type. They must be certified by their respective associations for this type of work.

**1.5 Delivery, Storage and Handling**

.1 Deliver all materials as specified, any defective, damaged, warped material or material deemed to be inferior to the specification by the Architect will be promptly replaced.

.2 All materials shall be stored and stacked in order to prevent damage from exposure to moisture.

**1.6 Co-ordination and Co-operation**

.1 Co-ordinate and co-operate with all other trades to ensure satisfactory and expeditious completion of the work.

.2 Co-ordinate installation of work to be built-in by other sections, also equipment to be incorporated into finished carpentry work.

.3 Review drawings of other sections affecting work of this section to co-ordinate locations of other components.

**1.7 Samples**

.1 Submit 300 mm (12") long samples of each type of trim and molding.

.2 Do not proceed with work before the Architect's acceptance.

**1.8** **Shop Drawings**

.1 For the following finish carpentry items, submit [ 6 ] copies of shop drawings clearly showing details of installation profiles, jointing and other related details.

1. Casework [site fabricated] & Trims
2. Moldings
3. Wood Door Frames and Wood Screens

## PART 2 - PRODUCTS

**2.1** **Softwood Lumber:** To CSA-O141 and NLGA Grading Rules, with maximum 14 percent moisture content. Use selected yard lumber for natural or paint finish. Clear Select Douglas Fir, Clear Select White Pine, Clear Select Red Cedar.

**2.2** **Hardwood Lumber:** To National Hardwood Lumber Association [NHLA] standards, moisture content maximum 14 percent. Select Birch or Poplar as indicated on drawings or specified herein.

**2.3** **Hardwood Plywood:** To CSA-O115 of thicknesses shown; plain sliced veneers; architectural grade, birch or poplar, good 1 side, sound other side, veneer on plywood core with Type 1 bond.

**2.4** **Douglas Fir Plywood:** To CSA-O121 good 1 side sound other side select face, free from boats or defects.

**2.5** **Miscellaneous Hardware:** To Section 05600: Miscellaneous Metals.

**2.6** **Finished Hardware:** To Section 08710: Finish Hardware, supplied from hardware schedule.

**2.7** **Fastenings:** Finishing nails and screws: To CSA-B111, hot dip galvanized for exterior work, electrogalvanized for interior work, or resin coated nails for power nailing of interior work.

**2.8** **Adhesive:**

.1 **For Millwork:** Polyvinyl adhesive to CSA-O112.4.

.2 **For Casework and Cabinetwork:** Water resistant urea resin to CSA-O112.5, Type 1 and 2.

**2.9** **Sealing Tape:** Preformed butyl tape 10-15 durometer hardness, paper release, width and thickness, as specified by manufacturer.

## PART 3 - EXECUTION

**3.1 Preliminary Work**

.1 Give at least [ 5 ] days notice to the Architect before starting work.

.2 Provide temporary protection to all interior areas during operations.

.3 Upon completion of any site fitting in which core materials are exposed, apply one coat of sealer to all such surfaces scheduled to be concealed in the finished work.

.4 Drill holes in steel members required unless steel members have been pre-drilled under separate sections. Obtain Architect's acceptance prior to drilling.

**3.2 Installation - General**

.1 Install plastic laminate work with concealed fastening devices. Method of securing plastic laminate work shall be reviewed before commencing installation. Fasteners shall not be more than 600 mm (24") oc and 150 mm (6") from edges and ends. Scribe edge of plastic laminate to abutting dissimilar surfaces to effect neat, true and plumb closure.

.2 Install woodwork to custom grade requirements of AWMAC.

.3 Install work in accordance with drawings and as specified to affect a secure, neat and complete installation.

.4 Install materials in longest lengths possible, jointing only where support is obtained. Erect materials plumb, level, square and to required lines. Accurately cut, fit, frame and fasten members in a neat manner consistent with quality specified.

.5 Space fastenings at not greater than 600 mm (2'-0") oc unless otherwise specified. Locate fastenings not more than 150 mm (6") from end of member. Fastenings shall be staggered such that centre of fastening device is not greater than the lesser of 38 mm (1-$^1/_2$") from edge of framing member, or $^1/_3$ the width member.

.6 Plugging of concealed fastening devices shall consist of solid plugs up to 25 mm (1") diameter, and 10 mm ($^3/_8$") plywood for holes over 25 mm (1") diameter; same species as surrounding wood. End grain plugs are acceptable.

.7 Incorporate accepted provision to recognize expansion and contraction characteristics of materials. Make joints to conceal shrinkage; mitre exterior corners; cope interior corners; mitre or scarf end-to-end joints. Use blind mitre splines and dowels where detailed on drawings or as necessary.

.8 Nail trim with finish nails of properly selected dimension to hold members firmly in place without splitting wood.

.9 On exposed finished work, set all nails for filler. Do not drive wood screws when setting.

.10 When preservative treated wood members are cut, planed or drilled under this section, apply wood preservative to freshly exposed surfaces in accordance with manufacturers instructions prior to permanently affixing such members.

.11 Provide cutouts as required for inserts, grilles, service devices and other fitments and fixtures as required by other Sections.

.12 Make allowance where fixed objects pass through or project into and around periphery of work of this Section to permit normal movement without restriction.

**3.3 Other Doors and Steel Frames**

.1 Accurately hang; fit plumb and square without binding doors shall swing shut with 1.5 mm ($^1/_{16}$") clearance at head. 2.4 mm ($^3/_{32}$") at jambs and 6 mm ($^1/_4$") clearance over finished floor surfaces.

.2 Install steel frames in locations where indicated. Verify position in wall relate to adjacent components and surfaces.

.3 Install steel frames using accepted temporary bracing members to anchor head member to structure above securely. Install frames rigid and accurately aligned plumb, level and true to line in all planes. Anchor floor plates on concealed face of jamb to floor substrate material in an accepted manner. Provide and install metal shims where required to ensure level and plumb vertical and horizontal alignment of all surfaces.

.4 Install jamb extension members to ensure rigid installation. Effect all connections in an accepted manner.

.5 Install temporary wood brace at head for frame openings wider than 1.4 m (4'-6") in masonry walls until masonry is complete and set.

.7 Remove doors for finishing and sealing of edges by Section 09900: Basic Painting and re-install when dry.

**3.4 Finish Hardware**

.1 Take delivery of and install all finish hardware including butts, hinges, snaps, closers, panic hardware, strikes, bolts, escutcheons, cylinders, weatherstripping and any other supplied. Check each item as received and distribute to respective door sections.

.2 Install all other items as directed by Architect.

.3 Install lock cylinders to specialty items such as aluminum entrances, and the like.

.4 Make provisions for counter-sinking or counter-boring screw heads.

.5 Mount door stops for swing doors where hardware may contact wall finish or built-in fitments.

.6 Fix push and pull plates with minimum 6 screws each. Fix kick plates with screws at not more than 150 mm (6") oc. Where push and pull sets are back-to-back, mount with suitable through bolts.

.7 Install matching strike boxes with locksets and latchsets.

.8 Unless otherwise specified, allow minimum throw of 13 mm ($^1/_2$") for dead bolts.

.9 Install extension flush bolts to top and bottom of inactive leaf of pairs of doors without panic devices or other emergency hardware.

.10 Refer to section 08710 for further installation information.

**3.5 Final Finishing**

.1 Sandpaper finished wood surfaces thoroughly as required to produce uniformly smooth surface, always sanding in direction of grain run, except do not sand wood which is scheduled to be left rough. No coarse grained sandpaper mark, hammer mark, or other similar imperfections are acceptable.

.2 Clean work and notify painter when work is ready for sealing and finishing. Inspect work and co-operate fully in adjusting work to the Architect's approval.

**3.6**

.1 On completion of all work in building, check woodwork and plastic laminate work carefully for defects. Clean plastic laminate surfaces and remove identification marks.

.2 Adjust and refit working parts, and refinish as required to provide smooth operation without sticking and binding.

.3 Damage to work of this section attributable to work under separate sections shall be corrected by this section at no cost to owner.

**3.7 Interior Trim**

.1 Install, glue and finish nail to AWMAC Standard, custom grade.

.2 Select running trim to match adjacent pieces of even colour, grain and texture.

.3 Set nails and secure neatly; leave no hammer or drive marks; securely anchor to wall or floor bearings.

**3.8 Completion**

.1 Clean work and notify painter when work is ready for sealing and finishing. Inspect work and co-operate fully in adjusting work to the Architect's approval.

-End-

# PART 1 - GENERAL

**1.1 Scope**

.1 Comply with Division 1: General Requirements.

.2 Provide materials, labour and equipment for the installation of fibreglass reinforced plastic panels and trim (FRP) shown on the drawings described herein, or as necessary to complete the work.

**1.2 Related Work Under Other Sections**

None

**1.3 Standards**

- Manufacturer to be ISO 9001 certified plant.
- Product to be Greenguard Gold certified.
- Manufacturer to be Canadian Food Inspection Agency and Agriculture Canada certified.
- Mold and Mildew Resistant per ASTM D3273 and D3274 Tests.

**1.4 Samples**

.1 Submit duplicate copies of manufacturer's literature showing basic construction and assembly, treatment at walls.

.2 Submit duplicate samples of each type of plastic panel required for the project.

**1.5 Environmental Conditions**

.1 Permit wet trades work to dry before commencing installation.

.2 Maintain uniform minimum temperature of l5 degrees C and humidity of 20-40 percent before, during and 48 hours after installation and prevent moisture to collect on or in-between panels.

.3 Stacked on skid not more than 5 high and store materials in work area 48 hours prior to installation.

**1.6 Maintenance Materials**

.1 Deliver 10 panels for maintenance for each pattern and type required for the project. Store where directed by the Owner and identify contents.

.2 Maintenance materials shall be from the same production run as the installed materials.

## PART 2 - PRODUCTS

**2.1 Fibreglass Reinforced Plastic Panels:**

.1 Type: Embossed Finish.

.2 Flexural Strength 17,000 psi, ASTM D790.

.3 Flexural Modulus 6.0 x $10^2$, ASTM D790.

.4 Tensile Strength 8,000 psi, ASTM D636.

.5 Tensile Modulus 9.43 x $10^2$, ASTM D636.

.6 % Elongation 1.20%, ASTM D638.

.7 Izod Impact 7.0 ft-lb/in, ASTM D256.

.8 Coefficient of Linear Thermal Expansion 2.22 x $10^5$ in/in degrees F, ASTM D696.

.9 Barcol Hardness 30, ASTM D2583.

.10 Abrasion Resistanc:e 0.293 % Wt. Loss, Taber Test.

.11 Water Absorption: 0.17% - 72 hr @ 77 degrees F, ASTM D570.

.12 Flame Spread: $\leq$ 200, ASTM E84.

.13 Flame Spread: $\leq$ 140, CAN/ULC S102-10.

.14 Smoke Development Index: $\leq$ 450, ASTM E84.

.15 Smoke Developed: $\leq$ 135, CAN/ULC S102-10.

.16 Nominal Thickness: 0.090 in.

.17 Finish: Embossed.

.18 Colour: Light Grey.

.19 Size: width 4 ft and suit heights as indicated on drawings or necessary to complete installation.

***Acceptable Products:*** Or Approved Equal
Stabilt Exceliner FRP Panels as supplied by Avanta Building Solutions, Mississauga, On 647-380-0222, Shivali Rani, shivali@avantabuilds.ca

**2.2** **FRP Trims:**
Colour Matched PVC trims, inside/outside corners, division bar, nylon rivets and 'J' end/bottom cap moulding.

**2.3** **Adhesive:**
Titebond advanced FRP polymer adhesive recommended by the manufacturer.

## PART 3 - EXECUTION

**3.1** **Preliminary Work**

.1 Give at least [ 5 ] days notice to the Architect before starting work.

**3.2** **Panel System**

.1 Install panels and trim according to manufacturer's instructions.

.2 Use qualified installers with minimum (5) years experience installing FRP panels.

.3 Ensure all substrate surfaces that panels are applied to are clean, dry and free of all substances that my effect bonding on panels and trim.

.4 Carefully inspect all panels and trim before installation, **do not install any defective materials**.

.5 Install panels with bottom edge located to clear top of epoxy base.

.5 Apply adhesive uniformly using adhesive manufacturers recommended trowel to the entire back of panels completely to the edge (100% coverage).

.5 Lay FRP panels in place leaving approximately 1/8 inch between panels and 1/4 inch space top and bottom.

.5 Follow adhesive manufacturer's recommendations for set and application times.

.5 Apply pressure to entire panel face with laminate type roller, removing trapped air and ensure proper adhesion between surfaces.

**3.4** **Clean-up**

.1 Replace installations out of plumb and not aligned with adjacent panels and construction.

.2 Clean panel face to remove soiling, stains, dust, and dirt using clean rags, and cleaning agents as instructed by manufacturer.

.3 Clean all exposed work and leave residue and debris free from work of this section. Replace defective panel or trims.

-End-

## PART 1 - GENERAL

**1.1 Scope**

.1 Comply with Division 1: General Requirements.

2 Provide materials, labour and equipment for the installation of rigid insulation and sprayed foamed in place insulation shown on the drawings, described herein or as necessary to complete the work.

**1.2 Related Work Under Other Sections:**

N/A

**1.3 Delivery, Storage and Handling**

.1 Deliver material to site in original package with the manufacturers seals and labels intact.

.2 Protect material during delivery, storage and handling against exposure to damage, moisture or sunlight by covering with light coloured opaque protection within the building before covering with final finish.

**1.4 Co-ordination and Co-operation:**

.1 Co-ordinate and co-operate with all other trades to ensure satisfactory and expeditious completion of the work.

## PART 2 - PRODUCTS

**2.1 Insulation:**

.1 **Extruded Expanded Polystyrene:** To CAN/CGSB-51.20, Type 4, RSI 0.87/25 mm ship lapped edges. Only polystyrene insulations listed on CAN/CSA Qualified Products List are acceptable.

***Acceptable Products** or Approved Equal:*

DOW 'Styrofoam SM'

.1 **Sprayed Foam:** Two component medium density polyurethane foam insulation/ air barrier to CAN/ULC-S705.1-01, including amendments 1 & 2 and S705.2-05.

***Acceptable Products** or Approved Equal:*

BASF 'Walltite ECO'

**2.2 Adhesive:**

.1 **For Polystyrene:** To CGSB-71-GP-24M; water base, non-solvent type.

**2.3 Vapour Barrier:** To CAN/CGSB 51.33-M89, Type 1.

***Acceptable Products** or Approved Equal:*

CIL [Plastics] '0.15 mm (6 mil) polyethylene film'

**2.4 Vapour Barrier Tapes:**

***Acceptable Products** or Approved Equal:*

| | |
|---|---|
| Kendall | 'Polken No. 827' |
| 3M | 'Scotch Brand 483' |

**2.5 Accessories:**

.1 **Insulation Clips:** Impale type, perforated 50 x 50 mm (2"x2") galvanized cold rolled carbon steel 0.41 mm (12 ga) thick, self adhesive back, spindle of 2.5 mm ($^1/_8$") diameter annealed steel, length to suit insulation, 25 mm (1") diameter washers of self-locking type.

***Acceptable Products or Approved Equal:***

| | |
|---|---|
| Continental Stud Welding Inc | 'Self Stick Insul-Anchors' |
| Fleck Bros. | 'Insul-Anchors' |
| Eckel | 'Stic-Klip' |

.2 **Adhesive for Clips:** Additional adhesive for clips, if required.

***Acceptable Products:***

| | |
|---|---|
| Bakelite | 'No. 230-35 Adhesive' |

.3 **Sealant:** To CAN/CSA-19.21 Sealing and bedding compound for acoustical purposes.

.4 **Staples:** Galvanized wire, 12 mm ($^1/_2$") minimum leg.

.5 **Mechanical Fastenings:** Corrosion resistant drill with hammer type complete with minimum 40 mm ($1^1/_2$") diameter washer.

## PART 3 - EXECUTION

**3.1 Preliminary Work**

.1 Give at least [ 5 ] days notice to the Architect before starting work.

**3.2 Workmanship**

.1 Install insulation only when building substrate materials are dry.

.2 Provide temporary thermal protection as required to building elements and spaces.

.3 Fit insulation closely around electrical boxes, plumbing and heating pipes and ducts, around exterior doors and windows and other openings to the exterior.

.4 Cut and trim insulation neatly to fit spaces. Butt joints tightly, offset vertical joints. Use only insulation boards free from chipped or broken edges. Use largest possible dimensions to reduce number of joints.

.5 Offset both vertical and horizontal joints in multiple layer applications.

.6 Install insulation tight to substrate to prevent air circulation behind board.

.7 Sprayed in Place Foam Applicator must be approved by the manufacturer and have a minimum of (5) years proven application experience on commercial projects.

.8 Do not enclose insulation until inspected and approved by the Architect.

**3.3 Rigid Insulation Installation**

.1 Apply compatible adhesive to polystyrene insulation board as recommended by supplier using the recommended method.

.2 Leave insulation board joints unbonded over line of expansion and control joints. Bond a continuous 150 mm (6") wide 0.15 mm (150 mil) polyethylene strip over joint using compatible adhesive before application of insulation.

.3 Use mechanical fastening or adhesive method for securing polystyrene insulation as recommended by insulation manufacturer.

**3.4 Sprayed Foam Insulation Installation**

.1 Apply to clean dry concrete surfaces as recommended by supplier using the recommended method.

.2 Provide complete coverage to minimum thicknesses shown on drawing.

.3 Allow full cure of application before applying cementitious fire proofing material.

**3.5 Perimeter Foundation Rigid Insulation Installation**

.1 **Interior Application:** Extend boards to top of footing vertically to below bottom of finished floor slab, installed on inside face of perimeter foundation walls as shown on drawings.

**3.6 Perimeter Wall Sprayed Foam Insulation Installation**

.1 **Interior Application:** Extend sprayed foam to top of existing floor structure above vertically to below bottom of existing exterior concrete wall structure, installed on complete inside face of perimeter upper walls as shown on drawings.

**3.7 Reinstatement and Clean-up**

.1 Reinstate exterior surfaces to ensure a weather-tight surface.

.2 Remove debris and leave site in a tidy condition.

-End-

# PART 1 - GENERAL

**1.1 Scope**

.1 Comply with Division 1: General Requirements.

.2 Provide materials, labour and equipment for the installation of sound attenuation batt insulation as shown on the drawings, described herein or as necessary to complete the work.

**1.2 Related Work Under Other Sections**

N/A

**1.3 Labels**

.1 Glass and mineral wool fibre insulation must bear the CSA logo with a file number on the package.

.2 Labelling of containers must include:

.1 Table of RSI [R] Values, corresponding to required thickness and the maximum area of coverage per bag.

.2 Minimum weight per square meter when installed to achieve the RSI [R] Value.

.3 Net mass of contents.

**1.4 Delivery, Storage and Handling**

.1 Deliver materials to site in original package with manufacturers seals and labels intact.

.2 Store material in a dry open area and on raised supports.

**1.5 Co-ordination and Co-operation:**

.1 Co-ordinate and co-operate with all other trades to ensure satisfactory and expeditious completion of the work.

**1.6 Protection**

.1 Protect material during delivery, storing and handling against exposure to damage, moisture, freezing, sunlight and other environmental conditions by covering with tarpaulins or polyethylene sheets until incorporated in the building and covered with final finish.

## PART 2 - PRODUCTS

**2.1 Materials**

.1 **Mineral Fibre:** To CSA-A101, Type 1 glass and mineral fibre blankets, thickness and thermal resistance values as shown on drawings.

.2 **Sound Attenuation Batt Insulation:** To CSA-A101, Type 1 glass and mineral fibre blankets, 70 mm (2 $^{3}/_{4}$") min batt thickness, to create a min STC rating of 45 for 117 mm (4 $^{5}/_{8}$") over wall thickness.

**Note:** All sound attenuation walls to continue to underside of existing structural deck above or as indicated on drawings.

.3 **Vapour Barrier Film:** To CAN/CGSB-51.33, Type 1.

***Acceptable Products:***

| | |
|---|---|
| CIL [Plastics] | 0.15 mm (6 mil) polyethylene film |

.4 **Sealant:** To CAN/CGSB-19.21-M87. Sealing and Bedding Compound for Acoustical Purposes.

## PART 3 - EXECUTION

**3.1 Preliminary Work**

.1 Give at least [ 5 ] days notice to the Architect before starting work.

**3.2 Application**

.1 Friction fit batt or roll insulation snugly to occupy full width and length of space between studing.

**3.3 Reinstatement and Clean-up**

.1 Reinstate exterior surfaces to ensure a weather-tight surface.

.2 Remove debris and leave premises in a cleaned and tidy condition.

-End-

# PART 1 - GENERAL

**1.1 Scope**

.1 Comply with Division 1: General Requirements.

.2 Provide materials, labour and equipment to complete joint sealant work as shown on the drawings, schedules, resealing of existing joints, spray foam sealant, described herein, or as necessary to complete the work.

**1.2 Related Work Under Other Sections**

.1 Section 06200: Finish Carpentry, [provide and install all sealant.]

.2 Section 09900: Basic Painting, [provide and install all sealant.]

**1.3 Standards**

.1 Comply with Ontario Building Code, Parts 5 and 9.

**1.4 Supervision**

.1 Comply with the recommendations and directions of manufacturers whose materials are specified. Consult manufacturer's technical representative and discuss the following terms with decisions confirmed in writing by the Contractor.

.1 Weather conditions under which work will be done.

.2 Anticipated frequency of joint movement.

.3 Shape factor of the joint.

.4 Durometer hardness, slump and curing characteristics of materials specified.

.5 Joint characteristics as built.

.6 Sample of sealed joint to be acceptable to Architect prior to completion.

**1.5 Environmental Requirements**

.1 Ensure sealant and substrate materials are at minimum temperature +5 degrees C (40 degrees F).

.2 Where necessary to apply sealants below temperature of +5 degrees C (40 degrees F), follow manufacturers recommendations.

**1.6 Co-ordination and Co-operation**

.1 Co-ordinate and co-operate with all other trades to ensure satisfactory and expeditious completion of the work.

**1.7 Warranty**

.1 Provide a signed certificate warranting that caulking work will not leak, crack, crumble, melt, shrink, run, lose adhesion or stain adjacent

surfaces for a period of five [5] years after the certificate of final acceptance.

## PART 2 - PRODUCTS

### 2.1 Materials

.1 **Primers:** Type recommended by sealant manufacturer.

.2 **Joint Fillers:**

.1 **General:** Compatible with primers and sealant, outsized 30 to 50 percent.

.2 **Extruded Closed Cell Foam:** Polyethylene, urethane, neoprene or vinyl; Shore A, hardness 20, tensile strength 140 to 200 kPa.

***Acceptable Products:*** Or Approved Equal

| | |
|---|---|
| Sternson | 'Backer Rod' |
| Industrial Thermo Polymers | 'Backer Rod' |

.3 **Extruded Tubing:** Polyvinyl chloride or neoprene; with 6 mm ($^1/_4$") minimum thick walls.

.4 **Bond Breaker:** Pressure sensitive plastic tape.

***Acceptable Products:*** Or Approved Equal

| | |
|---|---|
| 3M Ltd. | 'No. 266 or No. 481' |

.5 **Sealants:**

.1 **Sealant for vertical and horizontal non-traffic bearing joints:**

.1 Dry conditions, normal temperature range, movement range to 25 percent: to CAN/CSA-19.18, 'Sealing Compound, One Component, Silicone Base, Solvent Curing'.

.2 Dry conditions, low temperature range, movement range to 25 percent: to CAN/CSA-19.13, 'Sealing Compound, One Component, Elastomeric Chemical Curing'.

.3 Wet conditions, normal or low temperature range, movement range to 25 percent: to CAN/CSA-19.24, 'Sealing Compound, Multi-Component Chemical Curing'.

.2 **Acoustic sealant:** to CAN/CSA-19.21, 'Sealing and bedding Compound, Acoustical'.

***Acceptable Manufacturers:*** Or Approved Equal
CGE Construction Sealants
Dow Corning Construction Sealants
Hilti
Mono
Tremco

.6 **Foam Insulating Sealant:** Two component rigid polyurethane foam in nozzle or pressure-applicator to CAN/CSA-51.23, 'Spray-Applied Rigid Polyurethane Cellular Plastic Thermal Insulation'.

***Acceptable Products:*** Or Approved Equal

| | |
|---|---|
| Insta-Foam | 'Froth Pak'. |
| Mono | 'Instant Foam' |

.7 **Joint Cleaner:** Xylol, methylethyleketone, toluol or non-corrosive type recommended by sealant manufacturer and compatible with joint forming materials.

.8 **Colours:** To match adjacent surfaces or clear as directed by the Architect.

## PART 3 - EXECUTION

**3.1 Preliminary Work**

.1 Give at least [ 5 ] days notice to the Architect before starting work.

**3.2 Location**

.1 Seal with sealant at the junction of the following **exterior** finishing materials, unless sealant is specified to be included in the work of other sections.

- .1 Concrete to concrete (including external joints of precast concrete).
- .2 Concrete to metal.
- .3 Concrete to masonry.
- .4 Masonry to metal
- .5 Masonry to masonry.
- .6 Metal to metal.
- .7 Metal to wood.
- .8 Wood to Wood.
- .9 Wood to Masonry
- .10 Wood to concrete.

.2 Seal at the junction of the following **interior** finishing materials unless sealant is specified to be included in the work of other sections:

- .1 Concrete to concrete.
- .2 Concrete to metal.
- .3 Concrete to masonry.
- .4 Masonry to metal.
- .5 Masonry to masonry.
- .6 Metal to metal.
- .7 Gypsum Board to existing surfaces.
- .8 Metal to gypsum board.

.3 Install pre-molded joint fillers in accordance with manufacturer's instructions, working in close co-operation with waterproofing trades.

.4 Seal joints from face to exposed surface.

**3.3 Inspection**

.1 Ensure joints to receive sealant are properly prepared.

.2 Ensure surfaces to be caulked are sound, dry, free from dirt, water, frost, loose materials, corrosion, paint and other foreign matter.

.3 Inspect joint sizes and correct to achieve depth ratio of $^1/_2$ joint width with minimum width and depth of 6 mm ($^1/_2$") and maximum width of 20 mm ($^3/_4$").

.4 Commence sealing work only after joint surfaces have been inspected and approved by the Architect. For projects with unusual or complicated caulking conditions, the Architect may require the sealant manufacturer’s

representative to visit site to discuss installation procedures with the contractor.

**3.4 Preparation**

.1 Before starting sealing, test materials for indications of staining or poor adhesion.

.2 Commence sealing on masonry only after mortar has cured.

.3 Remove all dust, dirt, other foreign matter and existing sealant and backer materials. Allow joint surfaces to dry thoroughly.

.4 Remove rust, mill scale and coatings from ferrous metals by wire brush, grinding or sandblasting.

.5 Remove oil, grease and other coatings from non-ferrous metals with joint cleaner.

.6 Prepare concrete, masonry, glazed and vitreous surfaces to sealant manufacturers instructions.

.7 Install joint filler to achieve correct joint depth.

.8 Where necessary to prevent staining, mask adjacent surfaces prior to priming and sealing.

.9 Apply bond breaker tape where required to manufacturers instructions.

.10 Prime sides of joints in accordance with sealant manufacturers instructions immediately prior to sealing.

.11 Do not exceed shelf life and pot life of the materials and installation times as marked on the containers.

.12 For two part materials, mix sealants thoroughly with a mechanical mixer, capable of mixing at 80-100 rpm without mixing air into materials. Continue mixing until the material is of uniform colour and free from streaks of unmixed components.

**3.5 Application**

.1 Apply sealants and joint primers to manufacturers instructions. Apply sealant using gun with proper size nozzle. Use sufficient pressure to fill voids and joints solid. Superficial pointing with skin bead is not acceptable.

.2 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities. Neatly tool surface to a slight concave profile.

.3 In masonry cavity construction, vent sealed joints from cavity to 3 mm ($^1/_8$") beyond external face of wall by inserting vent tubing at bottom of

each joint and maximum of 1500 mm (5ft) OC vertically. Position tube to drain to exterior.

.4 Ensure that the correct sealant depth is maintained. The following chart is a guide for providing effective width-to-depth ratios for specified sealant:

| JOINT WIDTH | JOINT DEPTH | |
|---|---|---|
| | Minimum | Maximum |
| 6 mm ($^1/_4$") | 3 mm ($^1/_8$") | |
| 6 mm-13 mm ($^1/_4$"-$^1/_2$") | One half width | Equal to width |
| 13 mm-25 mm ($^1/_2$"-1") | One half width | Equal to width |
| Over 25 mm (1") | As reviewed by Architect | |

.5 Cut out damaged sealant unacceptable to the Architect; reprepare and prime joints and install new materials as directed.

**3.6 Protection**

.1 Provide wood planks or other approved, non-staining means of protection for the completed sealant installations where required to protect work from mechanical, thermal, chemical and other damage by other construction operations and traffic.

.2 Maintain protection securely in place until project completion. Remove protection when directed by the Architect.

**3.7 Clean-up**

.1 Clean adjacent surfaces immediately.

.2 Remove excess sealant and droppings using recommended cleaners as work progresses.

.3 Remove masking after tooling of joints. Remove materials installed for protection. Wash and leave work neat and clean.

-End-

# PART 1 - GENERAL

## 1.1 Scope

.1 Comply with Division 1: General Requirements.

.2 Provide materials, labour and equipment to provide rated labelled and unrated steel doors, insulated metal panels and frames complete, as shown on the drawings, described herein, or as necessary to complete the work.

## 1.2 Related Work Under Other Sections

.1 Section 04211: Basic Unit Masonry, [co-ordinating with work of this section.]

.2 Section 06100: Rough Carpentry, [co-ordinating with work of this section.]

.3 Section 06200: Finish Carpentry, [co-ordinating with work of this section and provide all steel doors for installation.]

.4 Section 07900: Sealants, [co-ordinating with work of this section.]

.5 Section 09900: Basic Painting, [co-ordinating with work of this section.]

## 1.3 Standards

.1 **Welding:** To CSA-W59.

.2 Perform work of this section in accordance with requirements of Canadian Manufacturing Specifications for Steel Door and Frames, latest version of Canadian Steel Door and Frame Manufacturers' Association (CSDFMA) standard, except as otherwise specified herein.

## 1.4 Delivery, Storage and Handling

.1 Carefully handle doors, frames and screens to preclude any disfigurement, twisting or marking.

.2 Store frames on supports such that a minimum clearance of 100 mm (4") is maintained between underside of metal and ground or floor. Prevent moisture damage.

.3 Cover doors and frames in an approved manner to protect from inclement weather, water and damage.

.4 Cover all prefinished steel surfaces with protective masking.

## 1.5 Co-ordination and Co-operation

.1 Co-ordinate and co-operate with all other trades to ensure satisfactory and expeditious completion of the work.

**1.6 Shop Drawings**

.1 Submit [ 6 ] copies of shop drawings clearly indicating each door frame screen material, core thickness, reinforcements, glazing, type, profiles location of exposed fasteners and arrangement of hardware, etc.

.2 Include schedule identifying each unit with door marks and number relating to numbering on drawings and in door schedule.

.3 Show all door swings.

## PART 2 - PRODUCTS

**2.1 Materials**

.1 **Sheet Steel:** Cold rolled, commercial grade, to ASTM A526/A526 with zinc finish. Interior ZF001 and Exterior G90.

.2 Minimum thickness for sheet steel components shall be in accordance with CSDFMA Specifications except as follows:

| | | GAUGE NO. | EQUIVALENT THICKNESS |
|---|---|---|---|
| .1 | Frames & closures angles. | 16 | 1.5 mm (0.0598") |
| .2 | Frames for openings larger than 1200 x 2184 mm (4'-0"x7'-2"). | 14 | 1.9 mm (0.0747") |
| .3 | Frame reinforcement & extension channels. | 14 | 1.9 mm (0.0747") |
| .4 | Doors and metal panels. | | |
| | Surface sheets | 16 | 1.5 mm (0.0598") |
| | Surface sheets for doors greater than 1200 x 2184 mm (4'-0" x 7"x2") | 16 | 1.5 mm (0.0598") |

.5 Metal jamb anchors occurring in exterior walls shall be fabricated from galvanized sheet steel having zinc coating designation Z275 to ASTM A5250, 3 per frame minimum.

.2 **Core**

.1 In addition to CSDFMA specifications, interior rated doors; resin impregnated pre-expanded Kraft honeycomb core, and semi-rigid glass fibre insulation at 0.04 kg/$m^3$ (3 ld/$ft^3$) to requirements of CSA-A101-M1983, Type 1 is acceptable. Maximum opening of honeycomb shall be 19 mm ($^3/_4$").

.2 Exterior doors and metal panels; self-extinguishing foamed-in-place urethane foam only for 1-3/4" doors and metal panels and glass fibre for frames.

.3 Sound rated doors; sufficient density to provide satisfactory structural support and sound reduction characteristics of 32 decibels at average frequencies of 125 to 4,000.

.3 **Door Bumpers:** To manufacturers requirements of colour selected.

.4 **Primer:** Zinc rich primer conforming to CGSB-1-GP-181M.

.5 **Panel Fasteners:** Concealed fasteners of approved hot dip galvanized steel, type to provide accurate, secure installation.

.6 **Metal Filler:** Two component epoxy type.

.7 **Phosphatizing:** To CGSB-31-GP-105Ma.

.8 **Accessories:** Guard boxes, tie anchors, hinges, strikes, reinforcing, spreaders, finishing hardware, glazing stops, etc. of approved manufacturers.

**2.2 Welding**

.1 Ensure welds are continuous, free from inclusions, porosity, lack of fusion penetration, uneven contour, undercuts and cracks. Remove weld spatter on expose surfaces. **NOTE: Continuously weld all seams and joints, grind smooth flush, dress and fill.**

**2.3 Fabrication (frames)**

.1 Form profiles accurately to details indicated. All frames shall have mitred and welded corners. Knock down frames are unacceptable for this project.

.2 Prepare for hardware using approved templates.

.3 Reinforce all door frames for closers.

.4 Fill all exposed surface depressions and all joints resulting from fabrication of frames with metallic filler and sand to a smooth, uniform finish.

.5 Prepare each door frame for bumpers unless indicated otherwise. Provide and install 3 bumpers on strike jamb of each single leaf door frame and 2 bumpers on head of double leaf door frame.

.6 Ship each frame complete with easily removable metal channel or angle shaped spreaders.

.7 Terminate all door frames at top concrete slab. Provide floor plates for anchorage of slab.

.8 Provide jamb/mullion extension/reinforcement channels for each jamb and mullion in metal stud partitions extending to underside of structure with approved provision for vertical adjustment.

.9 Reinforce door heads for frames with door openings exceeding width of 1500 mm (5'-0"). Weld all reinforcement to frame in an approved manner to realize total strength potential.

.10 Provide frames with integral base at locations indicated.

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

.12 Use thermally broken and insulated frames to exterior doors.

**2.4 Fabrication (slab doors and panels)**

.1 Construction all doors and panels of flush type hollow steel construction or honeycomb core construction. Form each face from a single sheet of metal. **NOTE: Continuously weld all seams and joints, grind smooth flush, dress and fill.**

.2 Reinforce doors to ensure that the maximum corner-to-corner racking of doors does not exceed 1.5 mm ($^{1}/_{16}$").

.3 Prepare doors for hardware as per frame requirements. Where pairs of doors occur, prepare meeting edge to receive integral astragal. Refer to Hardware Schedule for removable mullions, astragals and the like for fire rated doors.

.4 Bevel strike edges of doors 1.5 mm ($^{1}/_{16}$") maximum.

.5 Provide continuous metal closure at top of doors flush with edges of exposed surfaces. Provide continuous metal closure at bottom of doors.

.6 Clean doors of all deleterious substances and contaminants, sand, flood coat with air drying paste filler, and again sand to eliminate all unevenness or irregularities including dimpling resulting from welding.

## PART 3 - EXECUTION

**3.1 Installation:** Provide doors, frames and screens to appropriate section as listed in 1.2 above for installation with 3 anchors minimum per frame.

**3.2 Clean-up**

.1 After inspection and acceptance, remove manufacturers labels, clean and polish, ready for painting under Section 09900.

-End-

# PART 1 - GENERAL

**1.1 Scope**

.1 Comply with Division 1: General Conditions.

.2 This section is used as a control of the hardware and for the provision of dimensional information and all other requirements necessary for the installation of the finish hardware.

**1.2 Related Work Under Other Sections**

.1 Section 06200: Finish Carpentry, [provide all finish hardware to this section for installation.]

**1.3 Standards**

.1 Hardware must be listed on the CAN/ULC-'69' series 'Qualified Products List' and ANSI/BHMA 'A' Series, except interior use door closers and National Builders' Hardware Association (NBHA).

.2 Locate and install door hardware to the Canadian Steel Door and Frame Manufacturers Association Standard 'Canadian Metric Guide', unless otherwise detailed.

.3 Use only one manufacturer for similar products.

**1.4 Delivery, Storage and Handling**

.1 Deliver each item of hardware packaged separately in original individual containers, with necessary screws, keys, instructions and installation templates. Mark each container with item number show on list.

.2 Be responsible for arranging delivery time and date to site, or door manufacturer, of all hardware so that all work may progress without delay or interruptions.

.3 Hardware supplier and hardware installer together shall check, in detail, hardware delivered to site to prevent discrepancies, shortages or omissions.

.4 Storage and protection of hardware is responsibility of the general Contractor and/or installer.

.5 Any loss or damage shall be the Contractor's sole responsibility. Exercise close control over handling of hardware particularly the distribution of keys.

**1.5 Maintenance Data**

.1 Provide maintenance data, parts list, manufacturer's instructions for each type of door closer, lockset, door holder, and panic hardware.

.2 Provide (2) sets of wrenches for door closers and locksets.

.3 Brief Owner's maintenance staff regarding proper care of hardware such as lubrication of locksets, and adjustments of door closers, cleaning and general maintenance.

**1.6 Certification and Warranty**

.1 Hardware supplier shall inspect operation of all installed hardware. Upon completion of this inspection, present a list of deficiencies to General Contractor for correction. Forward copies of deficiency list to Owner and Consultant.

.2 On completion of finish hardware installation, and after rectification of deficiencies, submit to Finish Hardware Consultant written certification that all materials are accounted for, correctly installed and functioning normally.

.3 Submit a written warranty, in accordance with Division covering replacement of defective door closers for a period of four years from the expiration of the standard one year warranty. Total warranty period of (5) years.

**1.7 Co-ordination**

.1 Before furnishing any hardware, check all drawings and specifications for hardware requirements, verify door swings, check all shop drawings with frame and door schedules and advise Architect in writing of any discrepancies noted.

## PART 2 - PRODUCTS

**2.1 Finish Hardware** See Hardware Schedule.

## PART 3 - EXECUTION

**3.1 Installation**

.1 All installation to manufacturers recommendations.

**3.2 Templates**

.1 Provide timely lists of materials complete with setting diagrams, dimensions and sizes to all concerned.

.2 Use template hardware for hollow metal doors and frames.

.3 Provide necessary templates for preparation of doors and frames.

**3.3 Installation, Heights and Requirements**

.1 Hinges: 3 per door for doors less than 2130 mm (7'-0") in height. 4 per door for doors over 2130 mm (7'-0") in height.

.2 Deadlock Strikes: 1260 mm ($49\frac{1}{2}$") form finished floor.

.3 Mortise Strikes: 980 mm ($38\frac{1}{2}$") form finished floor.

.4 Backset for Locksets: 70 mm ($2\frac{3}{4}$").

.5 Push Plates and Door Pulls: 1066 mm (42") from finished floor.

.6 Deadlocks: 1250 mm (50") from finished floor.

.7 Exit Device Cross Bar: 990 mm (39") from finished floor.

.8 Door Closers and Door Holders: Degree of opening to be 90 degrees unless noted otherwise.

.9 All installation heights to meet A.N.S.I. requirements and be approved by Finish Hardware Consultants.

**3.4 Clean and Adjust**

.1 Upon completion of finish hardware installation adjust for smooth silent secure operation.

.2 Clean and polish finish hardware and adjacent surfaces ready for use.

-End-

## PART 1 - GENERAL

**1.1 Scope**

.1 Comply with Division 1: General Requirements.

.2 Provide materials, labour and equipment for all new glass, mirrors and glazing with type and colour shown on the drawings described herein, or as necessary to complete the work.

**1.2 Related Work Under Other Sections**

.1 Section 08131: Steel Doors and Frames [provide and install all glass and glazing]

**1.3 Standards**

.1 Comply with Ontario Building Code, Parts 3 and 9 and applicable CGSB and CSA standards.

## PART 2 - PRODUCTS

**2.1 Glass:**

.1 **Clear Sheet:** To CAN/CSA-12.2 Ordinary Quality 6 mm ($^1/_4$").

.2 **Polished plate or float (low 'E' and reflective):** to CAN/CSA 12.3 glazing quality of thickness indicated.

.3 **Wired:** to CAN/CGSB 12.11 minimum 6 mm thick polished Georgian.

.4 **Fire Rated Pyran Platinum F, impact rated glass ceramic:** to UL 10C, UBC 7-2 and UBC 7-4, CAN / CSA -12.1, CAN4-S104 by Glassopolis.

.5 **Tempered Safety:** To CAN/CSA-12.1 Type 2 Grade A, 6mm thickness.

.6 **Sound Insulating units for doors:** to CAN/CSA 12.8, minimum 12 mm air space; 6 mm thick clear tempered for room side glazing sheet and 6 mm thick fire rated for corridor side. c/w 'Black insulating spacers.

.7 **Plastic:** Clear Plexiglas, 6mm thickness.

.8 **Patterned Obscured Glass Film:** 3M 'Fasara' Decorative Window Film, Opaque White.

**2.2 Glazing:**

.1 **Glazing Compound:** Oil type to CAN/CSA-19.6.
**Glazing Compound Fire Rated:** DAP 33 putty to CAN/ULC S-101M.

.2 **Sealing Compound:** One component silicone rubber to CAN/ULC-19.18 gun grade One component elastomeric base to CAN/ULC-19.13 gun grade Multi-component, chemical curing to CAN/ULC-19.24, Type 2, Class A. Colour to match frame.

.3 **Glazing Tape:** Performed butyl tape 10-15 durometer hardness, paper release, width and thickness, as specified by manufacturer.

**Glazing Tape Fire Rated:** Closed cell polyvinyl chloride foam, coiled on release paper over adhesive on two sides, maximum water absorption by volume 2% to CAN/ULC S-101M, as specified by manufacturer of glass.

.4 **Setting Blocks:** Neoprene, Shore 'A', durometer hardness 80-90. 100 mm (4") long x 9 mm ($^3/_8$") thick x 6 mm ($^1/_4$") high.

.5 **Spacer Shims:** Neoprene, Shore 'A', durometer hardness as specified, 75 mm (3") long x 2.4 mm ($^1/_8$") thick x 9 mm ($^3/_8$") high.

.6 **Glazing Points and Wire Spring Clips:** Galvanized, corrosion resistant, manufacturers standards.

.7 **Lock-Strip Gaskets:** Black neoprene to ASTM C542, H type for cavities, spline type for recessed reglets. Provide internal drainage channel with drainage holes in sill section. Use injection moulded one-piece corner sections and heat-seal to main gaskets.

.8 **Primer-Sealers and Cleaners:** To glass manufacturers standards.

## PART 3 - EXECUTION

**3.1 Preliminary Work**

.1 Give at least [ 5 ] days notice to the Architect before starting work.

**3.2 Glazing (General)**

.1 Remove protective coating and clean contact surfaces with solvent and wipe dry.

.2 Perform glazing at temperatures recommended by manufacturer of glazing materials.

.3 Size glazing materials to accurately fit openings with clearance all around as recommended by Flat Glass Marketing Association for single glass, and by Insulated Glass Manufacturers Association of Canada unless otherwise noted.

.4 Apply primer-sealer to contact surfaces.

.5 Place setting blocks to manufacturer’s instructions.

.6 Install glass, rest on setting blocks and press against tape to ensure full contact and adhesion at perimeter.

.7 Install removable stops; avoid displacement of tape or sealant; exert pressure for full continuous contact.

.8 Provide 3 mm ($^1/_8$") minimum edge clearance except where indicated otherwise.

.9 Insert spacer shims to centre glass in space; sit shims 600 mm (2 ft) oc and maintain 6 mm ($^1/_4$") below sight line.

.10 Do not cut or scratch tempered or heat-treated glass.

.11 Provide adequate edge clearances for plastic glazing sheets in accordance with manufacturer's instructions.

.12 Mark each light of glass to indicate presence of glass. Use method acceptable to and approved by Architect.

.13 Replace all glass, damaged or broken by, or under the responsibility of this section at no expense to the Client, prior to completion of work. Remove all broken glass from premises.

.14 Damage to work of this section attributed to work under separate sections shall be corrected by this section. Cost shall be borne by contractor and/or section to whom damage is attributed, to the satisfaction of the Architect.

.15 Clean glass and metal surfaces to present clean, dry, grease and oil free surfaces to receive glazing tapes, gaskets, seals and continuous heel bead.

**3.3 Exterior or Sound Insulated Glazing**

.1 Remove metal stops and gaskets.

.2 Place setting blocks and spacers.

.3 Spacer shims for insulating glass shall be 0.4 mm ($^1/_{64}$") less in thickness than the clearance between unit and stops, and approximately 75 mm (3") long. Locate 600 mm (2'-0") o.c. and at least 300 mm (12") from corners. Spacers shall be buried at least 6 mm ($^1/_4$") below surface of sealant.

.4 Cut glazing tape to proper length and set against permanent stops 5 mm ($^3/_{16}$") below sightline. First, install horizontal strips and extend over entire width of opening before applying vertical strips. Weld corners together by butting tape and dabbing with sealant.

.5 Press glass against glazing tape previously described.

.6 Reapply all metal stops and gaskets.

**3.4 Interior Window Film**

.1 Apply to thoroughly clean and dry existing glass surfaces complete coverage as per manufacturer's instructions.

**3.5** **Clean-up**

.1 Remove excess glazing and droppings as work progresses. Clean surfaces with cleaners recommended by the sealant manufacturer.

.2 Removed labels after work is complete; clean and polish both inside and out.

.3 Remove surplus material, equipment and debris and leave clean and tidy.

-End-

## PART 1 - GENERAL

**1.1 Scope**

.1 Comply with Division 1: General Requirements.

.2 Provide materials, labour and equipment for the installation of steel stud wall and ceiling framing and accessories as shown on the drawings, described herein or as necessary to complete the work.

**1.2 Related Work Under Other Sections**

.1 Section 06100: Rough Carpentry, [provide and install wood blocking.]

.2 Section 07214: Fibre Insulation, [provide all sound insulation.]

.3 Section 09250: Gypsum Board, [co-ordinating work with this section.]

**1.3 Standards**

.1 Steel Stud Framing to National Association of Architectural Metal Manufacturers [NAAMM] standards.

.2 Anchor bolts to CAN/CSA-G40.21.

.3 Welding to CSA -W47.1-1983 and CSA -W59.

.5 Shop finish sections with hot dip galvanizing to ASTM A525.

.6 Sizes and spacings to carry live, dead and dynamic loadings with a maximum deflection of l/360 of the clear spans.

## PART 2 - PRODUCTS

**2.1 Channel Studs:** To ASTM C645-83, roll-formed galvanized steel to size and thickness required for spans and spacings and as detailed on drawings; knock-out service holes 460 mm (18") oc; matching floor and ceiling snap-in tracks to suit stud sizes; channel stiffeners to manufacturers standards. **Use 20 gauge material for studs with abuse resistant gypsum wallboard.**

**2.2 Metal Furring and Suspension Systems:** To Section 09250: Gypsum Board, Paragraph 2.2.

**2.3 Isolating Strips:** Rubberized, moisture resistant, 3 mm ($^1/_8$") thick cork strip 12 mm ($^1/_2$") wide with self-stick adhesive.

**2.4 Acoustical Sealant:** To CAN/CSA-19.21; Sealing and Bedding Compound for Acoustical Purposes.

**2.5 Anchors:** Floor, wall, ceiling and others of type, size and spacing to manufacturers standards.

**2.6 Framing Screws:** Galvanized, power driven screws. Type, size and spacing to manufacturers standards.

**2.7** **Sound Attenuation Insulation:** Provided by Section 07214; Fibre Insulation.

## PART 3 - EXECUTION

**3.1** **Preliminary Work**

.1 Give at least [ 5 ] days notice to the Architect before starting work.

**3.2** **Installation-General**

.1 Install in accordance with NAAMM standards.

.2 Install continuous separation strips to isolate steel tracks and studs from any uninsulated surface.

.3 Align floor and ceiling tracks; anchor 600 mm (2 ft) oc.

.4 Accurately cut steel studs to provide necessary head expansion joint and snap into track. Ensure full floor track contact and uniform ceiling track clearances to accommodate structural shrinkage.

.5 Install opening headers, double studs at opening jambs, triple studs at corners, bridging and cross bracing as required. Ensure service hole openings are aligned.

.6 Carefully adjust studding within a tolerance of 1:1000 and secure elements except ceiling track connections with screws. Secure ceiling track connections by crimping and to manufacturer's directions.

.7 Install necessary back-up headers and/or knee studs for attachment of fixtures [i.e. lavatories, WCs, bathroom fixtures, plumbing hardware, grab bars, towel rails, cabinet work, electrical boxes, etc].

.8 Install two continuous beads of acoustical sealant at floor and ceiling track prior to installing wall panels.

.9 Co-operate with other Sections by supplying and installing additional accessories as required together with back-up framing or access holes.

**3.3** **Sound Attenuation Partitions**

.1 Install sound attenuation partitions where shown on drawings. Install sound attenuation insulation in partitions so indicated by filling all voids with batts.

.2 Maintain air space between backs of blankets and back of opposite face layer.

.3 Pack blankets tightly against ducts, conduits and services passing through attenuation barriers.

.4 **Extend sound rated partition to underside of structure**. Incorporate approved provision to obviate transmittance of structural deflection to partition assembly.

.5 Do not make fastenings of studs or runners to columns. Install independent self-supporting partitions at all columns. Support partitions from structural floor and underside of structure.

.6 Cope gypsum board by section 09250 neatly to profile of structural components providing between 8 mm ($^5/_{16}$") and 6 mm ($^1/_2$") clear space between edge of gypsum board and surface of structural members.

.7 Apply a continuous 8 mm ($^5/_{16}$") bead acoustical sealant of compressible filler strips to perimeter edges of each face sheet of partitions, including areas above suspended ceiling.

.8 Apply a 6 mm ($^1/_4$") bead around all cutouts including electrical switch and plug outlets, butter back and sides of all outlets boxes with sealant, and any other opening in the partition that permits sound transmission.

.9 Apply sealant to clean, dry surfaces free of dust and other foreign matter.

**3.4** **Suspended and Furred Ceilings:** To Section 09250: Gypsum Board, Paragraph 3.3.

**3.5** **Metal Furring (Attachment to Masonry or Concrete Walls):** To Section 09250 Gypsum Board, Paragraph 3.4.

**3.6** **Resilient Furring:** To Section 09250: Gypsum Board, Paragraph 3.5.

**3.7** **Clean-up**

.1 Clear away waste materials and debris and leave premises 'broom clean`.

-End-

# PART 1 - GENERAL

**1.1 Scope**

.1 Comply with Division 1: General Requirements.

.2 Provide materials, labour and equipment for the installation of gypsum board shown on the drawings, described herein, or as necessary to complete the work.

**1.2 Related Work Under Other Sections**

.1 Section 06200: Finish Carpentry, [provide and install all gypsum board and trims.]

.2 Section 09900: Basic Painting, [co-ordinating with work of this section.]

.3 Division 15: Mechanical, [install all access panels to be provided by this Division and co-ordinate all grilles.]

.4 Division 16: Electrical, [co-ordination of all recessed fixtures and valance grilles]

**1.3 Standards**

.1 Comply with Ontario Building Code, Parts 3 and 9 and CAN/CSA-A82.27 'Gypsum Board Products'. Carry out work in accordance with CSA-A82.31 'Gypsum Board Applications', except where specified otherwise.

.2 Construct fire rated ceilings/walls to provide required ULC approved fire ratings. Submit written proof of compliance with ULC design.

.3 Ensure sound rated construction meets approved tables in building codes or have STC rating tested in accordance with ASTM E90.

**1.4 Inspection**

.1 Examine underlying and adjoining work and remove or repair defects liable to impair the results of the work.

.2 Apply gypsum board after inspection and approval by the Architect of electrical and mechanical work behind or above this finish.

**1.5 Delivery, Storage and Handling**

.1 Deliver and store materials undamaged in original wrappings and bundles.

.2 Store materials in a dry weatherproof enclosure.

.3 Store gypsum board flat, in piles without overhanging boards.

**1.6 Environmental Requirements**

.1 Ensure temperature of surrounding areas is minimum 10 degrees C and maximum 21 degrees C, 24 hours before installation and until joint filler has dried. Avoid concentrated or irregular heating.

.2 Provide adequate ventilation to eliminate excessive moisture before commencing and during the work to ensure proper drying of joint filler and adhesive. Do not force dry adhesive and joint treatment.

**1.7 Co-ordination and Co-operation**

.1 Co-ordinate and co-operate with all other trades to ensure satisfactory and expeditious completion of the work.

## PART 2 - PRODUCTS

**2.1 Gypsum Board:**

.1 **Abuse Resistant:** To CAN/CSA-A82.27, standard type, minimum 15.9 mm ($^5/_8$") thick or as indicated on drawings. **In all areas other than fire rated partitions.**

.2 **Moisture and Mold Resistant:** To CAN/CSA-A82.27, standard type, minimum 15.9 mm ($^5/_8$") thick or as indicated on drawings. **In all washroom areas other than fire rated partitions**. 'Humitek' or equal.

.3 **Fire Rated Abuse Resistant:** To CAN/CSA-A82.27, fireguard type X (1) hour rated, minimum 15.9 mm ($^5/_8$") thick.

***Accepted manufacturers:*** Or Approved Equal
U.S.G
C.G.C.
Domtar
Westroc

.4 **Acoustical:** To ASTM D3273, type X, minimum 15.9 mm ($^5/_8$") thick STC min 50 as indicated on drawings.

***Accepted manufacturers:*** Or Approved Equal

| | |
|---|---|
| Certainteed | 'Silent FX' |
| Acoustical Surfaces Inc. (1-800-448-0121) | 'Sound Break XP' |

**2.2 Concrete Backer Board:**

.1 **Concrete Backer:** To CAN/CSA-A82.27, standard type, minimum 12.7 mm ($^1/_2$") thick or as indicated on drawings. **In all areas other than fire rated partitions.**

***Accepted manufacturers:*** Or Approved Equal

| | |
|---|---|
| USG | 'Durock' |
| Custom Building Products | 'Wonderboard |
| Or Equal | |

**2.3 Metal Furring and Suspension Systems:**

.1 **Steel Studs:** To ASTM C645-83, roll formed to sizes and thicknesses required for spans and spacings, with knock-out service holes 460 mm (18") oc, complete with matching floor and ceiling snap-in tracks to suit stud sizes and channel stiffeners to manufacturer's directions. **Use 20 gauge material for all studs.**

.2 **Metal Furring Runners, 12.7 mm ($^1/_2$") Resilient Furring Channels, Hangers, Tie Wires, Inserts, Anchors:** To CAN/CSA A82.30, galvanized type.

.3 **Drywall Furring Channels:** 20 gauge thickness galvanized steel channels for gypsum board screw attachment.

.4 **Resilient Clips:** 0.5 mm (0.02") thick galvanized steel for gypsum board resilient attachment.

**2.4** **Fastenings and Adhesives:**

.1 **Nails, Screws and Staples:** To CAN/CSA-A82.31, galvanized.

.2 **Stud Adhesive:** To CAN/CGSB-71.25.

.3 **Laminating Compound:** To CAN/CSA-A82.31 asbestos free. Mix to manufacturers specifications, apply to wallboard with applicator producing 6 mm ($^1/_4$") diameter threads and spread 50 mm (2") oc.

**2.5** **Accessories:**

.1 **Coping Beads:** 12 mm ($^1/_2$") or 16 mm ($^5/_8$") to suit gypsum board thickness, 0.6 mm galvanized steel of G90 zinc finish to ASTM A525/A525 M-87, perforated flanges, one piece length per location. Use type designed to be concealed in finished work with joint tape and joint compound.

.2 **Corner Beads:** 0.6 mm galvanized steel 25 x 25 mm (1"x1") and 32 x 32 mm ($1^1/_4$"x$1^1/_4$") for gypsum board over 12.7 mm ($^1/_2$") thick; 2400 mm (4 ft) length; G90 zinc finish to ASTM A525/A525; perforated flanges; one piece length per location.

.3 **Reveal Trims** 'D-800' gypsum board reveal trim for 12.7 mm ($^1/_2$") and 15.9 ($^5/_8$") thick board and 12.7 mm ($^1/_2$") reveal dimension.

.4 **Edge Trims:** 'D-200' gypsum board edge trim for 12.7 mm ($^1/_2$") and 15.9 ($^5/_8$") board.

.5 **Acoustic Sealants:** To CAN/CGSB-19.21.

.6 **Insulating Strip and Pads:** Rubberized 3 mm ($^1/_8$") thick closed cell moisture resistant neoprene strip, 12 mm ($^1/_2$") wide; self adhesive one face; length as required.

***Acceptable Manufacturers*** *or Approved Equal*
Bailey Metal Products Limited

.7 **Metal Fire Rated Access Panels:** Provide new 300mm x300mm (12” x 12”) min. or size to suit existing size, access panel for drywall application (2hr min) c/w hex head cam latch location as shown on drawings.

***Acceptable Manufacturers:*** *Or Approved Equal*

| | |
|---|---|
| Cendrex (1-800-479-1489) | PFN-GYP |
| Accudor | FB-5060 or FB-5050 |

## PART 3 - EXECUTION

**3.1 Preliminary Work**

.1 Give at least [ 5 ] days notice to the Architect before starting work.

**3.2 General**

.1 Installation in accordance with manufacturers printed directions.

.2 Employ only skilled labour.

.3 Where vapour barrier continues over metal furring members, ensure installation of insulation, vapour barrier and perimeter seals are complete before applying gypsum board finish.

.4 Co-ordinate this work with other trades to ensure proper location of hangers, carrying channels and furring channels required for installing flush mounted light fixtures, outlet boxes, diffusers, fittings, equipment units and associated material. Rectify installation errors at no additional cost.

**3.3 Suspended and Furred Ceilings**

.1 Space hangers not exceeding 1200 mm (4 ft) oc each way and in rows parallel to walls. Area between hangers must not exceed 1.5 $m^2$. Do not secure hangers to pipes, ducts and electrical or mechanical items.

.2 Erect hangers and runner channels for suspended gypsum board ceiling in accordance with CAN/CSA-A82.31-M1980 except where specified otherwise.

.3 Support light fixtures using additional hangers within 150 mm (6") of each corner and maximum 600 mm (2 ft) around perimeter of fixture.

.4 Install work level, to 1:1000 tolerance.

.5 Provide additional hangers, as required, to support weight of installed equipment; frame with furring channels at perimeter of openings for access panels, light fixtures, diffusers, grilles and other built-in items.

.6 Install 19 x 64 mm ($^3/_4$"x$2^1/_2$") furring channels parallel to and at 600 mm (2 ft) oc with furring clips or double strand of wire.

.7 Furr for gypsum board faced vertical bulkheads within or at termination of ceilings.

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

**3.4 Metal Furring - Attachment to Masonry or Concrete Walls**

.1 Install furring for gypsum board finishes to CAN/CSA-A82.31 except where specified otherwise.

.2 Frame openings and around built-in equipment, cabinets and access panels on four sides. Extend furring into reveals. Check clearances with equipment supplier.

.3 Furr duct shafts, beams, columns, pipes and exposed services where required.

**3.5 Resilient Furring**

.1 Erect drywall resilient furring transversely across studs/joists spaced maximum 600 mm (2 ft) OC and not more than 150 mm (6") from ceiling/wall juncture. Secure to each support with [38 mm ($1^1/_2$") common nail] [25 mm (1") drywall screw].

.2 Install 150 mm (6") continuous strip of 12.7 ($^1/_2$") or 15.9 ($^5/_8$") mm gypsum board along base of partition/partywalls where resilient furring is installed.

**3.6 Gypsum Board Application**

.1 Do not apply gypsum board until bucks, anchors, blocking, electrical and mechanical works are approved.

.2 Take measurements accurately.

.3 Erect gypsum board vertically or horizontally whichever results in fewer end joints. Butt joints loosely with 6 mm ($^1/_4$") maximum gap. Do not force board into position. Ensure end joints occur over framing.

.4 Where shown on drawings, laminate gypsum board to concrete or concrete block masonry only when the base is dry, clean and free from dirt or efflorescence. Mix adhesive according to manufacturer's directions. Apply adhesive with a notched trowel leaving 10 x 12 mm ($^3/_8$"x$^1/_2$") ribbons 32 mm ($1^1/_4$") oc over entire back side of face layer. Temporarily secure gypsum board in place with concrete nails or bracing. Avoid impact or movement of boards until adhesive is firmly set.

.5 Where fastener application to furring, studs, runner channels, angles and other framing is required, use 15.9 mm ($^5/_8$") long approved screws for gypsum board up to 16 mm ($^5/_8$") thick to secure metal furring, wood furring and framing. Fasten gypsum boards maximum 25 mm (1") thick to metal angle and channel runners with 32 mm ($1^1/_4$") screws. Space screws 300 mm (12") oc in field of board and 200 mm (8") staggered along abutting edges. Start securing board centrally and work toward edges and ends. Drive screws so screw heads provide a slight

depression. Do not drive screws closer than 100 mm (4") from edges or ends of gypsum board.

.6 Apply Foil backed gypsum board to soffit areas where indicated on the drawings.

.7 Use water resistant gypsum board adjacent to slop sink and where wall tiles to be installed. Use water resistant sealant at fastener heads, edges, ends and cut-outs exposing gypsum core. Do not apply joint treatment on areas to receive tile finish.

.8 Apply 12 mm ($^1/_2$") diameter bead of acoustic sealant around periphery of each face of partitioning to seal gypsum board/structure junction where partitions abutt fixed building components. Seal perimeter of cut-outs around electrical boxes, ducts and in partitions where perimeter sealed with acoustical sealant.

**3.7 Accessories**

.1 Erect accessories straight, plumb, level, rigid and in proper plane; use full length pieces; make joints tight, properly aligned and rigidly secured; mitre and fit corners accurately, free from rough edges; secure at 150 mm (6") oc.

.2 Install casing beads around perimeter of suspended ceilings.

.3 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated; use sealant at joints.

.4 To promote a thermal break, install continuous insulating strips at edges of gypsum board or casing beads abutting metal window or exterior door frames.

**3.8 Control Joints**

.1 Install control joints in gypsum board where board is placed over masonry control joints, at junction of dissimilar wall materials, at changes in substrate construction, at approximate 7 m (23 ft) spacing on long corridor runs in walls and ceilings and at locations indicated on the drawings.

.2 Where application is on studs, double up studs at control joints; place one stud on each side of joint; terminate runners at each side of joint.

.3 Construct control joints of two back-to-back casing beads set in gypsum board facing and supported independently on both sides of joint.

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

.5 Install control joints straight and true.

**3.9 Expansion and Construction Joints**

.1 Provide at locations where building expansion and construction joints occur and elsewhere as required.

.2 Where application is on studs, double up studs at expansion and construction joints; place one stud on each side of joint; terminate runners at each side of joint.

**3.10 Access Doors**

.1 Install access doors to electrical and mechanical fixtures specified in respective sections and shown on the drawings.

.2 Rigidly secure frames to furring or framing systems.

**3.11 Sealing**

.1 Provide perimeter sound sealing at junction of gypsum board with structure, other partitions, junction of dissimilar materials and adjacent construction; apply in concealed locations only; install in strict accordance with sealant manufacturer's instructions.

.2 Provide two beads or more as required to exceed partition rating.

.3 Seal openings around ducts and other members passing through the drywall system.

.4 Seal around ducts, frames and other locations to ensure a moisture proof installation and to the Architect's approval.

**3.12 Finishing**

.1 Finish face panel joints and internal angles with joint system comprising joint compound, joint tape and taping compound installed in accordance with manufacturer's directions and feathered out on panel faces.

.2 Finish corner beads, control joints and trim as required with two coats joint compound and one coat taping compound, feather out to panel faces.

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

.4 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent board surface.

.5 Completed installation shall be smooth, level or plumb, free from waves and other defects and ready for painting.

.6 Do not treat joints of laminated gypsum board for at least 24 hours after lamination.

.7 Leave finished work smooth, seamless, plumb, true, flush and with square, plumb, neat corners and edges.

.8 Remove and make good at no extra cost any work which is defective or unsuitable and as required by the Architect.

**3.13 Clean-up**

.1 Vacuum clean areas of operation; wash and polish blemished surfaces ready for use. Arrange painting of new gypsum board surfaces as soon as possible after installation.

-End-

# PART 1 - GENERAL

**1.1 Scope**

.1 Comply with Division 1: General Requirements.

.2 Provide materials, labour and equipment for the installation of cement backer boards and ceramic tile as shown on the drawings described herein or as necessary to complete the work.

**1.2 Related Work Under Other Sections**

.1 Section 07900: Sealants, [co-ordinating with work of this section.]

**1.3 Standards**

.1 Do ceramic tile work in accordance with the Terrazzo, Tile and Marble Association of Canada [TTMAC] Manual including the TTMAC Expansion Joint requirements. Tradesmen to have minimum 5 years experience in this type of work.

**1.4 Samples**

.1 Provide a manufacturers technical manual clearly showing the project name, tile types, accessories and colours, together with installation, cleaning and maintenance requirements.

.1 Provide a full size sample of each tile, and 300mm (12”) long piece of accessories.

**1.5 Maintenance Materials**

.1 Provide a 2 per cent extra supply of each tile type and colour from the same production runs as the materials for installation. Store where directed by owner for future maintenance use.

**1.6 Examination**

.1 Visit site, determine existing conditions and limitations and requirements for protection of adjacent areas; verify dimensions.

**1.7 Delivery and Storage**

.1 Deliver in original packages and containers. Handle materials carefully to avoid damage to new and existing work. Store materials under suitable protective coverings on skids clear of ground or floor. Keep dry and free from foreign matter.

**1.8 Environmental Conditions**

.1 Maintain air and structural base temperatures at 12 degrees C minimum or 20 degrees C maximum for 24 hours before, during and after installation.

**1.9 Warranty**

.1 Provide a signed certificate warranting materials and installation against cracking, splitting, discolouration or loosening for a period of [2] years from the date of the certificate of final acceptance.

## PART 2 - PRODUCTS

**2.1** **Ceramic Wall and Base Tile :**

**Wall:** 100mm x 100mm (4” x 4”) in 300mm x 300mm (12” x 12” grid) glazed matt finish.
Colours ‘Selected by Architect’.

***Acceptable Products:***
Recer Projestos ‘Centura Tile’

**2.2** **Mortar [Interior]:** Thin-set latex mortar, suitable for use with non-absorptive tile.

***Acceptable Products:***

| | |
|---|---|
| Flextile | '#52 Polymar Thin Set' [multi-purpose floor] |
| | '#54 Walls' |
| Mapei | 'Keracrete' [multi-purpose floor] |
| | 'Keracrete Walls' |

**2.3** **Mortar Additive [Interior]:** Latex mortar additive.

***Acceptable Products:***

| | |
|---|---|
| Flextile | '#41' |
| Flextile | '#43-thinset' |
| Mapei | 'Keraply' |

**2.4** **Grout:** Polymer modified floor (sanded) and wall grout (unsanded)
Colours Selected by Architect

***Acceptable Products:***
Flextile
Mapei

**2.5** **Grout Optimizer Additive:** Acrylic polymer latex grout additive.

***Acceptable Products:***

| | |
|---|---|
| Flextile | '6000" |
| Mapei | |

**2.6** **Patching Compound:** Portland cement based polymer modified.

***Acceptable Products:***
Mapei 'Plani/patch'

**2.7** **Grout Sealer:** To CAN/CGSB-25.20-M88, Type 1, white. Mould and Mildew resistant.

***Acceptable Products:***
Sternson 'Sterncrete Liquid'

or as recommended by grout manufacturer

**2.8** **Sealant:** TO CAN/CGSB-19.24-M90 for wet conditions, movement range to 25 per cent, traffic bearing joints to Table 1, white.

**2.9** **Filler/Leveller:** Purpose-made, premixed latex-cement underlayment.

***Acceptable Products or equal:***
Flextile 'Latex Underlayment'

**2.10** **Corner Wall Strips:** Continuous trim, of sections listed below. Use longest possible strip. Secure to wall with flush stainless steel screws at 300mm (12") o.c. before applying adhesive.

***Acceptable Products:***

Schlüter-Systems 'Type Quadek-k, Stainless Steel'

**2.11** **Shower Corner shelf (SSH) for staff showers:** brushed stainless steel square corner shelf.

***Acceptable Products:***

Schlüter-Systems 'SES2 D3EB'

**2.12** **Membranes:** Continuous barrier.

***Acceptable Products or equal:***

Schlüter-Systems 'Kerdi Type'

**2.13** **Colours:** Grout colours as selected by Architect.

## PART 3 - EXECUTION

**3.1** **Preliminary Work**

.1 Give at least [ 5 ] days notice to the Architect before starting work.

**3.2** **Preparation of Surfaces**

.1 Remove wall and floor plates [and lay aside for re-use].

.2 Clean existing surface using TTMAC recommended surface cleaner and rinse clean. Apply filler/leveler to manufacturer's directions and cure ready for installation of replacement materials. Maximum surface tolerance 1:400.

**3.3** **Installation**

.1 Apply thin-set mortar to clean, sound, frost free and dry surfaces only for floor crack barrier installation.

.3 Apply continuous membrane barrier on floor and walls as per manufacturer's instructions.

.4 Apply thin-set mortar to clean, sound, frost free and dry surfaces only.

.5 Fit tile around corners. fitments, fixtures, drains and other built-in objects. Maintain uniform joint size. particularly between sheet-mounted panels. Machine cut edges smooth and even.

.6 Do not use tile with chipped surfaces, split edges or damaged corners.

.7 Lay out tiles to ensure perimeter tiles are $^1/_2$ size or larger. Lay tile [plumb], straight, true, even and flush with adjacent tile, to manufacturer's directions. Ensure full embedment for tile. Align patterns and textures. Joints to be 3mm (1/8").

.8 Tap tile after setting and replace hollow sounding units to obtain full bond.

.9 Apply grout and grout sealer evenly, working well into each joint. Wipe surfaces as work proceeds.

.10 Keep control and expansion joints free of mortar and grout. Fill these joints with sealant to manufacturer's directions.

.11 Apply all floor membranes as per manufactures instructions over clean substrate surfaces. All floor tiles to be applied over anti-crack membrane.

.12 Apply continuous metal corner strip as shown on drawings.

.13 Provide clean tight cuts at all penetrations.

.14 Seal all grout joints with recommended sealing products or as specified.

.15 Seal all inside corners at wall, ceiling and floor joints with silicone sealant as per section 07900.

**3.4 Clean-up**

.1 Remove debris; thoroughly clean tile and leave ready for occupancy.

-End-

# PART 1 - GENERAL

**1.1 Scope**

.1 Comply with Division 1: General Requirements.

.2 Provide materials, labour and equipment for the installation of suspension systems and lay-in acoustic ceilings shown on the drawings described herein, or as necessary to complete the work.

**1.2 Related Work Under Other Sections**

.1 Division 15: Mechanical [co-ordination of all ceiling grilles and diffusers]

.2 Division 16: Electrical [co-ordination of all lay-in light fixtures]

**1.3 Standards**

.1 **Installation:** To ASTM C636 unless specified otherwise.

.1 **Construction:** To ASTM C635 unless specified otherwise.

.3 Ensure sound-rated construction meets approved tables in the building codes or have STC rating tested in accordance with ASTM E90.

.4 **Maximum Deflection:** 1/360th of span to ASTM C635 deflection test.

**1.4 Samples**

.1 Submit duplicate copies of manufacturer's literature showing basic construction and assembly, treatment at walls, recessed fixtures, splicing, interlocking, finishes, acoustic units and installation.

.2 Submit duplicate samples of each type of acoustical panel required for the project.

**1.5 Environmental Conditions**

.1 Permit wet trades work to dry before commencing installation.

.2 Maintain uniform minimum temperature of l5 degrees C and humidity of 20-40 percent before, during and 48 hours after installation.

.3 Store materials in work area 48 hours prior to installation.

**1.6 Maintenance Materials**

.1 Deliver acoustical units for maintenance of 1 full case for each pattern and type required for the project. Store where directed by the Owner and identify contents.

.2 Maintenance materials shall be from the same production run as the installed materials.

## PART 2 - PRODUCTS

**2.1** **Suspension Systems:**

.1 **Fabrication:** Intermediate duty system to ULC F207. Basic materials for suspension system: commercial quality cold-rolled steel mill finished.

**2.2** **Tee Bar Grid Components:** Exposed shop painted satin sheen white components die cut. Main tee with double web, rectangular bulb and 25 mm (15/16") rolled cap on exposed face. Cross tee with rectangular bulb; web extended to form positive interlock with main tee webs; lower flange extended and offset to provide flush intersection.

***Acceptable Products:*** Or Approved Equal

| | |
|---|---|
| Armstrong | 'Prelude XL' |

**2.3** **Hanger Wire:** Galvanized soft annealed steel wire, 2.6 mm (16 ga) diameter for other ceilings.

**2.4** **Hanger Inserts:** Purpose made, as detailed.

**2.5** **Carrying Channels:** Galvanized steel channels; 38 x 150 x 1.2 mm ($1^1/_2$"x 6"x 18ga).

**2.6** **Accessories:** Splices, wire ties, retainers and wall moulding flush or reveal to complement suspension system components, as recommended by system manufacturer.

**2.7** **Acoustic Panels:**

.1 Type: Mineral Fibre Board Lay-in.

.2 Pattern: smooth, low VOC, impact resistant, washable.

.3 Flame spread rating of 25 or less class A.

.4 Noise reduction coefficient NRC designation of .50 - .60.

.5 Light reflectance range of 0.90.

.6 Ceiling plenum sound transmission range of 35 - 40.

.7 Edge Square.

.8 Colour: white.

.9 Size 600 x 600 x 19 mm thick (24"x 24"x $^3/_4$").

.10 Shape flat.

***Acceptable Products:*** *Or Approved Equal*
Armstrong School Zone Fine Fissured- 1810 fire guard

## PART 3 - EXECUTION

**3.1 Preliminary Work**

.1 Give at least [ 5 ] days notice to the Architect before starting work.

**3.2 Suspension System**

.1 Install hangers from structure.

.2 Do not install the ceiling system and panels until work above ceiling has been inspected and accepted by the Architect.

.3 Lay out [center line of ceiling both ways, to provide balanced borders at room perimeter] [with border units not less than 50 percent of standard unit width] [system according to reflected ceiling plan] [to match existing].

.4 Ensure suspension system is co-ordinated with location of related components.

.5 Install wall mould to provide correct ceiling height. Level finished ceiling to within 1:1000.

.6 Completed suspension system to support superimposed loads, such as [lighting fixtures] [diffusers] [grilles] and [speakers].

.7 Support [light fixtures] [diffusers] with additional ceiling suspension hangers within 150 mm (6") of each corner and at maximum 600 mm (2 ft) around perimeter of fixture.

.8 [Interlock] [Attach] cross member to main runner to provide rigid assembly.

.9 Install suspension system to manufacturer’s instructions and ULC tested design requirements.

.10 Frame at openings for light fixtures, air diffusers, speakers and at changes in ceiling heights.

**3.3 Panel Installation in Suspension System**

.1 Install acoustical panels in ceiling suspension system.

.2 Install fibrous acoustical media [and spacers] over entire area above suspended metal panels.

.3 In fire-rated ceiling systems, secure lay-in panels with hold-down clips and protect over light fixtures, diffusers, air return grilles and other equipment to ULC requirements.

**3.4** **Clean-up**

.1 Clean exposed metal work. Clean and replace panel units. Touch up scratches, abrasions and other defects in painted surfaces.

-End-

PART 1 – GENERAL

**1.1 Scope**

.1 Comply with Division 1: General Requirements.

.2 Provide materials, labour and equipment for the installation of new dry packed cement base and new bonded thin-set cement seam-less terrazzo and precast cove base, patching and refinishing of existing venetian terrazzo floors and base as shown on the drawings described herein or as necessary to complete the work.

**1.2 Related Work Under Other Sections**

.1 Section 06100: Rough Carpentry, [co-ordinating with work of this section.]

.2 Section 07900: Sealants, [co-ordinating with work of this section.]

**1.3 Standards**

.1 Do terrazzo work in accordance with the Terrazzo, Tile and Marble Association of Canada [TTMAC] Manual. Tradesperson to have minimum of 5 years experience in this type of work and trained to do specified Seamless Terrazzo System, see below.

**1.4 Power Supply for equipment**

.1 Subtrade to provide separate power generator compatible to Generac or equal, do not hook-up to school panels.

**1.5 Samples**

.1 Provide minimum a 300mm (12”) x 300mm (12”) control sample of each of the samples of colours and aggregates as selected by the Architect.

**1.6 Examination**

.1 Visit site, determine existing conditions and limitations and requirements for protection of adjacent areas; verify dimensions.

**1.7 Delivery and Storage**

.1 Deliver in original packages and containers. Handle materials carefully to avoid damage to new and existing work. Store materials under suitable protective coverings on skids clear of ground or floor. Keep dry and free from foreign matter.

**1.8 Environmental Conditions**

.1 Maintain air and structural base temperatures at 12 degrees C minimum or 20 degrees C maximum for 24 hours before, during and after installation.

**1.9 Warranty**

.1 Provide a signed certificate warranting materials and installation against cracking, splitting, discolouration or loosening for a period of [10] years from the date of the certificate of final acceptance.

PART 2 – PRODUCTS

**2.1** **Conductive Matrix :** As recommended by the manufacturer.

**2.2** **Marble and Granite Chips:** as selected by the Architect.

**2.3** **Colour Pigments:** Non fading mineral pigments to British standard 1014 as selected by the Architect.

**2.4** **Flexible Reinforcing Membrane:** Iso-C with fiberglass scrim reinforcing. Supplied by the manufacturer.

**2.5** **Sealant:** As recommended by manufacturer, high performance, high gloss, chemical-resistant.

**2.6** **Cleaners, Sealers and Floor Finish:** Terrazzo, Tile and Marble Association of Canada Types 1001,1002,1003,1004,2001,2002 and 3001 as applicable and as recommended by the manufacturer.

**2.7** **Seamless Terrazzo Epoxy Primer:** Over dry pack base as recommended by manufacturer, complete with full sand broadcast to allow for bonding to seamless terrazzo.

**2.8** **Seamless Terrazzo System Products Manufacturer:** Seamless Terrazzo products by Durabond Products Limited, Anthony Rapone (416) 904-9895

**2.9** **Seamless Terrazzo precast cove base or poured in place cove base:** As recommended by the manufacturer, complete with continuous stainless steel top trim.

**2.10** **Waterproofing membrane (showers):** Kerdi membrane by Schluter Systems or approved equal.

**2.11** **Dry Packed Cement Base:** Portland Cement To CAN/CSA-A5-M88, Type 10, Normal as recommended by the manufacturer, maximum 4” (100mm) thick.

**2.12** **Reinforcing Mesh:** Galvanized welded wire mesh 2” (50mm) x 2” (50mm) 16 gauge, square openings.

**2.13** **Isolation Membrane:** Polyethylene Film; to CAN/CGSB-51.34-M86, Type 2, 4 mil thick or 15 lb. unperforated roofing felt.

**2.14** **Moisture Mitigation Membrane:** Moisture mitigating membrane with maximum 0.3 perms with 100% RH. Full coverage purpose made one component water based 2 coat system moisture mitigation membrane over clean smooth concrete sub floor, complete with full sand broadcast over to allow bonding to dry pack cement base as recommended by the manufacturer.

**2.15** **Perimeter Foam Gasket:** Full perimeter wall foam expansion pink sill gasket as recommended by manufacturer, between dry pack cement base/finished terrazzo floor and new or existing wall surfaces.

**2.16** **Transition strips:** Schluter reno ramp, Reno U or Deco depending on condition.

**2.17** **Specified Seamless Terrazzo Trained Installers:** The following is a list of the specified seamless terrazzo system trained installers:

***Trained Installers:***

**Castlewall Flooring** Carlo Rao, 20 Coville Rd. North York, ON, 416-256-9100, carlo@castlewall.ca

**Gem Campbell** Manny Cunha, 505 Clayson Rd., North York, ON, 416-746-1700, manny@gemcampbell.com

**Roppaco Terrazzo** Max Roppa, 3209 Orlando Dr., Mississauga, ON, 646-325-4152, max@roppaco.ca

**Senate Flooring** Neil Belluz, 365 Grays Rd. Stoney Creek, ON, 905-560-0845, neil@senateflooring.com

**Terrazzo Mosaic & Tile Co. Ltd.** Mark Onorato, 900 Keele Street, Toronto, ON, 416-653-6111, mark@tmtcoltd.com

**York Marble** Glen Pestrinut, 2 Sheffield Dr, North York, ON, 416-235-0161, glen@yorkmarble.com

PART 3 – EXECUTION

**3.1** **Preliminary Work**

.1 Give at least [ 5 ] days notice to the Architect before starting work.

**3.2** **Preparation of Surfaces**

.1 Examine all surfaces upon which the work of this section is to be installed and report any defects to the Architect.

.2 **Dry grinding with HEPA vac system is required for all new and existing refinished terrazzo floor and base surfaces.** Clean existing surface using TTMAC recommended surface cleaner and rinse clean. After grinding apply terrazzo matching filler/leveler to manufacturer's directions and cure ready for installation of replacement materials. Maximum surface tolerance 1:400.

.3 Seamless terrazzo shall be clean and sound with 1500 polished finish with minimum of ½" 13mm thickness below finished floor levels, conforming to general contour required for slopes to floor drains. All base surfaces shall be clean and sound.

.4 For refinishing of existing terrazzo and base dry grind all surfaces with HEPA vac system.

.5 For any patching, remove all defective or damaged work before patching with new terrazzo material to match existing.

**3.3 Installation**

.1 Concrete to 28 day cure minimum. Clean floor slab, remove laitance by dry HEPA vac system grind and or acid etch and rinse thoroughly with clean water. Moisture content in slab shall not exceed 16% to ASTM F-2170. Perform moisture testing before installation.

.2 Apply isolation membrane on sand dusting and full foam perimeter gasket and then install dry packed mesh reinforced cement base sloped to drains as shown on drawings or as necessary to complete the work.

.3 Apply specified moisture mitigation membrane 2 coat system in even layer over entire sub-surface and allow to cure.

.4 Mix and install seamless cement terrazzo system and precast base and apply terrazzo primer before install of terrazzo strictly under specifications of manufacturer and where possible under the direction of the manufacturer's representative. Mask all adjacent surfaces.

.5 Dry grinding with HEPA vac system is required for all new and refinished terrazzo surfaces. Grout terrazzo when it has set sufficiently hard as specified for thin set terrazzo topping.

.6 For new and refinishing of existing terrazzo surfaces apply minimum 2 coats of recommended sealer to all surfaces and final non slip wax coating.

.7 For any patching remove and replace defective or damaged work.

**3.4 Clean-up**

.1 Remove debris; thoroughly wax with non-slip product and clean all terrazzo surfaces and leave ready for occupancy.

-End-

PART 1 – GENERAL

**1.1 Scope**

.1 Comply with Division 1: General Requirements.

.2 Provide materials, labour and equipment for the installation of chip flake epoxy as shown on the drawings described herein or as necessary to complete the work.

**1.2 Related Work Under Other Sections**

.1 Section 03300: Cast-in-place Concrete, [co-ordinating with work of this section.]

.2 Section 07900: Sealants, [co-ordinating with work of this section.]

**1.3 Qualifications**

.1 Perform work of this Section only by Subcontractor of recognized standing (manufacturer training/ certification) who has adequate plant, equipment, and skilled workers to perform it expeditiously, and is known to have been responsible for satisfactory installations similar to that specified during period of minimum [five] years]

**1.4 Submittals**

.1 Product Data: For each type of product. Include manufacturer's technical data, application instructions, and recommendations for each chip flake epoxy flooring component required.

.2 Provide 150mm (6”) x 150mm (6”) sample of each colour finished.

.3 If requested by the Architect provide on-site installation minimum {1 $m^2$}[10 sq.ft.], of each chip flake epoxy flooring system with minimum slip resistance required, for review.

.4 Submit Laboratory Test Reports: For chip flake epoxy flooring products, indicating compliance with requirements for low-emitting materials and samples for initial section for each type of exposed finish required.

.5 Submit Installer Certificates: Signed by manufacturer certifying that installers comply with specified requirements.

.6 Submit Material Certificates: For each chip flake epoxy flooring component, from manufacturer.

.7 Submit Material Test Reports: For each chip flake epoxy flooring system, by a qualified testing agency.

**1.5 Examination**

.1 Visit site, determine existing conditions and limitations and requirements for protection of adjacent areas; verify dimensions.

.2 Before commencing work of this Section arrange site meeting to be attended by representatives of Contractor/applicator/manufacturer, the

Consultant, and the Owner's Representative. Discuss design details, surface conditions, application procedures, and suitability of chip flake epoxy flooring systems for use intended and alternative recommendations.

.3 Prior to start of work, submit letter from chip flake epoxy manufacturer confirming qualifications of the sub-contractor.

**1.6 Delivery and Storage**

.1 Deliver in original packages and containers. Handle materials carefully to avoid damage to new and existing work. Store materials under suitable protective coverings on skids clear of ground or floor. Keep dry and free from foreign matter.

**1.7 Environmental Conditions**

.1 Maintain air and structural base temperatures at 12 degrees C minimum or 20 degrees C maximum for 24 hours before, during and after installation.

**1.8 Warranty**

.1 Provide a signed certificate warranting materials and installation against cracking, splitting, discolouration or loosening for a period of [2] years from the date of the certificate of final acceptanc

PART 2 – PRODUCTS

**2.1** **General:** Each material used in the application of each chip flake epoxy flooring system shall be as recommended or manufactured by the supplier of the chip flake epoxy flooring system.

**2.2** **Chip Flake Epoxy Flooring and Cove Base :** Durabond Dur-a Flex Flake Decorative Chip Flake Epoxy System a decorative, multi-coloured, epoxy based chip flake epoxy flooring system; comprised of a two-component, solvent free, low viscosity, penetrating epoxy primer; two component epoxy undercoat, broadcast decorative chip flakes; and two-component clear epoxy sealer, slip resistant, colours as selected by Architect.

**2.3** **Decorative Chip Chip Flake Epoxy:** Dur-a Flex Epotel GSC and Durex Chip Flakes. Design Coverage: Epotel GSC 2.5 $m^2$/l (100 $ft^2$/ gal) at 15 mils with decorative chip flake at full saturation to excess broadcast at minimum 1$m^2$ /kg (5$ft^2$/lbs).

**2.4** **Top Coat:** Dur-a Flex Epotel 1000 Clear. Design Coverage: 2.5 $m^2$/L (100 $ft^2$/ gal) at 15 mils WFT.

**2.5** **Fillet Stips:** As recommended by the manufacture at all vertical/ horizontal conditions.

**2.6** **Service Temperature Range:** minimum 0 degrees C; maximum 50 degrees C, quick term 95 degrees C.

**2.7** **Thickness:** 80 mils (2 mm).

**2.8** **Performance Criteria as Tested:**

1. Compressive Strength: at 7 days, ASTM C579, 11,500 psi.
2. Tensile Strength: ASTM C307, 3,000psi.
3. Flexural Strength: ASTM C580, 950 psi.
4. Water Absorption: ASTM C413, 0.1 percent.
5. Flammability: ASTM D635, self extinguishing.
6. Indentation: MIL D-3134F, 3.6 percent.
7. Bond Strength: ACI 503R, 350 psi – concrete fails.
8. Abrasion Resistance: CS-17 wheel, I kg load, 1000 rev; ASTM D4060, 35 – 45 mg maximum weight loss.
9. Chemical Resistance: review recommended and limited service as tested (confirm with manufacturer).

**2.9** **Primer:** Dur-a Flex Epotel Multi-Prime, 100% solids epoxy flooring primer. Design Coverage: 5 $m^2$/ L (200 $ft^2$/ gal) at 8 mils or equal.

**2.10** **Sealant:** Slip and Stain resistant to ASTM D-2047 as recommended by the manufacturer.

**2.11** **Filler/Leveller:** Purpose made full self leveling latex-cement underlayment over existing concrete subfloor.

***Acceptable Products:*** Or Approved Equal

Ardex or Mapei

**2.12** **Moisture Mitigation Membrane:** Full coverage purpose made one component water based 2 coat system moisture mitigation membrane.

***Acceptable Products:*** Or Approved Equal

Ardex 'VR98'

PART 3 – EXECUTION

**3.1** **Preliminary Work**

.1 Give at least [ 5 ] days notice to the Architect before starting work.

**3.2** **Examination and Preparation of Surfaces**

.1 Examine all surfaces upon which the work of this section is to be installed and report any defects to the Architect.

.2 **Dry grinding with HEPA vac system is required for all existing and new floor and base surfaces.** Clean existing surface using recommended surface cleaner and rinse clean. After grinding apply matching filler/leveler to manufacturer's directions and cure ready for installation of replacement materials. Maximum surface tolerance 1:400.

.3 Test substrate in accordance with ASTM D4263 and ASTM F1869 or ASTM F2170 or ASTM F2420 to ensure that moisture level and in accordance with ASTM F710 for acid-alkali balance; does not exceed limits recommended by chip flake epoxy flooring manufacturer. Submit completed test documentation to Contractor and Consultant for review prior to beginning chip flake epoxy flooring installation.

.4 Ensure that surfaces to receive chip flake epoxy flooring have been provided as specified in the work of other Sections; that they will not adversely affect execution, permanence, or quality of work; and that they can be put into acceptable condition by means of preparation specified in this Section.

.5 Defective work resulting from application to unsatisfactory surfaces will be considered the responsibility of those performing the work of this Section.

.6 Cover or mask surfaces adjacent to those receiving chip flake epoxy flooring to protect work of others and property from damage and soil.

.7 Materials soiled by chip flake epoxy flooring during application and storage, and from which soil cannot be completely removed, shall be replaced under work of this Section.

.8 Fill open control joints, and other cracks and voids with material compatible with chip flake epoxy flooring material.

.9 Clean prime surfaces as recommended by chip flake epoxy flooring manufacturer.

**3.3 Installation**

.1 General:

1. Before work commences, arrange for a pre-installation meeting, at which conditions of surfaces and possible adaptations to suit, and use of materials and application procedures shall be discussed between Contractor, Chip flake epoxy flooring Subcontractor, Consultant, and representatives of material manufacturers.

2. Stop chip flake epoxy flooring in a straight line on each side of control joints; fill space over expansion joint with self-levelling, non-sag recommended sealant.

3. Apply chip flake epoxy flooring with care to ensure that no laps, voids, or other marks or irregularities are visible, and with an appearance of uniform colour, sheen and texture, all within limitations of materials and areas concerned.

4. Match colours and textures of approved samples.

5. Make clean true junctions with no visible overlap between adjoining applications of chip flake epoxy flooring.

6. Chase edge of adjacent floor systems so that chip flake epoxy flooring finishes flush with adjacent floor systems.

.2 Concrete to 28 day cure minimum. Clean floor slab, remove laitance by wet grind and or acid etch and rinse thoroughly with clean water. Moisture content in slab shall not exceed 16% to ASTM F-2170. Perform moisture testing before installation.

.3 Apply bonding agent and install dry packed cement base sloped to drains and waterproofing membrane in shower and floor drain areas as shown on drawings or as necessary to complete the work.

.4 Apply primer followed by flooring in accordance with chip flake epoxy flooring manufacturer's specifications.

.5 Install transition strips at junctions of broadcast chip flake epoxy flooring with other materials, and together with beads at top of bases.

.6 Cove material up wall where bases are indicated. Form cove with 25 mm [1"] radius using fillet strips.

.7 Epoxy Application:

1. Primer: Premix components A and B at 2:1 ratio with low speed drill equipped with paddle mixing blade for two minutes. Pour into substrate in ribbons and apply with squeegee. Cut in with brush and back roll with short nap roller. Apply to minimum 8 mils thickness.

2. Decorative Chip Flake Epoxy: Premix liquid components A and B with low speed drill/ mixing paddle for two minutes, apply at minimum 15 mils and immediately broadcast decorative chip flakes in wet epoxy to excess. Allow to cure and sweep and vacuum loose aggregate.

3. Top Coat: Blend components A and B for two minutes, pour onto floor into ribbons, distribute with squeegee and lightly backroll with lint free roller to smooth surface finish. Application thickness will dictate surface profile; 10 mils for smooth finish or 5 mils for a coarse profile.

4. Match colours and textures of approved samples.

5. Make clean true junctions with no visible overlap between adjoining applications of chip flake epoxy flooring.

6. Chase edge of adjacent floor systems so that chip flake epoxy flooring finishes flush with adjacent floor systems.

7. Finish surfaces shall be level, or straight where sloped to drains, within a tolerance of [1.5 mm] [1/16"] in [3 m] [10'-0"], and shall not vary more than [0.8 mm] [1/32"] in any running [300 mm] [12”].

**3.4 Trained Installers**

.1 These products must be applied by manufacturer’s certified and trained installers with minimum of 5 years experience with installation of this specific product.

***Trained Installers:***

**CPS Flooring** Doug Kurtin, 1043 North Service Rd. E., Oakville, ON, 905-844-7056, admin@canpoly.com

**Delso Contracting and Enterprises Ltd.** Michael Eramo, 7200 Tranmere Drive., Mississauga, ON, 905-676-0066, delso@delso.on.ca

**RMD Surfaces** Giovanni Puglisi, 345 Limeridge Rd Rd. W. Unit 05, Hamilton, ON, 905-517-5009, gpuglisi28@gmail.com

**Senate Flooring** Neil Belluz, 365 Grays Rd. Stoney Creek, ON, 905-560-0845, neil@senateflooring.com

**3.5 Clean-up**

.1 Remove debris; thoroughly wax with non-slip product and clean all finished surfaces and leave ready for occupancy.

.2 Touch-up and refinish minor defective work. Refinish entire surface areas where finish is damaged or otherwise unacceptable.

.3 Erect barriers to prevent the entry and presence of personnel not performing work of this Section during application of fluid-applied chip flake epoxy flooring, and for 48 hours following completion of application.

-End-

# PART 1 - GENERAL

**1.1 Scope**

.1 Comply with Division 1: General Requirements.

.2 Provide materials, labour and equipment for painting and finishing new and existing materials as shown on the drawings, described herein, or as necessary to complete the work.

**1.2 Related Work Under Other Sections**

.1 Section 04211: Basic Unit Masonry, [painting new masonry.]

.2 Section 07900: Sealant, [co-ordinating with work of this section.]

.3 Section 08131: Steel Doors and Frames, [paint frame and door and all exposed faces and edges.]

.4 Section 09250: Gypsum Board, [painting of gypsum board.]

.5 Division 15: Mechanical, [painting of all mechanical items and painting ll mechanical grilles in Vestibule Ceiling to match metal tile colour.]

.6 Division 16: Electrical, [painting of all electric items.]

**1.3 Standards**

.1 **Paint Materials:** To MPI Architectural Painting Specification Manual and MPI Maintenance Repainting Manual, Exterior and Interior Systems. Provide signed certificate stating materials comply with the standards and that paint materials for each coating are products of one manufacturer only. Use only odourless solvent products in all interior locations. Do not mix or thin. Use materials and colours directly from the manufacturer's containers.

.2 **Workmanship Standards:** To MPI Architectural Painting Specification Manual and MPI Maintenance Repainting Manual, Exterior and Interior Systems as applicable with sufficient coats to provide full coverage, colour match and uniform sheen, but using minimum number of coats specified. Conform to regulations of authorities having jurisdiction.

**1.4 Samples**

.1 Submit the successful manufacturers colour system with the approved colours marked and related to those used on the approved colour schedule. Submit the colours to the Architect for approval and retention in the project file. Ensure finished work matches manufacturers colour sample.

**1.5 Environmental Requirements**

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

.2 Do not clean equipment, brushes, rollers, etc. on the premises.

.3 During paint operations, provide sufficient fresh air circulation.

.4 In cold weather, use temporary exhaust fans or ozone air purifier.

**1.6 Delivery and Storage**

.1 Deliver materials in original containers with labels intact and seals unbroken.

.2 Store materials under covers and protect from fire at all times. The Architect will not provide material storage space.

**1.7 Protection**

.1 Before commencement of work, remove cover plates of service devices, surface hardware, frames of lighting fixtures and all other obstructions. Replace them in satisfactory condition when work of this section is completed, to the approval of Architect.

.2 Before commencement of work, protect all surface hardware that is impractical to remove. Protect all weather stripping, acoustic and smoke seal gaskets in an approved manner.

.3 Remove soiled and used rags, waste and empty containers from the building daily. Take all precautions to preclude a fire.

.4 Post legible signs at all points of entry to the areas in which work of this section is being applied.

.5 Erect suitable barriers to prevent traffic and other trades from working in such areas during application of this work.

**1.8 Inspection**

.1 Have material suppliers' representatives visit site in company with Contractor and painter prior to commencement of operations to discuss finishing procedures to be used and to analyze conditions of surfaces to be coated, in order that alternative recommendations may be accorded consideration, should adverse conditions exist.

.2 Ensure that material suppliers' representatives visit site at intervals during surface preparation and application operations, to ensure that specified surface preparation has been completed, specified products are being used, proper number of coats are being applied, and specified finishing procedures are being implemented.

.3 Submit to Contractor and Architect a written report of material suppliers' representatives verify conformance to Specifications.

**1.9 Maintenance Materials**

.1 Provide extra (1) 4L unopened can of each colour of paint and stain. Store where directed for future maintenance use.

## PART 2 - PRODUCTS

**2.1 Colours:** To match existing or as selected by the Architect (Maximum 3 colours.)

**2.2 Gloss Values**

.1 Gloss values at 60% and Sheen Values at 85% determined in accordance with MPI Gloss:

| | | |
|---|---|---|
| .1 | 0 to 5 for flat. | max. 10 sheen |
| .2 | 5 to 10 for high sheen flat. | 10-35 sheen |
| .3 | 10 to 25 for eggshell. | 10-35 sheen |
| .4 | 25 to 35 for satin. | min. 35 sheen |
| .5 | 35 to 70 for semi-gloss | |
| .6 | 70 to 85 for gloss | |
| .7 | 85 to 100 for high gloss | |

**2.4** **Interior Finish Materials:**

.1 For New Concrete
One coat Block Filler
Two coats Primer Sealer
Two coats Satin or Semi-Gloss Enamel

.2 For Existing Concrete Block
One coat Multi Surface Primer Sealer for oil or latex based original paint
Two coats Satin Enamel

.3 For Epoxy Finish on New Concrete Block
Two coats Block Filler
One coat Epoxy Primer
Two coat Epoxy Colour Coat

.4 For Epoxy Existing Concrete Block
One coat Epoxy Multi Surface Primer for oil or latex based original paint
Two coat Epoxy Colour Coat

.5 For New Gypsum Board and Plaster Walls and Ceilings
One coat Primer Sealer
Two coats Flat Paint on Ceiling and Two coats Satin on Walls

.6 For Existing Gypsum Board and Plaster Walls and Ceilings
One coat Multi Surface Primer Sealer for oil or latex based original paint
Two coats Flat Paint on Ceiling and Two coats Satin on Walls

.7 For New Gypsum Board and Plaster Walls in High Humidity Areas
One coat Primer Sealer
Two coats Semi-Gloss Enamel

.8 For Existing Gypsum Board and Plaster Walls in High Humidity Areas
One coat Multi Surface Primer for oil or latex based original paint
Two coats Satin Enamel

.9 For Painted New Wood Doors (on exposed edges)
One coat Primer Sealer
Two coats Semi-Gloss Enamel

.10 For Painted Existing Wood Doors (on exposed edges)
One coat Multi Surface Primer for oil or latex based original paint
Two coats Semi-Gloss Enamel

.11 For New Primed Ferrous Metal Surfaces
One coat Spot Priming
One coat Multi Surface Primer for oil or latex based original paint
Two coats Gloss Enamel

.12 For Existing Primed Ferrous Metal Surfaces
One coat Spot Priming Rust Inhibitor Type
One coat Multi Surface Primer for oil or latex based original paint
Two coats Gloss Enamel

.13 For New Galvanized and Zinc Coated Metal
One coat Cementitious Galvanized Metal if bare metal or
One coat Primer
Two coats Semi-Gloss Enamel

.14 For Existing Galvanized and Zinc Coated Metal
One coat Cementitious Galvanized Metal if bare metal or
One coat Spot Priming Rust Inhibitor Type
One coat Multi Surface Primer for oil or latex based original paint
Two coats Semi-Gloss Enamel

.15 For Pipe Insulation Covering
One coat Tinted Primer
Sealer
One coat Semi-Gloss Enamel

.16 Existing and New Interior Wood Stained
One coat wiping stain
One coat sanding sealer
Two coats Semi-Gloss Varnish

**.17 Special paint for wall projection screen area**
**One coat Primer Sealer**
**Two coats 3D4K screen paint by 'Paint on Screen 1-800-236-8015 sales@paintonscreen.com'**

**2.5 Exterior Finish Materials**

.1 For New Primed Ferrous Metal Surfaces
One coat Spot Priming
One coat Multi Surface Primer for oil or latex based original paint
Two coats Gloss Enamel

.2 For Existing Primed Ferrous Metal Surfaces
One coat Spot Priming Rust Inhibitor Type
One coat Multi Surface Primer for oil or latex based original paint
Two coats Gloss Enamel

.3 For New Galvanized and Zinc Coated Metal
One coat Cementitious Galvanized Metal if bare metal or
One coat Primer
Two coats Semi-Gloss Enamel

.4 For Existing Galvanized and Zinc Coated Metal
One coat Cementitious Galvanized Metal if bare metal or
One coat Spot Priming Rust Inhibitor Type
One coat Multi Surface Primer for oil or latex based original paint
Two coats Semi-Gloss Enamel

***Acceptable Products: (Premium professional quality paint as per the current MPI Manual. Products with specific manufacturer listed will not be substituted without Architect's written approval)***

Benjamin Moore
Dulux-Glidden
Para Paints and Coatings
Sherwin Williams

## PART 3 - EXECUTION

**3.1 Preliminary Work**

.1 Give at least [ 5 ] days notice to the Architect before starting work.

**3.2 Preliminary Repairs**

.1 Cut away the cracked or fissured finish to expose the primary substrate for a minimum of 300 mm (12") on both sides of the crack[s] or fissure[s].

.2 Examine substrate surface and where cracks or fissures are due to normal settlement or acceptable building movement, fill with compatible materials to material manufacturer's directions and the Architect's approval.

.3 Fill and neatly join repairs to existing work for both substrate and finish; trowel to an even, level and matching texture; cure and sand as required.

.4 Reprime entire repair to ensure colour and texture matches the surrounding finished surfaces prior to normal repainting operations.

**3.3 Preparation of Surfaces**

.1 Prepare wood surfaces to MPI standards:

.1 Use CAN/CGSB 10-GP-126M vinyl sealer over knots and resinous areas.

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

.3 Tint filler to match stains used to finish woodwork.

.2 Touch up shop primer on steel with MPI approved primer applied to MPI procedures.

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

.4 Prepare masonry, surfaces to MPI procedures.

.5 Prepare new wallboard surfaces to MPI procedures. Fill cracks with plaster patching compound.

.6 Prepare copper piping and accessories to MPI procedures.

.7 Thoroughly clean all existing surfaces, sand and scrape loose paint from existing surfaces, remove all abandoned wall plugs, nails, screws, remove all oil, grease, tar, etc., fill all holes and low areas flush with existing surfaces, sand and prime paint.

**3.4 Application**

.1 Sand and dust between each coat to remove defects visible from a distance up to 1.5 m (5 ft).

.2 Finish bottoms, edges, tops and cut-outs of doors after fitting as specified for door surfaces.

.3 Finish tops of cabinets and projecting ledges, above and below sight lines as specified for surrounding surfaces.

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

.5 Repainted surfaces within already painted areas must colour match existing.

.6 After painting, drawers, window sashes and doors must operate freely.

**3.5 Mechanical and Electrical Equipment**

.1 Paint exposed conduits, pipes, hangers and other mechanical and electrical equipment occurring in finished areas including inside cupboards and cabinet work. Colour and texture to match adjacent surfaces, except where noted otherwise.

.2 Paint interior of ductwork where visible with primer and one coat matte black paint.

.3 Paint both sides and edges of plywood backboards for mounting equipment before installation. Leave equipment in original finish except for touch-up as required; paint conduits, mounting accessories and other unfinished items.

**3.6 Special paint for wall projection screen area**

.1 Apply as per manufacturer’s instructions.

**3.7 Completion**

.1 Remove protection; make good damage to this and adjacent work.

2 Remove materials, debris, tools, plant and equipment from the premises.

**3.8 Clean-up**

.1 Remove rubbish, rags and oily waste from the site daily and at final completion and keep areas clean.

.2 Upon completion, clean blemished surfaces to the Architect's satisfaction. Repair any damage. Replace hardware plates, drapes, pulls, etc.

.3 Leave building and painted site equipment in a 'cleaned and polished' condition.

To be completed by Contractor before commencing work as verification of Architects colour selection.

APPENDIX A

Project Date
Municipality Page of

1. Submit name of material manufacturer for future maintenance and matching.

   _____

2. List material manufacturers numbers which comply with CAN/CGSB Standard for each primer sealer, paint, varnish, enamel and filler.

Any unauthorized materials will be removed from the site.

_____ _____
Signature/Company Seal Date

-End-

# PART 1 - GENERAL

**1.1 Scope**

.1 Comply with Division 1: General Requirements.

.2 Provide materials, labour and equipment for the installation of security gate, as shown on the drawings, described herein or as necessary to complete the work.

**1.2 Related Work Under Other Sections**

.2 Section 16: Electrical, [co-ordinating with work of this section.]

**1.3 Delivery, Storage and Handling**

.1 Delivery all materials as specified any defective, damaged, warped material or material deemed to be inferior to the specification by the Architect will be promptly replaced.

.2 All materials shall be stored and stacked in order to prevent damage from exposure to moisture.

**1.4 Co-ordination and Co-operation**

.1 Co-ordinate and co-operate with all other trades to ensure satisfactory and expeditious completion of the work.

.2 Co-ordinate installation of work to be built-in by other sections, also equipment to be incorporated into finished carpentry work.

.3 Review drawings of other sections affecting work of this section to co-ordinate locations of other components.

**1.5 Samples**

.1 Submit a copy of the manufacturer’s product catalogue, clearly identifying the proposed products to the Architect for written approval prior to award of contract.

**1.4 Shop Drawings**

.1 Submit [ 6 ] copies of shop drawings, schedules and installation details, clearly showing site dimensions, sizes, materials, thicknesses, finishes, connections, joints, anchorage, supports, details and accessories. Fabricate only with the Architect's written approval.

## PART 2 - PRODUCTS

**2.1** **Security Gate:** as shown on drawings.

***Acceptable Manufacturer or approved equal:***

Mobiflex-Aeroflex clear anodized finish c/w lock cylinder prepped on Servery 1042a side, lock cylinder supplied from hardware list. Refer to project 14986-241851 tel. 1-800-852-3539.

## PART 3 - EXECUTION

**3.1** **Preliminary Work**

.1 Give at least [ 5 ] days notice to the Architect before starting work.

.2 Provide temporary protection to all areas during operations.

**3.2** **Installation**

.1 Install all items to manufacture's instructions and recommendations.

.2 Set items plumb, square, level, without any distortions, centered exactly in locations shown on drawings.

.3 Secure each item to the base structure in accordance with details as shown on drawings, manufacturer's instructions and reviewed shop drawings.

**3.3** **Clean-up**

.1 Clean each metal specialty item using only cleaning agents recommended by the manufacturer. Leave installations in a 'finish polished' condition.

-End-

## PART 1 - GENERAL

**1.1 Scope**

.1 Comply with Division 1: General Requirements.

.2 Provide materials, labour and equipment for the installation of all visual display boards to locations shown on the drawings.

**1.2 Related Work Under Other Sections**

.1 Section 06200: Finish Carpentry, [co-ordinating with work of this section.]

.2 Section 07900: Sealants, [co-ordinating with work of this section.]

**1.3 Examination:**

.1 Examine all surfaces and conditions upon which the work of this section depends. Report all discrepancies to the Architect.

.2 Commencement of work means acceptance of these surfaces

**1.4 Delivery, Storage and Handing**

.1 Deliver and store materials undamaged in original wrappings and containers with manufacturers labels and seals intact.

.2 Store materials in suitable storage place. Prevent damage during handling and storage.

**1.5 Shop Drawings**

.1 Submit [ 6 ] copies of shop drawing clearly indicating types, materials, finishes, sizes, etc.

## PART 2 - PRODUCTS

**2.1 Materials:**

.1 **Quantity and Location:** As Shown on Drawings

.2 **Sheet Steel:** To ASTM A526/A526M.

.3 **Aluminum Frame:** To Aluminum Association Alloy AA6063.T.5. 19 x 12 x 19 mm ($^3/_4$"x $^1/_2$"x $^3/_4$"), minimum wall thickness 1.0 mm (0.04")

.4 **Hardware:** Include minimum 4 keyhole steel mounting brackets.

.5 **Finishes:** White boards to be 'white' porcelain baked enamel. Aluminum to be clear anodized.

.6 **High Density Particle Core Backer Board:** 12 mm ($^1/_2$") for white boards and 6 mm ($^1/_4$") for cork boards.

***Acceptable Products:***
Architectural School Products or approved equal 'White Board'

**2.2 Fabrication:**

.1 **Frames:** Mitre all corners frames screwed to backing @ 150 mm (6") on centre.

.2 **Exposed Cork or Porcelain Surfaces:** To be pressure/heat factory laminated.

## PART 3 - EXECUTION

**3.1 Erection**

.1 Install boards and signage in accordance with manufacturer's instructions and Board's Guidelines attached.

.2 Hang units, plumb, level, rigidly supported with toggle type anchor bolts in hollow stud walls.

**3.2 Clean-up**

.1 Remove debris resulting from the work.

.2 Leave installation in a tidy condition ready for use.

-End-

## PART 1 - GENERAL

**1.1 Scope**

.1 Comply with Division 1: General Requirements.

.2 Provide materials, labour and equipment for the installation of washroom accessories [including those required in accommodation provided for disabled persons] as shown on drawings, described herein or as necessary to complete the work.

**1.2 Related Work Under Other Sections**

.1 Section 06200: Finish Carpentry, [co-ordinating work with this section and provide all washroom accessories and grab bars attached to partitions for installation by this section.]

.2 Section 10155: Solid Phenolic Toilet Compartments, [co-ordinating work with this section and provide all washroom accessories and grab bars attached to partitions for installation by this section.]

**1.3 Shop Drawings**

.1 Submit [ 6 ] copies of shop drawings or catalogue illustrations indicating size and description of components, base material, surface finish inside and out, hardware and locks, attachment devices, description of rough-in-frame and building-in details of anchors for grab bars.

## PART 2 - PRODUCTS

**2.1 Materials:**

.1 **Sheet Steel:** Commercial grade, stretcher levelled sheet steel to ASTM A526/A526M with G90 zinc coating to ASTM A525M.

.2 **Stainless Steel Sheet:** To ASTM A666-87, Type 302, No. 4 finish.

.3 **Steel Tubing:** 25 mm (1") OD tubing of 1.2 mm ($^{1}/_{16}$") wall thickness.

.4 **Fasteners:** Stainless steel tamperproof screws and bolts torx or 2 hole snake eyes type; expansion shields, butterfly, lead or eazy anchor type, as recommended by fixture manufacturer.

**2.2 Finishes:**

.1 **Chrome and Nickel Plating:** To ASTM B456 [satin] [polished] finish.

.2 **Stainless Steel:** To ASTM A666, Type 302, No. 4 finish, minimum 0.8 mm thick.

.3 **Baked Enamel:** To product manufacturers standard. Colour selected from standard range by the Architect.

.4 **Manufacturers or Brand Names:** Not acceptable on exposed faces.

**2.3** **Washroom Accessories:** Provide the following accessories as supplied by Bobrick Washroom Equipment and Frost as noted.

.1 **Room 1042A:** soap dispenser and Paper Towel units supplied by owner installed by general contractor, (**1**) surface mount waste receptacle *F-326*.

.2 **Rooms 1044A:** soap dispenser and Paper Towel units supplied by owner installed by general contractor, (**2**) surface mount waste receptacle *F-326*..

**2.4** **Fabrication**

.1 Weld and grind joints of fabricated components flush and smooth. Use mechanical fasteners only where approved.

.2 Wherever possible, form exposed surfaces from one sheet of stock, free of joints.

.3 Brake form sheet metal work with 1.5 mm ($^{1}/_{16}$") radius bends.

.4 Form surfaces flat without distortion. Maintain flat surfaces without scratches or dents.

.5 Back paint components where contact is made with other building finishes to prevent electrolysis.

.6 Hot dip galvanize ferrous metal anchors and fastening devices to CAN/CSA-G164.

.7 Shop assemble components and package complete with anchors and fittings.

.8 Deliver inserts and rough-in frames to job site at appropriate time for building-in. Provide templates or rough-in measurements as required.

.9 Provide steel anchor plates and components for installation on studding and building framing.

## PART 3 - EXECUTION

**3.1** **General**

.1 Installation by Sections listed above.

.2 **All paper towel dispensers and soap dispensers, supplied by owner to be installed by General Contractor for all rooms indicated and as shown on the drawings.**

-End-