HWDSB

2025-141-P02083 W.H. Ballard Elementary School Washroom Renovations

801 Dunsmure Road, Hamilton, ON

AMRA J
ARCHITECTS INC.

Pages

INTRODUCTORY INFORMATION

Hamilton Wentworth District School Board – Front End Documents

Division 01 – General Requirements

Division 02 – Existing Conditions

Division 03 – Concrete

Division 04 – Masonry (refer to drawings)

Division 06 – Architectural Woodwork

Division 07 – Thermal and Moisture Protection

Division 08 – Openings

Division 09 – Finishes

Pages

END OF THIS SECTION

1. Hazardous Building Materials Assessment

1. A copy of the following report with respect to the identified portion of the Work is being made available as part of the Bid Documents; files titled as follows:

   .1 Titled: W.H. Ballard Elementary School
   Washrooms & Changerooms Renovations & Upgrades
   Prepared by: PINCHIN Ltd.
   File No.: 336572.025
   Dated: February 6, 2025
   No. of Pages: 165

   .2 Abatement Specifications (#pages 15)

2. These reports provide detailed descriptions of the assessment criteria, findings, recommendations and limitations with respect to toxic or hazardous materials present at the identified property.

3. The reports, by their nature, cannot reveal all conditions that exist or can occur. Should conditions, in the opinion of the Consultant, be found to vary substantially from the report, changes in the scope of Work will be made, with resulting credits or expenditures to the Contract Price accruing to the Owner.

4. HWDSB Construction School Specific Information Sheet

1. Refer to attached HWDSB Appendix A instructions and information sample sheet, of construction site specific protocols the contractor will be required to follow. (6 pages)

End of Section

1. Definitions

1. The following Section of this Specification are of the abbreviated type and include incomplete sentences. Definite and indefinite articles have often been omitted and sentences are written in the form of direct instructions to the Contractor without using the phrase `the Contractor shall.' Standard specifications and other quality references inserted govern materials and workmanship without using phrases `conform with,' `conformity therewith,' etc. Omitted words and phrases to be supplied in the same manner as they are when a note appears on the Drawings.

2. The Specifications are separated into Sections for reference convenience only. Such separation must in no instance make Owner or his Consultants arbiter to establish subcontract limits between Contractor and Subcontractor.

3. Provide all items, articles, materials, operations or methods listed, mentioned or scheduled on Drawings and/or in Specifications, including all labour, materials, equipment, tools, services, and incidentals necessary and required to complete the work. Responsibility for breakdown into and extension of subcontracts, including co-ordination of same, rests entirely with the Contractor.

4. Standard Specifications referred to are editions in force at Tender Closing Date.

2. Terminology

1. Consultants are the team of Architects, Engineers and other experts commissioned by the Owner, directly or indirectly, to execute design, contract documents and supervision for the project, including any of their agents or employees.

2. Prime Consultant is the Architect.

3. Contractor is the Firm or Corporation who, having signed the Agreement, has the sole legal responsibility to carry out the work shown or described in the Contract Documents for the Owner, whether contractually assigned to a Subcontractor or supplier, or not.

3. Minimum Standards

1. Unless otherwise specified, work and material to conform or exceed the minimum standards set out in the editions of the Canadian Government Specification Board, Canadian Standards Associations, the Ontario Building Code, Underwriters' Laboratories of Canada, the Canadian Electrical Code, the Local Building Code in force, whichever is applicable.

2. Copies of Standard Specifications referred to in this Specification to be kept on the site.

3. The use of the name (or its abbreviation) of any of the following bodies, accompanied by the reference number of a specification of that body to mean that the entire specification of the body to apply as noted:

AISC: American Institute of Steel Construction;
ASHRAE: American Society of Heating, Refrigerating and Air Conditioning Engineers;
ASTM: American Society for Testing Materials;
CEC: Canadian Electric Code;
CGSB: Canadian Government Specification Board;
CISC: Canadian Institute of Steel Construction;
CRCA: Canadian Roofing Contractors' Association;
CSA: Canadian Standards Association;
OBC: Ontario Building Code;
ULC: Underwriters' Laboratories of Canada;

CLA: Canadian Lumbermen's Association.

4. Cooperation

1. Each trade to co-operate with the trades of adjacent or affected work. Supply in good time requirements affecting adjacent and underlying work in writing and items to be set or built in. Similarly, heed requirements and build-in items provided by other trades.

2. Take necessary precautions to protect work of other trades from contamination, marring or other damage due to application or installation processes, methods and activities.

3. General Contractor and each trade to co-operate with Contractors which may be assigned or selected by the Owner to perform work under Cash Allowances. Owner reserves the right to assign non-unionized labour to perform work under Cash Allowances, at Owners discretion.

4. Cooperate with and assist in coordinating work by Owner’s own forces or other contractors engaged by the Owner, in the interest of the school.

5. Coordination

1. Co-ordinate the work of all trades in such a manner that each trade co-operates with the trade of adjacent work.

2. Organize weekly job site meetings and send out notices stating time and place to Consultants, subcontractors, Suppliers and all others whose presence is required at the meetings.

3. Take note of all persons attending these meetings and submit to Consultants and Owner, Minutes of these Meetings showing any major decisions made and instructions or information required.

4. Co-ordinate the Work in this Contract with the work of others awarded work under Cash Allowances.

6. Building Dimensions and Co-ordination

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

2. Verify that all work, as it proceeds, is executed in accordance with dimensions and positions indicated which maintain levels and clearances to adjacent work, as set out by requirements of the drawings, and ensure that work installed in error is rectified before construction resumes.

3. Check and verify all dimensions referring to the work and the interfacing of all services. Verify all dimensions with the trade concerned when pertaining to the work of other trades. Be responsible to see that Subcontractors for various trades co-operate for the proper performance of the Work.

4. Avoid scaling directly from the drawings. If there is ambiguity or lack of information, immediately inform the Consultant. Be responsible for any change through the disregarding of this clause.

5. All details and measurements of any work which is to fit or to conform with work installed shall be taken at the building.

6. Advise Consultant of discrepancies and if there are omissions on drawings, particularly reflected ceiling plans and jointing patterns for paving, ceramic tile, or carpet tile layouts, which affect aesthetics, or which interfere with services, equipment or surfaces. DO NOT PROCEED without direction from the Consultant.

7. Ensure that each Subcontractor communicates requirements for site conditions and surfaces necessary for the execution of the Subcontractor's work, and that he provides setting drawings, templates and all other information necessary for the location and installation of material, holes, sleeves, insets, anchors, accessories, fastenings, connections and access panels. Inform other Subcontractors whose work is affected by these requirements and preparatory work.

8. Prepare interference drawings to properly co-ordinate the work where necessitated. Refer to Section 01340.

7. Use of Premises Before Substantial Performance

1. The Owner shall have the right to enter and occupy the building, in whole or in part, for the purpose of placing fittings and equipment, or for other use, before completion of the Contract if, in the opinion of the Consultant, such entry and occupancy does not prevent or interfere with the Contractor in the performance of the Contract. Such entry shall in no way be considered as an acceptance of the Work in whole, or in part, nor shall it imply acknowledgment that terms of the Agreement are fulfilled.

8. Layout of Work

1. Layout work with respect to the work of all trades. Arrange mechanical and electrical work such as piping, ducts, conduits, panels, equipment and the like to suit the architectural and structural details.

2. Alterations necessary due to conflict and interference between trades, to be executed at no cost to the Owner unless notification is given in writing before Tender Closing Date.

9. By-Laws and Regulations

1. Nothing contained in the Drawings and Specifications are to be so construed as to be knowingly in conflict with any law, by-law or regulation of municipal, provincial or other authorities having jurisdiction.

2. Perform work in conformity with such laws, by-laws and regulations and make any necessary changes or deviations from the Drawings and Specifications subsequently required as directed and at no cost to the Owner unless notification is given in writing before Tender Closing Date.

3. Furnish inspection certificates and/or permits as may be applicable as evidence, that installed work conforms with laws, by-laws, and regulations of authorities having jurisdiction.

10. Protection

1. Take necessary precautions and provide and install required coverings to protect material, work and finishes from contamination, damage, the elements, water and frost.

2. Make good any damage or replace damaged materials, as directed. Repairs to be made by the trade having originally installed or fabricated the damaged material, finish or item. Protect electrical equipment from water and the elements.

3. Protect adjacent private and public property from damage and contamination.

4. Protect curbs and sidewalks from damage from trucking by means of boards and the like. Repair, or pay or repair of damage to existing roads and sidewalks.

5. Mark glass after glazing in an acceptable manner and leave in place until final clean-up.

6. Protect floor finishes from construction traffic and transport of construction materials and equipment by means of 6 mm plywood panels.

11. Delivery, Handling and Storage of Materials

1. No storage available within the school for materials. Contractor to make necessary arrangements for storage containers as needed. Storage container location to be approved by the Owner prior to commencing project. Coordinate location of storage container/staging area with school prior to placement and protect all existing surfaces including turf, asphalt.

The Contractor is fully responsible for security, or any storage containers, fencing, equipment or material stored on school premises. HWDSB will not be held liable for missing or damaged items.

2. All deliveries to the school premises must be scheduled to arrive when no students are outside. This includes avoiding times when students are arriving, departing, or during outdoor activities.

3. Any maneuvering of vehicles or equipment within or around the school premises must be conducted while students are in class. This excludes maneuvering during breaks, lunch periods, or any other times when students might be outside.

4. All site maneuvering activities must be accompanied by a flag person to ensure the safety of students and staff.

5. Store materials which will be damaged by weather in suitable dry accommodation. Provide heat, as required, to maintain temperatures recommended by material manufacturer.

6. Store highly combustible or volatile materials separately from other materials, and under no circumstances, within the building. Protect against open flame and other fire hazards. Limit volume of supply on the site to minimum required for one day's operations.

7. Handle and store material so as to prevent damage to material, structure and finishes. Avoid undue loading stresses in materials or overloading of floors.

8. Avoid undue loading stresses in materials or overloading of floors. Do not store materials in building or utilize it for construction purposes in any manner which would exceed design loading on any building element. Temporarily support or strengthen parts of the structure subjected to excessive loads during construction.

9. Do not store material and equipment detrimental to finished surfaces within areas of the building where finishing has commenced or has been completed. No storage will be available within the school. Contractor to make necessary arrangements exterior to the school in storage containers as needed. Coordinate locations with school prior to placement and protect all existing surfaces.

10. Deliver package material in original, and Storage of unopened and undamaged containers with manufacturer’s labels and seals intact.

12. Debris

1. Assign clean-up duties to a crew with own Foremen which will be of sufficient size to prevent accumulation of debris and dirt in any part of the structure or on the site.

2. Remove Construction Debris daily and dispose of this debris in a legal manner so as to avoid causing hazards to occupants and visitors on site.

3. Under no circumstances should debris, rubbish or trash be burned or buried on the site.

- Do not dispose of any waste in the Owner's facilities unless Owner authorized. Under no circumstances shall the Contractor use the school's garbage disposal containers including those in the classrooms and interior spaces of the school.
- Perform a scan of the ground areas adjacent to the work area by use of metal detector/magnetic sweeper daily. Any construction debris is to be removed from the grounds on a daily basis.
- Pathways used to access exterior waste bins for demolition should take precautions to ensure routes are protected and cleared of any debris.

13. Cutting, Fitting and Patching

1. Required cutting to be done by General Contractor. Patching and painting of work to be executed by the General Contractor.

2. All sub-trades are to notify the General Contractors bidding as to the extent of the cutting, patching, and painting of their respective trades.

3. Drilling, cutting, fitting and patching necessary due to failure to deliver items to be built-in time, or installation in wrong location to be executed, as directed, at no cost to the Owner.

4. Give written notification prior to commencement of drilling and cutting of load bearing structural members and finished surfaces.

5. Cut holes with smooth, true, clean edges, after they are approved by applicable trade. Size holes and openings for hot water and steam pipes, so as to allow for expansion and contraction of such pipes.

14. Fastenings

1. Supply all fastenings, anchors and accessories required for fabrication and erection or work.

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

3. Exposed metal fastenings and accessories to be of the same texture, color, and finish as base metal on which they occur. Keep to a minimum; evenly space and lay out.

4. Fastenings to be permanent, of such a type and size and installed in such a manner to provide positive anchorage of the unit to be secured. Wood plugs are not acceptable. Install anchors at required spacing to provide required load bearing or shear capacity.

5. Power actuated fastenings are not to be used without prior written approval for specific use.

15. Surplus Materials

1. Surplus materials specifically so specified, to remain property of the Owner and be neatly stockpiled or stored, as directed.

2. All other surplus materials to become property of the Contractor; to be removed from the site and legally disposed of.

16. Documents Required and General Duties

1. **At Commencement of Contract**
   .1 The Owner has paid for the cost of the Building Permit. Mechanical Subcontractor will pay the cost of other Fees related to the Work Specified under Mechanical Scope. Electrical Subcontractor will pay the cost of all permits and fees related to the Work specified under Electrical Scope.
   .2 The General Contractor is to pay all other fees and refundable deposits if Applicable

2. **During Construction**
   .1 Organize Job Meetings in accordance with Section 01200.
   .2 Supply Monthly Progress Reports and Construction Schedule in accordance with Section 01200.
   .3 Confirm that payments are being made to subcontractors and suppliers by submission of receipts with the second and subsequent Progress Payment Application. No payment will be made for unincorporated material on the site, unless Bill of Sale in proper format is provided.

3. **Upon Completion**

   1.Upon completion of work before the Final Certificate of Payment is issued, the following to be observed, executed and submitted:
   .1 All deficiencies to have been completed in a satisfactory manner.
   .2 All final clean-up to have been executed, as specified in Section 01710.
   .3 Finishing Hardware, Inspection and Verification.
   .4 Organize a Final Inspection tour at which to be present:
   - the Owner's authorized representative;
   - the Architectural, Structural, Mechanical and Electrical Consultants, and their supervisory personnel, if any;
   - the Contractor and his superintendent.

   .5 Where the above procedure is impossible or where any deficiencies remain outstanding, the Owner's representative and the Consultant concerned, to inspect and accept the affected work and/or material upon notification by the Contractor, that all deficiencies involving this Consultant have been made good.
   .6 A complete release of all liens arising out of this Contract, other than his own. If a subcontractor or supplier refuses to furnish a release of such a lien, furnish a bond satisfactory to the Owner to indemnify him against any claim under such a lien.
   .7 Clearance Certificates from the Workplace Safety and Insurance Board, for the General Contractor and all Subcontractors.

.8 All reference records, as specified, under Section 01720.
.9 Certificate of Inspection from Mechanical and Electrical Engineers.
.10 Copies of all Lists of Deficiencies with each Deficiency verified when complete by only this project's job Superintendent. The Final List of Deficiencies to be signed, completed by all concerned, if accepted.
.11 Statement of Completion from General Contractor.
.12 Final adjustment of all Allowances.
.13 H.E.P.C. Inspection Certificate and all other Inspection Certificates required by Provincial, Municipal and other authorities having jurisdiction.
.14 Balancing Reports.
.15 As-Built Drawings. –Digital pdf files and AutoCAD v2018 or higher.
.16 A softcopy of Operation and Maintenance Manuals. A digital copy (pdf file) of all closeout documents.

17. Progress Reports

1. Submit to the Architect, Monthly Progress Reports consisting of a concise narrative and a marked-up summary schedule showing physical percentage complete by item and in total. These progress calculations must agree with the Progress Payment Claims.

2. Keep permanent written daily records on the site on the progress of work. Record to be open to inspection at reasonable times and copies to be furnished upon request. Records to show notes of commencement and completion of different trades and parts of work; daily high and low temperatures and other weather particulars; number of men engaged on the site (including sub-trades) broken down in groups for each type of construction work, and particulars about excavation and shoring; erection and removal of form work; pouring and curing of concrete; floor finishing; placing and compaction of backfill, masonry work; roofing.

3. Daily progress to give particulars on commencement and completion of each trade or part of work; form work erections and removal; concrete pouring and curing; floor finishing; masonry work; roofing; waterproofing; finishing trades, tests and inspection and the like.

18. Inspection and Testing

1. The contractor is responsible to provide his own quality control in order to meet or exceed the requirements of specified standards, codes, design criteria and referenced documents.

End of Section

1. Project Meetings for Coordination

1. Following the pre-construction meeting/construction phase kick-off meeting, arrange for site meetings every 2 weeks as appropriate to the stage of construction, for project coordination. Such meetings shall fall at the same time each week the meeting is scheduled. Prior to substantial performance, meetings shall be scheduled for every week in an effort to effectively complete all obligations under the contract in a timely manner.

2. General contractor's site supervisor and project manager as well as other responsible representatives of the Contractor's and Subcontractor's office and field forces and suppliers shall be obliged to attend.

3. Inform the Owner, Consultant, and those others whose attendance is obligatory, of the date of each meeting, in sufficient time to ensure their attendance.

4. Provide physical space for meetings within the construction office, prepare an agenda, chair and record the minutes of each meeting. Relevant information must be made available to all concerned, in order that problems to be discussed may be expeditiously resolved. Identify "action by: _____".

5. Within three days after each meeting, distribute digital copies of the minutes to each invited person, regardless of attendance.

2. Pre-construction Meeting

1. Within 5 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.

3. Project Meetings for Progress of Work

1. Conduct progress meetings in accordance with the schedule and/or decisions made at Pre-construction meeting.

2. Inform the Owner, Consultant, project consultants, Subcontractors and suppliers and those whose attendance is obligatory, of the date of the meeting, in sufficient time to ensure their attendance.

3. Include in the agenda the following:

    .1 Review, approval of minutes of previous meeting.
    .2 Review of Work progress since previous meeting.
    .3 Field observations, problems, conflicts.
    .4 Problems which impede construction schedule.
    .5 Review of off-site fabrication delivery schedules.
    .6 Corrective measures and procedures to regain projected schedule.
    .7 Revisions to construction schedule.
    .8 Progress during the preceding work period.
    .9 Look ahead for the succeeding two-week work period.

.10 Review submittal schedules: expedite as required.
.11 Maintenance of quality standards.
.12 Pending changes and substitutions.
.13 Review proposed changes for effect on construction schedule and on completion date.
.14 Other business

4. Progress Records

1. Maintain a permanent written record on the site of the progress of the work using standard OGCA form. This record shall be available to the Consultant at the site, and a copy shall be furnished to same on request. The record shall contain:

    .1 Daily weather conditions, including maximum and minimum temperatures.
    .2 Dates of the commencement and completion of stage or portion of the work of each trade in each area of the project.
    .3 Conditions encountered during excavation.
    .4 Dates of erection and removal of formwork, in each area of the project.
    .5 Dates of pouring the concrete in each area of the project, with quantity and particulars of the concrete.
    .6 Work force on project daily per trade.
    .7 Visits to site by personnel of Consultant, Jurisdictional Authorities and testing companies.

End of Section

1. General

1. Submit to Architect, for review, shop drawings, product data and samples specified.

2. Until the submission is reviewed, work involving relevant products must not proceed.

2. Shop Drawings

1. Drawings to be originals prepared by Contractor, Subcontractor, Supplier or Distributor, which illustrate the appropriate portion of work; showing fabrication, layout, setting or erection details as specified in appropriate Sections.

2. Identify details by reference to sheet and detail numbers shown on Contract Drawings.

3. Maximum sheet size 24” x 36” as a PDF.

4. General Contractor shall provide and maintain an up-to-date shop drawing tracking log, which shall be reviewed at each construction meeting.

3. Project Data

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

2. Above will only be accepted if they conform to following:
   .1 Delete information which is not applicable to project.
   .2 Supplement standard information to provide additional information applicable to project.
   .3 Show dimensions and clearances required.
   .4 Show performance characteristics and capacities.
   .5 Show wiring diagrams (when requested) and controls.

4. Coordination of Submissions

1. Review shop drawings, product data and samples prior to submission.

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

3. Coordinate each submission with requirement of work and Contract documents. Individual shop drawings will not be reviewed until all related drawings are available.

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

5. Contractor's responsibility for deviations in submission from requirements of Contract documents is not relieved by Architect's review of submission, unless Architect gives written acceptance of specified deviations.

6. Notify Architect, in writing at time of submission, of deviations from requirements of Contract documents.

7. After Architect's review, distribute copies.

5. Submission Requirements

1. Schedule submissions at least fourteen (14) days before dates that reviewed submissions will be required to be returned.

2. Submit a digital copy (PDF) of shop drawings, product data to Architect for review.

3. Accompany submissions with transmittal letter, in duplicate, containing:
   .1 Date.
   .2 Project title and number.
   .3 Contractor's name and address.
   .4 Number of each shop drawing, product data and sample submitted.
   .5 Other pertinent data.

4. Submissions must include:
   .1 Date and revision dates.
   .2 Project title and number.
   .3 Name of:
      .1 Contractor.
      .2 Subcontractor.
      .3 Supplier.
      .4 Manufacturer.
      .5 Separate detailer when pertinent.

5. Identification of product or material.
   .1 Relation to adjacent structure or materials.
   .2 Field dimensions, clearly identified as such.
   .3 Specification Section number.
   .4 Applicable standards, such as CSA or CGSB numbers.
   .5 Contractor's stamp, initialled or signed, certifying review of submission, verification of field measurements and compliance with Contract documents.

6. Interference Drawings
   .1 Prepare interference drawings for all work in confined space ie: ceiling space.

End of Section

1. Access

1. Provide and maintain adequate service roads to project site to provide safe and convenient access for deliveries.

2. Storage Sheds

1. Provide adequate weather-tight sheds with raised floors, for storage of materials, tools and equipment. Coordinate location with Owner and obtain approval.

2. The contractors and/or subcontractors are not permitted to use school spaces/areas for storage at any time.

3. Storage shed to be within fast fence compound staging area to prevent vandalism. Staging area to be confirmed with Owner and Consultant prior to erecting area.

3. Sanitary Facilities

1. Provide portable toilets and other washroom facilities as required. Coordinate location with Owner and obtain approval. Keep area and premises in sanitary condition.

2. The contractors and/or subcontractors are not permitted to use school sanitary facilities at any time.

3. Portable toilet to be within fast fence compound staging area to prevent vandalism. Staging area to be confirmed with Owner and Consultant prior to erecting area.

4. Parking

1. The contractors and/or subcontractors are responsible for coordinating parking with the local municipality.

2. The contractors and/or subcontractor are not permitted to use the school parking lots during the months of September to June. The school parking lots can be used for construction during the months of July and August. Coordinate use of spaces with Owner and obtain approval.

5. Site Enclosures

1. Erect temporary site enclosures, hoarding, using prefabricated lock fence system. Fencing shall be mechanically fastened to the ground using secure spikes on the construction side of the fence. Alternatively, construction fencing shall be mechanically fastened to the vertical t-bar piled into the ground. The ground shall be repaired to its original condition matching adjacent surfaces once the fence is no longer required and removed off site. Exterior fencing shall include visual barrier using geotextile fastened to the fence. Access into this fenced area shall be controlled by the general contractor. Maintain fence at all times for the duration of the project.

2. Interior hoarding walls shall be erected at all locations where existing occupied spaces are in the vicinity and adjacent to the construction area. All interior hoarding walls shall be constructed using stud framing and drywall. Alternatively, good-one-side plywood can be used. All hoarding walls shall include a properly latching and lockable man door complete with locking handset/lever or orbit hardware. Access through this door shall be controlled by the general contractor. Maintain hoarding walls at all times for the duration of the project.

3. Size and location of enclosure to suit area of construction.

6. Enclosure of Structure

1. Provide temporary weather-tight enclosures protection for exterior openings until permanently enclosed.

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

3. Design enclosures to withstand wind pressure.

4. Erect dust barriers to prevent dust migration to non-renovated areas. Provide boot dust mats at each interior connection to occupied areas from the construction entrances/exits. If contractor is not able to prevent dust migration to non-renovated areas, the contractor shall provide negative air units and maintain for the duration of the project until such time where dust migration can be prevented.

7. Power supply

1. Electrical power is available in existing building and will be provided at no charge for construction purpose.

8. Water Supply

1. Water is available in existing building and will be provided at no charge for construction purpose.

9. Scaffolding

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

2. Erect scaffolding independent of walls. Remove promptly when no longer required.

3. Scaffolding to be designed by a professional Engineer when required under the Occupational Health and Safety act.

10. Heat and Ventilating

1. Not applicable.

End of Section

1. Construction Safety Measures

1. Observe and enforce construction safety measures required by the National Building Code; the O.B.C.; The Provincial Government; Workplace Safety & Insurance Board; and Municipal authorities.

2. In particular, the Occupational Health and Safety Act (O. Reg. 213/91), the regulations of the Ontario Ministry of Labour and Ontario Electrical Safety Code shall be strictly enforced.

3. Contractor shall ensure that copies of all applicable construction safety regulations, codes and standards are available on the job-site throughout the period of construction. All workers are to be informed that these documents are available for reference at any time.

4. The Contractor shall be considered as the "Constructor" in consideration of the rights and responsibilities for all construction safety requirements, procedures, facilities and inspection of all work performed by the Contractor, Subcontractors/Sub-trades and other Contractors engaged on this project.

5. In the event of a conflict between any of the provisions of the above authorities the most stringent provisions are to be applied.

2. Safety Data Sheet

1. Safety Data Sheets (SDS) must be available at the job-site for any product listed on the Hazardous Ingredients List prior to being used, installed or applied inside of the building.

2. A Safety Data Sheet is to be submitted to the Architect for any product which is known to create, or suspected of creating, a health hazard or discomfort during construction or upon commissioning of the project including, but not limited to, the following:
   .1 adhesives
   .2 solvents
   .3 sealants, (caulking, vapour seals, etc.)
   .4 sprayed-on fireproofing
   .5 resilient flooring
   .6 carpet, paint, varnish or other coatings
   .7 exposed membrane waterproofing
   .8 special coatings, (terrazo sealants, chafing coatings, etc.)
   .9 solder, brazing and welding and other filler metal
   .10 other products whose particles or vapours may become air borne after installation.
   .11 any other product as directed by the Consultant.

3. Comply with WHMIS regulation, Workplace Hazardous Material Information System.

3. Fire Safety Requirements

1. Comply with requirements for Building Construction, the Ontario Building Code, the Ontario Fire Code, the requirements of Local Fire Authorities and of the requirements of the Office of the Fire Marshal.

4. Overloading

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

5. Falsework

1. Design and construct falsework in accordance with the CSA S269.1

6. Scaffolding

1. Design and construct scaffolding in accordance with CSA Z797.

2. Scaffolding to be designed by a Professional Engineer when required under the Occupational Health and Safety Act.

7. Materials Specifically Excluded

1. Asbestos and/or asbestos-containing products are not permitted. Submit Safety Data Sheets for any product suspected of containing asbestos if so requested by Consultant. Examples of some materials requiring close scrutiny and/or confirmation include:
   .1 Transite drainage pipe - whether buried or above grade - not permitted.
   .2 Composite floor tile containing asbestos - not permitted.
   .3 Lay-in ceiling tiles containing asbestos - not permitted.
   .4 Insulation and/or jacketing for pies, ducts, motors, pumps, etc. - not permitted if any asbestos is present.
2. Solder for all piping is to be lead-free.
   .1 "Lead Free" shall mean solder which contains less than 0.030% of lead when dissolved in fluoroboric and nitric acids and tested by inductively coupled argon plasma atomic emission spectroscopy. "Steelbond 281" and "Silverbrite" are acceptable solder products.
   .2 The mechanical contractor shall provide an affidavit signed by the Principal of the company, on company letterhead, that all of the solder used on the project was either one of the two acceptable products or that the solder used (identified by brand name) meets or exceeds the testing criteria.
   .3 The Owner shall undertake random testing of the soldered joints. Should testing prove that the solder used was not as specified, the Owner shall take action against the contractor to the full extent of the law.
3. All paint and finish coatings are to be lead and mercury-free. Submit Material Safety Data Sheets confirming that these products are free of all lead and/or mercury compounds.

End of Section

PART 1 - GENERAL

1.1 Related Work

1. These specifications apply to all 16 divisions of the project specification. It is the responsibility of the contractor to apply these provisions wherever practical within specification limits to all products and services used on this project.

2. It is recognized that currently specified materials and methods may conflict with the basic intention of this section. Where reasonable alternate materials and methods exist that are not specified here, and that do not compromise quality or create additional cost for the owner, notify the Architect of such alternate materials or methods. Do not proceed to use alternate materials or methods to those specified without the express approval of the Architect.

3. Elsewhere, apply the provisions of this section to all work. Exceptions can only be made when signed off by the Architect. Suitability of all products used is the responsibility of the contractor.

1.2 Compliance Specifications

1. The contractor must comply with all applicable health, safety and environmental regulations.

1.3 Beyond Compliance Specifications

1. These specifications apply in addition to all applicable health, safety and environmental compliance regulations. They are incorporated here to reflect the Owner’s intention to develop a specification which maximizes environmentally “friendly” materials and methods wherever possible within current technical and budget limitations.

2. Beyond compliance specifications recognize that performance well beyond the minimum regulatory standard is often desirable, possible and affordable, often with no cost or low cost options. It also recognizes that application methods or protocols may be as important as the material specified. Therefore these specifications cover both material and methods.

3. The primary goal of beyond compliance specification is to reduce the use of products or methods which have negative health and environmental impacts both during and after construction. These considerations may include full life cycle impacts, associated with raw materials, manufacturing, transport, deconstruction and their eventual fate.

4. These specifications will specifically address primary categories of readily identifiable products, ingredients and methods.

5. These provisions apply to both indoor and outdoor applications equally.

1.4 Exceptions

1. These specifications recognize that not all substitutes are equal and therefore exceptions can be made based on substantive evidence of necessary and superior performance. Special considerations may be given to restricted substances when secondary provisions are made such as sealed in place (contained) applications. All such exceptions must be approved in writing by the Architect.

PART 2 - MATERIALS

2.1 Products or Substances to be Avoided or Limited in Use

1. No product containing the following substances may be used on this project when an equivalent product without or with a lower concentration of this substance is suitable and available. All products containing substances which are known to cause health effects including but not limited to cancer, mutagenic, neurological, or behavioral effects should be avoided if suitable substitutes not containing or containing lower concentrations are available. This provision shall be limited to information contained on Material Safety Data Sheets, therefore MSDS sheets must be reviewed for all products for which such sheets are required. Applications for exceptions must be accompanied by related MSDS and product application and performance sheets, clearly showing a need for the exception.

2.2 Volatile Organic Compounds

1. No product containing volatile organic compounds (in over simplified terms volatile petro chemical or similar plant derived solvents) may be used on this project when a suitable non VOC or failing that a low VOC substitute is available. Manufacturers may refer to the U.S. EPA definition of VOC's for guidance or alternatively use the low molecular weight organic compound descriptor.

   Example: Paints, Coatings, Primer, Adhesives, Chalks, Firestops, etc.

2. Waterborne equivalents are available for most of the solvent borne products used in construction and in most cases would be the preferred alternative. Waterborne products may in some instances have high VOC contents, therefore the fact that a product is waterborne does not automatically make it acceptable.

2.3 Chlorinated Substances

1. Poly Vinyl Chloride (vinyl) and other chlorinated products should be avoided if suitable substitutes are available.

2.4 Plasticizers

1. Plasticisers which offgass (low molecular weight) should be avoided.

2.5 Man Made Mineral Fibres

1. Products containing mineral fibres which can be emitted or abraded should be avoided.

   Examples: duct liner, mineral fibre ceiling tiles, etc.

2.6 Radiation

1. Products or methods which result in the lowest emission of Electro Magnetic Fields are preferred.

2.7 Biocides

1. Products containing biocides (pesticides, miticides, mildeweides. fungicides, rodenticides, etc.) are not to be used if suitable alternatives are available. Highly stable, low human toxicity biocides such as Portercept may be acceptable substitutes. Biocide formulas which break down, emit powders of offgass should be avoided.

2.8 Heavy Metals

1. Heavy metals such as lead, cadmium, mercury etc. should be avoided.

2.9 Aluminum

1. Raw aluminum should be avoided, anodized or factory painted aluminum is acceptable. This is particularly applicable to surfaces which people can touch.

2.10 Ozone Depleting Substances

1. Products which contain or which use Ozone Depleting Substances such as Bromide, Chlorofluorocarbons (CFC) or Hydrofluorocarbons (HFC) etc. should be avoided if suitable substitutes are available.

2.11 Greenhouse Gasses

1. Products which contain, use or generate Greenhouse gasses such as CO2 should be avoided if suitable substitutes are available.

2.12 Bituminous (tar) Products

1. Products containing tar compounds should not be used if suitable substitutes are available.

2.13 Chemical Compounds

1. Products containing the following chemical compounds should not be used if suitable substitutes are available: Neoprene, Latex, Butyl, ABS, Formaldehyde.

2.14 Adhesives

1. Adhesives containing solvents or other non preferred ingredients should be avoided if suitable substitutes are available, including systems designs which do not need adhesives or can use mechanical etc. fastening alternatives

2.15 Composite Products

1. Some composite products contain adhesives such as formaldehyde which are not preferred, and some composites such as Fibre Reinforced Plastics are not practical for recycling. These products should be avoided if suitable substitutes are available.

2.16 Cleaners and Solvents

1. Products, equipment, and methods which require the use of cleaners and solvents are not preferred if suitable substitutes are available. Examples of preferred products would include No Wax floors, or primerless caulks and adhesives, or products not requiring caulks and adhesives.

End of Section

1. General

1. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.

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

3. Prevent accumulation of waste, which create hazardous conditions.

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

5. At no time shall waste be stored inside the school building. All waste and waste containers must be separated from general public and school occupants using properly secured and locking construction hoarding.

2. Materials

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

2. Provide on-site construction specific dump containers for collection of waste materials, and rubbish. The school waste bins, and garbage collection shall not be used to dispose of construction related waste materials, debris and/or rubbish.

3. Cleaning During Construction

1. Maintain project grounds, and public properties free from accumulations of waste materials and rubbish.

2. Remove waste materials, and rubbish from site.

3. Vacuum clean interior building areas when ready to receive finish painting and continue vacuum cleaning on an as-needed basis until building is ready for substantial completion or occupancy.

4. Schedule cleaning operations so that resulting dust and other contaminants will not fall on wet, newly painted surfaces.

4. Final Cleaning

1. At completion of Work, remove waste materials, rubbish, tools, equipment, machinery, and surplus materials, and clean all surfaces and leave project clean and ready for occupancy.

2. Employ experienced professional cleaners, for final cleaning.

3. In preparation for Substantial Performance or Fitness for Occupancy status, whichever occurs first, conduct final inspection of interior and exterior surfaces and of concealed spaces.

4. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from all interior and exterior finished surfaces; polish resilient and ceramic surfaces so designated to shine finish. Vacuum carpet.

5. Clean and polish glass and mirrors.

6. Repair, patch and touch-up marred surfaces to specified finish and to match new adjacent surfaces.

7. Broom-clean, magnet roll, and pressure wash all concrete and asphalt paved surfaces; rake clean other surfaces of grounds.

8. Clean exposed ductwork and structure.

9. Replace filters.

10. Clean bulbs and lamps and replace those burned out.

11. Clean diffusers and grilles.

12. Clean sinks, faucets, and water closets and controls.

13. Maintain cleaning until project, or portion thereof, is occupied by Owner.

End of Section

1. Requirements Included

1. Record documents, samples, and specifications.
2. Equipment and systems.
3. Product data, materials and finishes, and related information.

2. Quality Assurance

1. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

3. Format

1. Organize data in the form of an instructional manual.
2. Correlate data into related consistent groupings.
3. Cover: Identify each section with type or printed title “Project Record Documents”, list title of Project, identify subject matter of contents.
4. Arrange content in folders under Section numbers and sequence of Table of Contents.
5. Provide separate folder for each separate product and system, with typed description of product and major component parts of equipment.

4. Contents, Each Volume

1. Table of Contents: Provide title of project; names, addresses, and telephone numbers of Consultant and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.
2. For each Product or System: list names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
3. Product Data: mark sheet to clearly identify specific products and component parts, and data applicable to installation; delete inapplicable information.
4. Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
5. Typed Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer’s instructions.

5. Submission

1. Submit for review a digital pdf file of completed closeout documents in final form 15 days prior to substantial performance. For equipment put into use with Owner’s permission during construction, submit Operating and Maintenance Manuals within 10 days after start-

up. For items of Work delayed materially beyond date of Substantial Performance, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.

2. Consultant comments will be returned, and the contractor is to revise the content of documents as required prior to final submittal.

3. Submit one (1) digital copy of revised volumes of data in final form within ten days after final inspection.

4. For contract drawings (architectural, landscaping, structural, mechanical, electrical), transfer neatly as-built notations onto a digital set and submit to consultant.

5. Prepare digital pdf file for submission on USB of completed closeout documents.

6. Record Documents and Samples

1. In addition to requirements in General Conditions, maintain at the site for Owner one record copy of:
   .1 Contract Drawings.
   .2 Specifications.
   .3 Addenda
   .4 Change Orders and other modifications to the Contract.
   .5 Reviewed shop drawings, product data and samples.
   .6 Field test records.
   .7 Inspection certificates.
   .8 Manufacturer's certificates.

2. Store Record Documents and Samples in Field Office apart from documents used for construction. Provide files, racks, and secure storage.

3. Label and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "Project Record" in neat, large, printed letters.

4. Maintain Record Documents in a clean, dry, and legible condition. Do not use Record Documents for construction purposes.

5. Keep Record Documents and samples available for inspection by Consultant.

7. Recording As-Built Conditions

1. The consultant will provide electronic copies of project drawings in PDF format. Make one (1) hardcopy of the project drawings for the purpose of recording as-built conditions. Mark and record changes on an on-going basis as construction proceeds. **Near the end of the construction period transfer all marks to the supplied electronic documents and submit for consultant review as project record as-built documents**.

2. Refer to drawings/specifications for additional mechanical and electrical requirements.

3. Record information concurrently with construction progress. Do not conceal work until required information is recorded.

4. Contract Drawings and shop drawings: legibly mark each item to record actual construction, including:
   .1 Measure depths of elements of foundation in relation to finish first floor datum.
   .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
   .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
   .4 Field changes of dimension and detail.
   .5 Changes made by change orders.
   .6 Details not on original Contract Drawings.
   .7 References to related shop drawings and modifications.

5. Specifications: legibly mark each item to record actual construction, including:
   .1 Manufacturer, trade name, and catalog number of each project actually installed particularly optional items and substitute items.
   .2 Changes made by Addenda and Change Orders.

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

8. Digital As-Built Drawings

1. Retain the services of a CAD drafting company acceptable to the consultant to prepare digital CAD As-Built documents for all Architectural and Engineering drawings.

2. After the consultant has found the Redlined As-Built drawings to be acceptable, transfer to digital file all information recorded on As-Built drawings. Layering of information as per consultant's instructions.

9. Equipment and Systems

1. Each Item of Equipment and Each System: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
2. Panelboard Circuit Directories: provide electrical service characteristics, controls, and communications.

3. Include installed colour coded wiring diagrams.

4. Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shutdown, and emergency instruction. Include summer, winter, and any special operating instructions.

5. Maintain Requirements: include routine procedures and guide for troubleshooting; disassembly, repair and reassemble instructions; and alignment, adjusting, balancing, and checking instructions.

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

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

8. Include sequence of operation by controls manufacturer.

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

10. Provide installed control diagrams by controls manufacturer.

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

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

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

14. Include test balancing reports as specified in mechanical specifications.

15. Additional Requirements: As specified in individual specification sections.

10. Materials and Finishes

1. Building Products, Applied Materials, and Finishes: include product data, with catalog number, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured products.

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

3. Moisture-protection and Weather-exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommend schedule for cleaning and maintenance.

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

11. Guarantees, Warranties and Bonds

1. Separate each warranty or bond keyed to the List of Contents listing.

2. List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal. Use Guarantee/Warranty Form as provided in Section 01721 whenever standard preprinted trade or manufacturer's Guarantee/Warranty forms are not available.

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

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

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

6. Co-execute submittals when required.

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

End of Section

1. Notes

1. To be made out on the letterhead of Guarantor or Warrantor which usually is a Subcontractor.

2. This format is to be used only when standard preprinted trade or manufacturer's forms are not available. Preprinted forms are to include all elements of information shown on this sample or as a minimum.

3. Comply with Requirements for Guarantee/Warranty as specified in Section 01720, Article 10.

To: Hamilton-Wentworth District School Board
20 Education Court
Hamilton, ON L9A 0B9

Date: _____

SECTION _____

TITLE _____

GUARANTEE/WARRANTY TO:

OWNER	Hamilton-Wentworth District School Board
PROJECT	*W.H. Ballard ES* *Washroom Renovations* *Project No. P02083*
ARCHITECT	*AMRA J Architects Inc.*
REFERENCE	(to specifications or drawings)
TIME	Period of Guarantee/Warranty:_____ years
GUARANTEE/ WARRANTY	Starting Date: Substantial Performance as certified by Architect Date: _____

(Description of Guarantee/Warranty)

_____
_____
_____

Upon written notification from the Owner or the Consultant that the above work is defective any repair or replacement work required shall be to the Consultant's satisfaction at no cost to the Owner.

This guarantee shall not apply to defects caused by the work of others, maltreatment of materials, negligence or Acts of God.

SUBCONTRACTOR

_____ _____
Signature Date

Authorized Signing Officer:

_____
(Name Printed)

_____
Title

Name of Firm: _____

Address: _____

Telephone Number _____

CONTRACTOR

_____ _____
Signature Date

Authorized Signing Officer:

_____ _____
(Name Printed)

_____
Title

Name of Firm: _____ SEAL

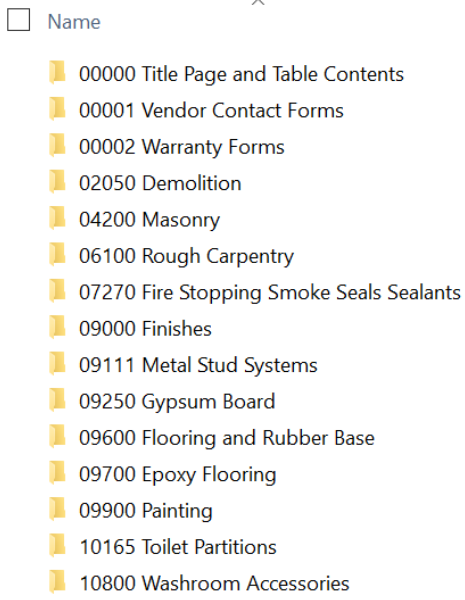
Address: _____

Telephone Number _____

End of Section

1. Maintenance Manual

1. On completion of project, submit to the Owner one (1) digital copy of Operations Data and Maintenance Manual in English, made up as follows:
   1.1. Enclose title sheet, labeled "Operation Data and Maintenance Manual", project name, date and list of contents.
   1.2. Organize content folders into applicable sections of work to parallel project specification break-down. Mark each section by labeled folder similar to the following example:



   1.3. The digital copy of all documents in the operations and manuals must be provided on a USB, format to be PDF.

2. Include the following information, plus data specified.

   .1 Maintenance instructions for finished surface and materials.
   .2 Copy of hardware and paint schedules.
   .3 Description, operation and maintenance instructions for equipment and systems, including complete list of equipment and parts list. Indicate nameplate information such as make, size, capacity, serial number.
   .4 Names, addresses and phone numbers of sub-contractors and suppliers.
   .5 Guarantees, Warranties and bonds showing:
      .1 Name and address of project.
      .2 Guarantee commencement date (date of Final Certificate of Completion).
      .3 Duration of guarantee.
      .4 Clear indication of what is being guaranteed and what remedial action will be taken under guarantee.
      .5 Signature and seal of Contractor.
      .6 Additional material used in project listed under various Sections showing name of manufacturer and source of supply.

3. Neatly type lists and notes. Use clear drawings, diagrams or manufacturers' literature.

4. Include in the Manuals a complete set of final shop drawings indicating corrections and changes made during fabrication and installation.

5. Include in the manuals a complete set of final as-built red line drawings. Include each drawing sheet and indicate on the title block “As-Build Drawing”

End of Section

1. General

1. **Bonds:** Refer to RFT Document for bonding requirements at time of tender submission and throughout the duration of the construction period.

2. Standard Warranty

1. Refer to Supplementary General Conditions and to Standard Contract Document CCDC No. 2, 2020 for warranty requirements and conditions for the standard warranty which is required for the work of this contract.

3. Extended Warranties

1. Refer to individual specification sections for requirements of extended warranties required for particular sections or items of work.

2. Extended warranties are required to be issued by manufacturers, fabricators, suppliers and/or installers, sometimes jointly, due to their unique position in the construction process and their ability to guarantee a particular section of work. Refer to individual requirements of extended warranties requested.

3. Unless specifically noted otherwise, all extended warranties shall commence on the date of Substantial Performance of the Work as certified by the Consultant.

4. All Extended Warranties shall be listed separately and included as a separate section in the operations and maintenance manuals provided to the HWDSB at project close out. Each Extended Warranty document shall include the vendor's contact information, date of warranty commencement and expiry as well as listing the specific product with extended warranty. This document shall clearly indicate if the warranty includes or excludes labour.

5. Listed below is a summary of extended warranties required for individual Sections. This list, if inconsistent with the specified requirements of individual extended warranties, shall be deemed correct with respect to the length of extended warranties. Extended warranties required shall include, but not be limited to, the following:

   Extended warranties (total warranty period listed, including entire building warranty)

Sealants (Section 07 92 00)	5 years
Painting (Section 09 91 00)	2 years

End of Section

Appendix XX – Construction School Specific Information Sheet Sample

In addition to the terms and conditions of the Contract Documents, the Contractor shall follow the protocols of the Construction Site Specific Information Sheet, sample provided below.
A completed version of this document, with site specific content, will be provided to the Contractor at the pre-construction meeting.

HWDSB

Capital Projects
Facility Services

Construction School Specific Information Sheet

1. School Information:

School Name:	W.H. Ballard Elementary School
Bell Times	
Morning (School Entry)**:**	0:00 AM
Afternoon (School Dismissal):	0:00 PM
Aftercare Program Dismissal:	6:00 PM
Caretaking Phone Number:	000-000-0000
***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:	HP0000
Security Panel Code:	0000

*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 API Alarm Inc. at 1-877-787-5237 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 API 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: API Alarm Inc.

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 API that they'll be on Fire Watch (in the area of the impacted devices only). API 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 API Alarm Inc. at 1-877-787-5237 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 API Alarm Inc. at 1-877-787-5237 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.

PART 1 - GENERAL

1.1. SUMMARY

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

1.1.1.1. Change rooms washrooms and showers area

1.1.1.2. Ceilings, floorings

1.1.1.3. Create new entrances and access to the new washrooms and change rooms, storage

1.1.1.4. Abatement as required to facilitate work.

1.1.1.5. Items for Salvage: change room benches and hooks as noted on drawings

1.2. REFERENCES

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

1.2.2. Definitions:

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

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

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

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

1.3. ADMINISTRATIVE REQUIREMENTS

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

1.3.2. Scheduling:

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

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

1.4. QUALITY ASSURANCE

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

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

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

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

1.5. SITE CONDITIONS

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

1.5.1.1. Hours of operation

1.5.1.2. Dust control, infection prevention and control.

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

1.5.1.4. Noise control.

1.5.1.5. Protection to existing building

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

PART 2 - PRODUCTS

2.1. MATERIALS

2.1.1. Description:

2.1.1.1. Regulatory Requirements:

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

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

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

2.1.2. Materials and Products Removed From Existing Building

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

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

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

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

PART 3 - EXECUTION

3.1. EXAMINATION

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

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

3.1.3. Preliminary Survey:

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

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

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

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

3.1.4. Existing Services:

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

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

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

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

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

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

3.2. PREPARATION

3.2.1. Protection of In-Place Conditions:

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

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

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

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

3.2.2. Environmental Protection:

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

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

3.2.3. Protection to Existing Services:

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

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

3.3. DEMOLITION — GENERAL

3.3.1. Execute work in conformance to Hamilton Wentworth School Board Standards. Notify HWDSB Project Manager before disrupting building access or services.

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

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

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

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

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

3.3.6.1. Damaged or unsafe services.

3.3.6.2. Unsupported services, structural members or missing hangers.

3.3.6.3. Incomplete insulation, vapour retarder or air barrier.

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

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

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

3.3.9. Demolition for new services:

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

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

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

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

3.3.11. Building Services:

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

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

3.3.11.3. Prevent demolition debris from entering building drains.

3.3.12. Relocation of Salvaged Items:

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

3.4. REMOVAL OF CEILINGS

3.4.1. Remove existing ceilings as shown in drawings. Acoustical ceiling panels and electrical light fixtures to be recycled rather than disposed as waste, as much as possible.

3.4.2. Support structure for ceiling systems including hangers and framing used for support of light fixtures shall be removed.

3.4.3. Carefully remove exit signs, speakers and other ceiling mounted fixtures.

3.4.4. Provide temporary support as required for sprinklers, fire alarm bells, smoke and heat detectors, and HVAC ductwork.

3.4.5. Take precautions to adequately support structure, provide bracing required for safety and execution of the work. Coordinate with structural requirements.

3.5. REMOVAL OF RESILIENT FLOOR FINISHES

3.5.1. Remove vinyl composite tile where shown. Strip all adhesive, underlayment or other cleavage membranes.

3.5.2. Remove resilient base.

3.5.3. Coordinate surface preparation of concrete slab with flooring trades in Division 09. Leave substrate flush, smooth and level suitable for new floor finish.

3.6. REMOVAL OF CERAMIC AND QUARRY TILE (walls and floors)

3.6.1. Remove mortar setting bed.

3.6.2. Strip all adhesive, underlayment or other cleavage membranes.

3.6.3. Leave substrate suitable for new finishes.

3.7. REMOVAL OF FLOORING

3.7.1. Remove terrazzo including base, raised pad at urinals and setting bed complete to concrete slab.

3.8. EXISTING SLAB PREPARATION

3.8.1. Remove existing floor finishes and bases as noted above.

3.8.2. At existing locations where flooring and base, has been removed, where concrete curbs, bases, steps and pads have been removed, grind and patch existing concrete slabs as required and clean slab and base surfaces, remove ridges, bumps, adhesives and other matter detrimental to bond of levelling coat, new finish application or underlayment. Surfaces shall be smooth, level and free of gouges; prepare for levelling coat and/or new finish application specified in respective Sections or underlayment.

3.8.3. At existing locations designated to receive new flooring, remove paint, old adhesives, and hard applied finishes by grinding or other approved means, as required to accommodate new flooring. Prepare for flooring application. Coordinate requirements with Work specified in flooring Sections.

3.8.4. At existing locations where slabs have been contaminated with oil, grease, resins or other such material not compatible with subsequent applied underlayment or flooring, remove contaminants by blast tracking or prepare existing surfaces by other approved means.

3.8.5. Rinse subfloor and vacuum clean.

3.9. CUTTING AND PATCHING

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

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

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

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

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

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

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

3.10. CLEANING

3.10.1. Waste Management:

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

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

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

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

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

1.1.1. Section Includes: Work requirements for flooring restoration including but not limited to following:

1.1.1.1. Repair existing concrete floors where walls and flooring has been removed.

1.1.1.2. Chipping and breaking out all deteriorated, spalled and delaminated concrete, defective cold joints, and the subsequent filling of voids, cracks and holes in concrete floor slabs.

1.1.1.3. Concrete levelling underlayment.

1.2. ADMINISTRATIVE REQUIREMENTS

1.2.1. Coordination:

1.2.1.1. Coordinate with trades responsible for concrete mix design including type of cement, water cement ratio, aggregates and placement technique.

1.2.1.2. Ensure that concrete supplied for slabs contains no admixtures that would be incompatible with concrete leveller, topping, fillers, or adhesives proposed for use by this Section or flooring trades.

1.2.2. Pre-Installation Meetings:

1.2.2.1. Prior to commencement of work, arrange for Project site meeting of all parties associated with work of this Section in accordance with project meetings specified in Section 01 10 00 - Project Administrative Requirements.

1.2.2.2. Include Contractor, Installers performing work of this Section, subcontractors installing finishes over these products (if applicable).

1.2.2.3. Review Specification for work included under this Section and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials, materials to be used, installation of materials, sequence and quality control, Project staffing, restrictions on areas of placement and other matters affecting construction.

1.3. SUBMITTALS

1.3.1. Submittals in accordance with Submittal Procedures specified in Section 01 10 00 - Project Administrative Requirements.

1.3.2. Product Data:

1.3.2.1. Submit manufacturer's Product data, performance criteria, application instructions, and other documentation for each material specified in this Section proposed for use, including:

1.3.2.1.1. Liquid curing/sealing and curing/hardener.

1.3.2.1.2. Joint sealant and primer.

1.3.2.1.3. Leveller.

1.3.2.2. Safety: Provide WHMIS Safety Data Sheets.

1.4. QUALITY ASSURANCE

1.4.1. Perform Work in accordance with ACI 302.1

1.4.2. Installers Qualifications:

1.4.2.1. Provide work of this Section executed by competent installers with minimum 5 years experience in the application of Products, systems and assemblies specified and with approval and training of the Product manufacturers.

1.4.2.2. Submit letter signed by manufacturer naming the installers and certifying that they have been trained in the application and safety measures for the products of this Section, and have 5 years experience.

1.4.2.3. Submit name and qualifications for the on-site lead supervisor who will be in full time attendance on site and directing the work of this Section.

1.4.3. Mock-Ups:

1.4.3.1. Provide site mock-up for concrete finishes indicating methods and materials, and procedures proposed to achieve concrete finishes and to comply with following requirements, using materials indicated for completed work:

1.4.3.1.1. Build mock-ups in location and of size as directed by Consultant.

1.4.3.1.2. Obtain Consultant's acceptance of mock-ups before continuing construction;

1.4.3.1.3. Mock-up to be used throughout construction period and used as standard of acceptance for subsequent concrete refurbishing work.

1.4.3.1.4. Mock-up may form part of permanent structure when accepted by Consultant. Repair or replace unacceptable mock-ups at no additional cost to Owner.

1.5. DELIVERY, STORAGE AND HANDLING

1.5.1. Storage and Handling Requirements: Store materials on site in manner to prevent damage. Protect materials from inclement weather. Comply with CSA A23.1, Clause 7.1.

1.5.2. Deliver materials in manufacturer's packaging including application instructions.

1.6. SITE CONDITIONS

1.6.1. Temporary Lighting: Minimum 1-200 W light source, placed 2.5 m (8’) above floor surface, for each 40 m2 (430 sq ft) floor being finished.

1.6.2. Electrical power: Provide sufficient electrical power to operate equipment normally used during construction

1.6.3. Make work area water tight protected against rain and detrimental weather conditions.

1.6.4. Temperature: Maintain minimum 10 degrees C ambient temperature for 7 days before installation and minimum 48 hours after completion of work and maintain relative humidity maximum 40% during same period.

PART 2 - PRODUCTS

2.1. JOINT SEALERS

2.1.1. For exposed locations: 2 component, chemically reactive polyurethane or polysulfide modified sealant over premoulded joint filler; self-levelling, grey colour. Acceptable products:

2.1.1.1. “Mapeflex P2 SL” by Mapei Corporation

2.1.1.2. “Sikaflex 2C/SL” by Sika Canada Inc..

2.1.2. For slabs to receive architectural flooring finish: mix 1 part cement 2 parts sand 1 part additive. Additive: “Albitol” by Sika Canada Inc.

2.1.3. For expansion joints:

2.1.3.1. “Mapeflex P2 SL/NS” by Mapei Corporation

2.1.3.2. “Sikaflex 2C NS/SL” polyurethane sealant by Sika Canada Inc.

2.1.4. For control joints which will not receive a resinous flooring finish:

2.1.4.1. “Mapeflex Joint Filler PO 95/100” by Mapei Corporation

2.1.4.2. “Sikafloor 524 EZ Polyurea” by Sika Canada Inc.

2.1.5. For isolation joints:

2.1.5.1. “Mapeflex P2 SL” by Mapei Corporation

2.1.5.2. “Sikaflex 2C SL” polyurethane sealant by Sika Canada Inc.

2.2. PATCHING AND CRACK REPAIR

2.2.1. Crack filler: Provide 1 of following:

2.2.1.1. “Planiseal VS Fast” by Mapei

2.2.1.2. “Lextile Patch” by Flextile Ltd

2.3. SELF LEVELING UNDERLAYMENT

2.3.1. Self-levelling, polymer-modified Portland cement based compound mixed with either a latex additive or water only depending on substrate conditions and Product instructions.

2.3.1.1. Primer: As recommended by the manufacturer, if required.

2.3.1.2. Compressive strength at 28 days: 38 MPa (5500 psi), to ASTM C109/C109M, or 36.5 MPa (5300 psi) tested to ASTM C1708.

2.3.1.3. Acceptable products:

2.3.1.3.1. “Flex-Flo” up to 12 mm (15/32") or “Flex-Flo Plus” up to 50 mm (2”) by Flextile Ltd.,

2.3.1.3.2. “NXT Level Plus” up to 50 mm (2") or “NXT Level” up to 76 mm (3/4”) by Laticrete International, Inc.,

2.3.1.3.3. “Ardex K-15” up to 40 mm (1-1/2”) by Ardex Canada, Inc.,

2.3.1.3.4. “UltraPlan 1 Plus with primer” up to 38 mm (1-1/2") or “UltraPlan M20 Plus with primer” up to 50 mm (2") by Mapei Corporation

2.3.1.3.5. “Sikafloor Level-25” where resinous flooring or tiles to be installed, or “Sikafloor Level-125” where resilient flooring to be installed.

2.3.1.4. Water: clean, potable.

2.3.1.5. Mechanically mix in accordance with manufacturer's printed instructions.

PART 3 - EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions:

3.1.1.1. Verify that the surface conditions are smooth, sound, dry, and free from conditions that will adversely affect execution, permanence, or quality of the work of this section and in accordance with manufacturer's printed instructions. Refer to Section 09 05 61 Common Work Results for Flooring Preparation

3.1.1.2. Ensure substrates are structurally sound, solid, stable, level, plumb and true to a tolerance in plane of 6 mm in 3 m (1/4" in 10' - 0") in accordance with ANSI A108/A118/A136.1 specification requirements. Ensure substrates are clean and free of dust, oil, grease, paint, tar, wax, curing agent, primer, sealer, form release agent or any deleterious substance and debris which may prevent or reduce adhesion.

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

3.2. PREPARATION

3.2.1.1. Mechanically sand, shot blast or scarify substrate to ICRI CSP-3 as required to completely remove paint, loosely bonded topping, loose particles and contaminants. Surface etching or contaminant removal by chemical means is not permitted. When sanding or scarifying surfaces that may contain silica sand, wear an approved dust mask.

3.2.1.2. Review setting out point with Consultant for each location, verify patterns and edge condition.

3.2.1.3. Cover and protect work of other sections and property from damage and dust.

3.2.1.4. Containment: Close and seal floor openings. Install dams at edges of floor area to receive treatment as necessary to contain self-leveling underlayment while in plastic state.

3.2.1.5. Use a digital level device to determine elevations on a 1200 mm x 1200 mm (4 x 4 foot) grid to establish and set self-adhering pegs at heights to indicate installation depths and top surface of underlayment application.

3.2.1.6. Erect barriers to prevent entry and presence of personnel not performing work of this section during application of topping or grout.

3.2.1.7. Joint Preparation:

3.2.1.7.1. Expansion and Isolation Joints: Mark and saw cut after self-leveling application.

3.2.1.7.2. Static (Non-Moving) Saw Cuts and Control Joints: to be patched or filled with joint sealer to Section 03 35 00 – Concrete Finishing.

3.2.1.7.3. Dynamic (Active) Cracks: Notify Consultant.

3.2.1.8. Cleaning: Broom clean and vacuum surfaces to pick up dust and debris.

3.3. CRACK FILLER TREATMENT

3.3.1. After existing flooring has been removed, examine concrete floor surfaces and repair cracks.

3.3.2. Using a diamond concrete cutting blade overcut the crack width to obtain a sound, clean edge. Clean cracks or joints with compressed air and/or vacuum with a dustless collection system. Follow ACI RAP Bulletin 2, "Crack Repair by Gravity Feed with Resin".

3.3.3. Mix components in accordance with manufacturer's recommendations

3.3.4. Fill joint with to full depth of crack and flush with concrete surface. Ensure that all voids and pinholes are filled/sealed.

3.4. LEVELLING UNDERLAYMENT

3.4.1. Priming:

3.4.1.1. Maintain ambient conditions as specified, with adequate ventilation during and following primer application to promote faster drying.

3.4.1.2. Prepare and apply primer in accordance with manufacturer's written instructions.

3.4.2. Embedded cable systems such as electric radiant heating, static dissipative wires, or hearing loop wire:

3.4.2.1. Install cable or wire prior to priming; attach securely to substrate along the entire length of the cable or wire every 150 mm (6 inches).

3.4.2.2. Self-Leveller Thickness: Ensure minimum of 12 mm (½ inch) over highest point of embedded cable or wire.

3.4.3. Pump or pour self levellers onto substrate within single lift thickness limit recommended by manufacturer.

3.4.4. Immediately following placement, lightly smooth the surface and pour lines

3.4.5. Provide levelling bed to achieve Floor Flatness value as described in this Section, to ASTM E1155.

3.4.6. Feathered edge: Steel trowel the edge after initial set but before it is completely hard.

3.4.7. Provide minimum 1.6 mm (1/16") levelling bed to surfaces to receive waterproofing and/or tiling uncoupling membrane, in accordance with manufacturer's instructions. Refer to Sectio 09 30 00 – Tiling.

3.4.8. Provide ramped levelling bed beneath finish flooring adjacent to ceramic tile, for minimum 600 mm (24") strip, to achieve flush finished surfaces at finished flooring transition.

3.4.9. Apply leveller with care to ensure that no laps, voids, or other marks or irregularities are visible, and with an appearance of uniform level and texture, within limitations of materials and areas concerned.

3.4.10. Make clean true junctions with no visible overlap between adjoining applications of topping.

3.4.11. Do not cover or bridge expansion joints or control joints. Provide 3 mm (1/8") wide movement joints over concrete slab control joints.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

1.1.1. Section Includes: Work requirements for flooring restoration including but not limited to following:

1.1.1.1. Repair existing masonry units where indicated in the drawings

1.2. REFERENCES

1.2.1. Abbreviations and Acronyms:

1.2.1.1. OMCA: Ontario Masonry Contractors' Association; www.canadamasonrycentre.com.

1.2.2. Reference Standards:

1.2.2.1. ASTM C270-24 - Standard Specification for Mortar for Unit Masonry

1.2.2.2. CAN/CSA-A179-14 - Mortar and grout for unit masonry

1.2.2.3. CSA A3000:23 - Cementitious materials compendium

1.3. ADMINISTRATIVE REQUIREMENTS

1.3.1. Pre-Installation Meetings:

1.3.1.1. Prior to commencement of work, arrange for Project site meeting of all parties associated with work of this Section in accordance with project meetings specified in Section 01 10 00 - Project Administrative Requirements.

1.3.1.2. Include Contractor, Installers performing work of this Section, subcontractors installing finishes over these products (if applicable).

1.3.1.3. Review Specification for work included under this Section and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials, materials to be used, installation of materials, sequence and quality control, Project staffing, restrictions on areas of placement and other matters affecting construction.

1.4. SUBMITTALS

1.4.1. Submittals in accordance with Submittal Procedures specified in Section 01 10 00 - Project Administrative Requirements.

1.4.2. Product Data:

1.4.2.1. Submit manufacturer's Product data. Include product characteristics and performance criteria.

1.4.2.2. Safety: Provide WHMIS Safety Data Sheets.

1.5. QUALITY ASSURANCE

1.5.1. Provide work of this Section executed by competent installers with minimum 5 years experience in the application of Products, systems and assemblies specified and with approval and training of the Product manufacturers.

1.5.2. Membership in good standing in OMCA.

1.6. DELIVERY, STORAGE AND HANDLING

1.6.1. Storage and Handling Requirements:

1.6.1.1. Handle, stack and store masonry units to avoid chipping, protect against staining and moisture entry.

1.6.1.2. Do not store or locate materials, plant and equipment in areas which will obstruct access to work by others.

1.7. SITE CONDITIONS

1.7.1. Ambient Conditions:

1.7.1.1. Provide uniformly distributed and continuous heating. Prevent stratification and cold spots.

1.7.1.2. Maintain masonry continuously at minimum 4 deg C (39 deg F) during placement and for 48 hours after placement.

1.7.1.3. Employ protection and heating methods which will prevent evaporation of moisture from masonry during curing.

PART 2 - PRODUCTS

2.1. MATERIALS

2.1.1. Replacement Concrete Masonry Unit (CMU): To match existing concrete block in all respects, modular size, with special shapes and sizes as detailed.

2.1.1.1. Acceptable Products: “Carbon Cure®” by Brampton Brick Limited, Permacon, or “Autoclave Block” by Day & Campbell Limited or “Carbo Cure” by Richvale

2.1.2. Ensure exposed surfaces are free of cracks, chips or other blemishes and broken corners. Include required sash blocks for control joints, solid block where noted and concrete block lintels over openings in concrete block walls unless steel lintels are shown.

2.1.3. Cement:

2.1.3.1. Portland cement: to CAN/CSA-A3000, Type GU - General use hydraulic cement (Type 10). For exposed mortar, maintain uniformity of cement manufacturer and batch for colour uniformity.

2.1.3.2. Masonry cement: to CAN/CSA-A3000 and CAN/CSA A179, Type N for non load bearing and and Type S for load bearing.

2.1.4. Hydrated lime: to CAN/CSA A179, Type S.

2.1.5. Sand: Clean, sharp, washed and conforming in all respects to requirements of CAN/CSA-A179.

2.1.6. Course aggregate to CAN/CSA A179.

2.1.7. Water for Mortar Mixing: Potable, free from any deleterious substances.

2.1.8. Mortar for Unit Masonry: Comply with ASTM C270, Proportion Specification, for job-mixed mortar; and ASTM C1142 for ready-mixed mortar.

2.1.9. Control Joints (Movement Joints) Filler: PVC control joint filler purpose designed for concrete masonry unit construction.

2.1.9.1. Durometer hardness between of 85 +/- 5 tested to ASTM D2240 of sizes and shapes required.

2.1.9.2. Acceptable products:

2.1.9.2.1. “VS Series PVC Control Joint” by Blok-Lok Limited.

2.1.9.2.2. “PVC Control Joint” by Masonpro Inc.

2.1.9.2.3. “PVC Control Joint” by Wire-Bond.

EXECUTION

2.2. PREPARATION

2.2.1. Surface Preparation: prepare surface in accordance with manufacturer's written recommendations.

2.2.2. Thoroughly clean surfaces by scrubbing to remove dirt, dust, and wax. Use stripper in accordance with manufacturer’s printed instructions.

2.2.2.1. Remove dirty solution with wet vacuum or mop.

2.2.2.2. Rinse with clean water and allow to dry thoroughly.

2.2.3. Establish and protect lines, levels, and coursing.

2.2.4. Protect adjacent materials from damage and disfiguration.

2.3. GENERAL REQUIREMENTS

2.3.1. Workmanship:

2.3.1.1. Build masonry plumb, level, and true to line, with vertical joints in proper alignment. Do masonry work in accordance with CSA S304, CSA A370 and CSA A371.

2.3.1.2. Do masonry mortar and grout work in accordance with CSA A179 except where otherwise specified.

2.3.1.3. Layout coursing and bond to achieve correct coursing heights, and continuity of bond above and below openings, with minimum of cutting.

2.3.2. Remove and replace existing masonry units that are loose, chipped, broken, stained, or otherwise damaged. Install new CMU to match existing; install in fresh mortar or grout, pointed to eliminate evidence of replacement.

2.3.3. Pointing: During the tooling of joints, enlarge voids and holes and completely fill with mortar. Point-up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for application of paint.

2.4. LAYING MASONRY UNITS

2.4.1. Install products in accordance with product manufacturer’s written requirements.

2.4.2. Provide control joints between new and existing concrete unit masonry. Do not tooth new CMU walls into existing block walls.

2.4.3. Coursing Design: To match existing. When new work is not attached to existing construction, half running bond for concrete masonry units with vertical joint in each course centered on units in courses above and below.

2.4.4. Lay walls to comply with specified construction tolerances, with courses accurately spaced and coordinated with existing construction.

2.4.5. Locate bearings and piers as Indicated on drawings. Provide solid masonry units at bearings. Grout under bearing plates installed on masonry with non-shrink grout.

2.4.6. Extend masonry and partitions to deck, slab or structural members, except where otherwise noted in the drawings. Incorporate both lateral support and deflection space at termination of walls as required.

2.4.7. Lay masonry in full bed of mortar, properly jointed with other work. Buttering corners of joints, and deep or excessive furrowing of mortar joints are not permitted.

2.4.8. Fully bond intersections, and external corners.

2.4.9. Tool with non-staining pointing tool to provide smooth, compressed, uniformly formed joints:

2.4.9.1. Concave for concrete unit masonry exposed to view.

2.4.9.2. For concrete unit masonry concealed from view:

2.4.9.2.1. Strike flush joints concealed in walls and joints in walls to receive plaster, stucco, tile, insulation, resilient bases, or other applied material except paint or similar thin finish coating. Ensure that no mortar protrudes from joints on wall surfaces to receive materials and coatings.

2.4.10. Maintain mortar joint thickness of 9 mm (3/8”), unless otherwise specified or indicated on drawings. Not to exceed 12 mm (1/2”).

2.4.11. Form control joints in concrete masonry as follows:

2.4.11.1. Fit bond-breaker strips into hollow contour in ends of block units on one side of control joint. Fill the resultant core with grout and rake joints in exposed faces.

2.4.11.2. Install temporary foam plastic filler in head joints and remove when unit masonry is complete.

2.5. INSTALLATION OF TUCK POINTING MORTAR

2.5.1. Repointing and Tuckpointing: Repoint defective joints as follows:

2.5.1.1. Cut back joints 13 mm (1/2") taking care not to damage units. Remove dust and loose materials by brushing or by water jet. If water jet is used, allow excess water to drain before repointing.

2.5.1.2. Repoint with same mix and colour as original.

2.5.1.3. Pack mortar tightly in thin layers and tool joint to match non-defective joints.

2.5.2. Immediately prior to application of mortar, dampen joints to be tuck pointed. Prior to application of pointing mortar, allow masonry units to absorb surface water.

2.5.3. Tightly pack mortar into joints in thin layers, approximately 6 mm (1/4”) thick maximum.

2.5.4. Allow layer to become "thumbprint hard" before applying next layer.

2.5.5. Pack final layer flush with surfaces of masonry units. When mortar becomes "thumbprint hard", tool joints.

2.6. REPLACEMENT OF MASONRY UNITS

2.6.1. Cut out mortar joints surrounding masonry units to be removed and replaced as follows:

2.6.1.1. Units removed may be broken and removed, providing surrounding units to remain are not damaged.

2.6.1.2. Once units are removed, carefully chisel out old mortar and remove dust and debris.

2.6.1.3. If units are located in exterior wythe of a cavity or veneer wall, exercise care to prevent debris falling into cavity.

2.6.2. Dampen surfaces of surrounding units before new units are placed as follows:

2.6.2.1. Allow existing masonry to absorb surface moisture prior to starting installation of new replacement units.

2.6.2.2. Butter contact surfaces of existing masonry and new replacement masonry units with mortar.

2.6.2.3. Centre replacement masonry units in opening and press into position.

2.6.2.4. Remove excess mortar with a trowel.

2.6.2.5. Point around replacement masonry units to ensure full head and bed joints.

2.6.2.6. When mortar becomes "thumbprint hard", tool joints.

2.7. CLEANING

2.7.1. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears prior to tooling joints.

2.7.2. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.

2.7.3. Protect masonry and adjacent work from damage from cleaning work.

2.7.4. Clean masonry in strict accordance with masonry manufacturer's printed instructions and referenced standards. Remove masonry and install new masonry if masonry is damaged by cleaning work.

2.7.5. Soak wall with clean water and flush off loose dirt and mortar.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

1.1.1. Section Includes: Provide masonry units including but not limited to following:

1.1.1.1. Concrete block masonry with sequestered carbon dioxide.

1.1.2. Products installed but not supplied under this section:

1.1.2.1. Loose steel lintels.

1.1.2.2. Hollow metal door frames

1.1.3. Ambient Conditions:

1.1.3.1. Provide uniformly distributed and continuous heating. Prevent stratification and cold spots.

1.1.3.2. Maintain masonry continuously at minimum 4 deg C (39 deg F) during placement and for 48 hours after placement.

1.1.3.3. Employ protection and heating methods which will prevent evaporation of moisture from masonry during curing.

PART 2 - PRODUCTS

2.1. PERFORMANCE/DESIGN CRITERIA

2.1.1. Provide only stainless steel reinforcement for exterior envelope walls.

2.1.2. Conform to requirements of CSA S304.1 for determination of loads acting on connectors and design requirements and to CSA A370 and CSA A371 for construction requirements, except where more stringent requirements are noted and/or indicated on Drawings and specified herein.

2.1.3. Obtain each masonry unit from 1 manufacturer. Provide units of uniform texture and colour for each kind required.

2.1.4. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.

2.1.5. Do not use calcium chloride in mortar or grout.

2.1.6. Add cold-weather admixture (if used) at the same rate for all mortar, regardless of weather conditions, in order to ensure that mortar color is consistent.

2.2. MATERIALS

2.2.1. Brick: to match existing.

2.2.2. Brick ties: “FERO Thermal Tie™ - Slotted Rap-Tie® Masonry Connector” by Fero; www.ferocorp.com

2.2.3. Concrete Blocks: Normal and lightweight units, metric modular units with low carbon footprint conforming to CSA A165.1,

2.2.3.1. Normal Type(s) Hollow Units: H/15/A/O

2.2.3.2. Full Solid Units: SF/15/A/O

2.2.3.3. Semi-Solid Units: SS/15/A/O

2.2.3.4. Lightweight Type(s) Hollow Units: Type H/15/C/O, Full Solid Units: Type SF/15/C/O and Semi-Solid Units: Type SS/15/C/O.

2.2.3.5. Provide bullnose corner block for all exposed corners.

2.2.3.6. Acceptable Products: “Carbon Cure®” by Brampton Brick Limited, or “Autoclave Block” by Day & Campbell Limited or “Carbo Cure” by Richvale.

2.2.4. Lateral Support and Anchorage for Masonry Walls: In accordance with CSA S304.1 and as specified and supplied as part of work of Section 05 50 00.

2.2.5. Cement:

2.2.5.1. Portland cement: to CAN/CSA-A3000, Type GU - General use hydraulic cement (Type 10). For exposed mortar, maintain uniformity of cement manufacturer and batch for colour uniformity.

2.2.5.2. Masonry cement: to CAN/CSA-A3000 and CAN/CSA A179, Type N and Type S.

2.2.6. Hydrated lime: to CAN/CSA A179, Type S.

2.2.7. Sand: Clean, sharp, washed and conforming in all respects to requirements of CAN/CSA-A179.

2.2.8. Course aggregate to CAN/CSA A179.

2.2.9. Water for Mortar Mixing: Potable, free from any deleterious substances.

2.2.10. Water Repellent Admixture: For exterior CMU with water repellent admixture:

2.2.10.1. Integral liquid or dry polymer admixture for mortar added during mixing or at the factory, compatible with integral water repellent admixture used in concrete masonry units.

2.2.10.2. Performance Requirements:

2.2.10.2.1. Water Permeance: Capable of achieving a Class E Rating when evaluated using ASTM E514.

2.2.10.3. Acceptable manufacturers and products:

2.2.10.3.1. “Dry Block” by GCP Applied Technologies.

2.2.10.3.2. Spec Mix

2.2.10.3.3. “RainBloc® for Mortar Admixture”, by ACM Chemistries Inc

2.2.10.3.4. Substitutions in accordance with Section 01 25 00 – Substitution Procedures.

2.3. MORTAR TYPES

2.3.1. Mortar for Unit Masonry: Comply with ASTM C270, Proportion Specification, for job-mixed mortar; and ASTM C1142 for ready-mixed mortar.

2.3.2. Mortar Types:

2.3.2.1. Loadbearing: Type S based on property specifications.

2.3.2.2. Non-loadbearing: Type N based on property specifications.

2.4. MORTAR MIXING

2.4.1. Use pre-blended, pre-coloured mortar prepackaged under controlled factory conditions. Ingredients batching limitations to be within 1% accuracy.

2.4.2. Colour of mortar shall be:

2.4.2.1. Concrete masonry units: Natural gray colour.

2.4.2.2. Brick: Colour matched to existing.

2.4.3. Mix mortar ingredients in accordance with CAN/CSA A179 in quantities needed for immediate use.

2.4.4. Maintain sand uniformly damp immediately before mixing process.

2.4.5. Add mortar colour and admixtures in accordance with product manufacturer's instructions. Provide uniformity of mix and colouration.

2.4.6. Do not use anti-freeze compounds including calcium chloride or chloride based compounds.

2.4.7. Do not add air entraining admixture to mortar mix.

2.4.8. Use a batch type mixer in accordance with CAN/CSA A179.

2.4.9. Re-temper mortar only within two hours of mixing, when water is lost by evaporation.

2.4.10. Use mortar within 2 hours after mixing at temperatures of 32°C or higher, or 2-1/2 hours at temperatures under 10°C.

2.5. GROUT TYPES

2.5.1. Grout shall comply with CSA A179. Use grout of consistency indicated or, if not otherwise indicated, of consistency (fine or coarse) at time of placement that will completely fill spaces intended to receive grout

2.5.1.1. Use fine grout in grout spaces less than 2 inches in horizontal dimension, unless otherwise indicated.

2.5.1.2. Use coarse grout in grout spaces 2 inches or more in least horizontal dimension, unless otherwise indicated.

2.5.2. Bond Beams:

2.5.2.1. Grout mix 10 to 12.5 MPa strength at twenty-eight (28) days; 200-250 mm slump; or premixed type in accordance with CAN/CSA-A23.1 or mixed in accordance with CAN/CSA A179 fine grout.

2.5.3. Lintels:

2.5.3.1. Grout mix 10 to 12.5 MPa strength at twenty-eight (28) days; 200-250 mm slump; or premixed type in accordance with CAN/CSA-A23.1 or mixed in accordance with CAN/CSA A179 fine grout.

2.5.4. Block Filler:

2.5.4.1. Dry pack grout to consist of 1 part Portland Cement, 1-1/2 parts sand, 2 parts 9 mm (3/8") pea gravel with only sufficient water to dampen mixture.

2.5.4.2. Measure and mix block filler in accordance with CAN/CSA-A179; mix filler to consistency in accordance with manufacturer’s recommendations; do not mix different types of grout in same mixer used for mixing of mortar unless mixer is thoroughly cleaned. Use and place grout in its final position within 2-1/2 hours of mixing it. Discard grout not used within 2-1/2 hours. Use coarse grout where required, in spaces 50 mm (2") or more in least horizontal dimension. Use fine grout in spaces less than 50 mm (2") in horizontal dimension.

2.5.5. Grout for hollow metal frames:

2.5.5.1. Fine grout to CSA A179.

2.5.5.2. Minimum compressive strength of 15 MPa.

2.6. GROUT MIXING

2.6.1. Mix batched and delivered grout in accordance with CAN/CSA-A23.1 transit mixed.

2.6.2. Mix grout ingredients in quantities needed for immediate use in accordance with CAN/CSA A179 fine grout.

2.6.3. Add admixtures in accordance with product manufacturer's instructions; mix uniformly. Do not use calcium chloride or chloride based admixtures.

PART 3 - EXECUTION

3.1. EXAMINATION

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

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

3.2. PREPARATION

3.2.1. Protection of In-Place Conditions:

3.2.1.1. Provide temporary bracing for masonry work during erection to prevent damage due to winds or other lateral loads until permanent structure provides adequate bracing.

3.2.1.2. Cold Weather Protection:

3.2.1.2.1. During cold weather, provide temporary enclosures and coverings in order to protect masonry work and to allow laying of masonry during inclement weather.

3.2.1.2.2. Provide temporary sheltering of freshly built masonry work, during installation and not less than 96 hours after erection to ensure required ambient temperatures.

3.2.1.2.3. Provide temporary wind bracing for newly laid masonry walls.

3.2.1.2.4. Completely cover open tops of freshly built walls each night with waterproof tarpaulins or plastic sheet coverings. Apply coverings to tops and faces of walls during rain or snow or upon stoppage of work.

3.2.1.3. Cold Weather Masonry: Provide temporary heated enclosures in accordance with Section 01 50 00 if necessary to maintain:

3.2.1.3.1. Product manufacturer's recommended temperatures for following, before, during and after installation until full cure: Ambient air, substrate, stored Products, installed Products.

3.2.1.3.2. Conform to CSA A371 for Cold Weather Requirements, which applies to mixing, enclosure, placing and curing of masonry materials.

3.2.1.3.3. Cementitious materials storage in accordance with CAN/CSA-A3000.

3.2.1.3.4. Aggregate materials storage in accordance with CSA A23.1.

3.2.1.4. Conform to CSA A371 for temporary wind bracing for masonry during construction. Provide temporary bracing for masonry work during erection to prevent damage due to winds or other lateral loads until permanent structure provides adequate bracing.

3.2.1.5. Protect masonry units and mortar ingredients before use from rain, snow, ice and freezing in accordance with requirements of CSA A371.

3.2.2. Surface Preparation for new masonry work:

3.2.2.1. Apply bituminous paint to steel buried in masonry.

3.2.2.2. When ambient air temperature is at or below 4 deg C (39 deg F), preheat

3.2.2.2.1. Masonry units to 15 deg C (59 deg F).

3.2.2.2.2. Cement and aggregate to 15 deg C (59 deg F).

3.2.2.2.3. Water to minimum 10 deg C (50 deg F), maximum 15 deg C (59 deg F).

3.2.2.2.4. Mixers, reinforcement and ties to 15 deg C (59 deg F).

3.2.2.3. Just prior to installing masonry remove snow, surface frost and ice from surfaces masonry is to be constructed against.

3.2.2.4. Do not mix in water until cement and aggregate have been combined.

3.2.2.5. Do not allow frozen lumps, ice or snow to contaminate mortar mix.

3.2.2.6. Maintain mortar continuously at minimum 10 deg C (50 deg F) during mixture.

3.2.2.7. Do not provide chemicals, additives or other contaminants to mortar mixture without review by Consultant.

3.2.2.8. Wet exposed masonry surfaces minimum once every 24 hours for 14 Days to minimize and retard surface evaporation. Do not allow surface freezing.

3.3. INSTALLATION

3.3.1. Provide scaffolding required to complete work of this Section. Provide scaffolding independently supported from floor or ground.

3.3.2. Conform to the OHSA; erect scaffolding adequate for proper execution of work, maintain and remove on completion. Lay masonry from scaffolds erected on same side as face work. Do not support scaffolding from finished building surfaces.

3.3.3. Conform to CSA S304.1 and CSA A371 for masonry work.

3.3.4. Do masonry mortar and grout work in accordance with CAN/CSA-A179 and CSA A371 except where specified otherwise.

3.3.5. Execute masonry work under continuous supervision and direction of a competent foreman.

3.3.6. Lay and set masonry units using experienced tradesmen.

3.3.7. Do not erect more than 1500 mm (5') in height of any wall in any 1 Working Day and do not raise any part of wall more than 600 mm (24") above remainder at any time.

3.3.8. Do not tooth at wall terminations. Rake back 1/2 unit length where stop-off occurs in horizontal run of masonry.

3.3.9. Lay up units true to line with accurately spaced courses. Keep bond plumb throughout. Provide corners and reveals plumb and true. Provide horizontal and vertical joints of uniform thickness in straight lines. Keep exposed faces free from stains, chips and cracks. Keep tolerance in plane 3 mm in 2400 mm (1/8" in 8').

3.3.10. Provide running bond unless indicated otherwise.

3.3.11. Avoid overplumbing and pounding of masonry corners and jambs after setting position. After mortar has set, if adjustment is required, remove mortar and replace with new mortar.

3.3.12. Install masonry wall base anchors in masonry foundation walls to line up with voids in masonry walls above as indicated on Drawings. Solidly fill voids between anchors and masonry with mortar.

3.3.13. Dampproof Coursing of Exterior Walls:

3.3.13.1. Install dampproof course where indicated on Drawings. If not fully indicated, install in locations as follows and as specified hereafter:

3.3.13.1.1. Below second exterior block masonry course and fourth exterior brick course above new grade line.

3.3.13.1.2. Over exterior lintels and shelf angles.

3.3.13.1.3. Below first masonry course of inner wythe at floors on grade. Extend dampproof coursing through full thickness of inner wythe.

3.3.13.1.4. Wherever roofs or other exterior, horizontal surfaces intersect masonry walls, immediately above roof flashing or horizontal surface flashing and seal to roof or other flashing or vapour barrier.

3.3.13.2. At shelf angles install flashing through exterior wythe up and over shelf angle, horizontally through insulation turning up wall and terminate at and adhere to air/vapour barrier as specified herein.

3.3.13.3. In non-cavity wall install flashing through full thickness of wall to provide dampproofing in accordance with manufacturer's recommendations.

3.3.13.4. Where brick is laid against concrete without air/vapour membrane with less than 25 mm (1") clear space separating them, apply 2 coats dampproofing to concrete.

3.3.13.5. Install flashings to provide continuous waterproofing flashing in wall except where such courses occur over openings in walls extend them past opening minimum of 200 mm (8") and turn up minimum 150 mm (6") at each end to create waterproof dam to prevent water draining into cavity. End dam where flashings terminate at an opening.

3.3.14. Laying Concrete Block:

3.3.14.1. Do not wet concrete block before laying. Lay first course of block work in full beds of mortar with joints of uniform thickness. Provide 100% solid blocks at following locations:

3.3.14.1.1. top course of interior block walls and block back-up wythes.

3.3.14.1.2. at sills of openings e.g. windows, louvres, etc.

3.3.14.1.3. top course of block below beams, joists and lintels bearing on walls.

3.3.14.1.4. at top of parapet walls.

3.3.14.2. Provide square end blocks at jambs of openings.

3.3.14.3. Provide concrete masonry units with face shells and end joints fully filled with mortar. Do not slush mortar into joints.

3.3.14.4. Provide damming and grout fill to vertical concrete block wall cavities at control joints.

3.3.14.5. Extend block partitions, both fire rated and non-fire rated, up to within 25 mm (1") of underside of structure above unless otherwise indicated, to allow for structural deflection.

3.3.14.6. Where gypsum board is applied directly to block walls, level walls to 3 mm in 3000 mm (1/8" in 10').

3.3.15. Brick:

3.3.15.1. Install shelf angles and spacers supplied as part of work of Section 05 50 00. Provide compressible filler below shelf angles.

3.3.15.2. Provide brick veneer tight to cavity compartmentalization.

3.3.15.3. Wet brick with absorption rate of over 20 g/minute when tested in accordance with CAN/CSA-A82 before laying.

3.3.15.4. Lay brick in level courses in full beds of mortar with vertical joints flushed up solid. Lay brick by shove joint method, with joints of uniform thickness.

3.3.15.5. Lay face brick in running bond to match existing. Evenly distribute variation in colour preferably working from 3 random pallets simultaneously.

3.3.16. Concrete Block Lintels:

3.3.16.1. Unless indicated otherwise on Structural Drawings, provide concrete block lintels over openings in masonry walls. Refer to Mechanical and Electrical Drawings for location of ducts and equipment mounted in or projecting through masonry walls. Refer to Structural Drawings for Lintel Schedules.

3.3.16.2. Unless otherwise noted in Door [and Frame] Schedule, set precast U-shaped reinforced block lintels for full thickness of wall plus minimum 200 mm (8") bearing. Provide reinforcement as indicated on Structural Drawings.

3.3.16.3. Fill lintels with concrete and leave shoring in place for minimum 10 Days before removal.

3.3.16.4. Set concrete blocks over lintel unit in a full mortar bedding.

3.3.17. Lateral Support Angles:

3.3.17.1. Install lateral support angles to underside of structure, at 2000 mm (6' - 6") oc, for lateral stability of interior masonry walls.

3.3.17.2. Install lateral supports at either horizontal or vertical intervals spaced at not more than:

3.3.17.2.1. 20 x wall thickness for solid wall of solid units.

3.3.17.2.2. 18 x wall thickness for solid wall of hollow units.

3.3.17.2.3. 36 x wall thickness for partitions.

3.3.18. Joint Tooling:

3.3.18.1. Provide joints in masonry, firmly pointed, compacted and tooled.

3.3.18.2. Exterior Masonry Joint Tooling:

3.3.18.2.1. Brick: Concave joints:

3.3.18.2.1.1. Horizontal: Rake back joints 9 mm (3/8").

3.3.18.2.1.2. Vertical: Rake back joints 9 mm (3/8").

3.3.18.2.2. Concrete Block:

3.3.18.2.2.1. Exposed: Concave joints.

3.3.18.2.2.2. Concealed: Flush joints.

3.3.18.2.2.3. Parged: Rake back joints 13 mm (1/2").

3.3.18.3. Interior Masonry Joint Tooling:

3.3.18.3.1. Concrete Block:

3.3.18.3.1.1. Exposed: Concave joints.

3.3.18.3.1.2. Concealed: Flush joints.

3.3.19. Built-In Work:

3.3.19.1. Solidly build items of hollow metal work and miscellaneous metal work, including but not limited to grilles, hose cabinets, electrical panels into masonry work, and ensure they are set square and true in walls and partitions.

3.3.19.2. Cut for and build into masonry, anchors, sleeves, inserts, reglets, piping, conduit, outlet boxes, metal flashings and leave chases, slots or openings required for fixing of work of other Sections. Build chases into masonry walls; do not cut.

3.4. CLEANING

3.4.1. Obtain cleaning materials in accordance with manufacturer's instructions and brick manufacturer's written instructions for cleaning and verify cleaning procedures outlined in CSA A371 with manufacturers. Follow brick manufacturer's written instructions for cleaning masonry. Test sample area, 10 m^2 (100 sq ft), to judge effectiveness of cleaning procedures and obtain Consultant's review with no objections recorded.

3.4.2. Keep wall clean and free of mortar stains during laying. Allow mortar droppings which adhere to wall to dry out but not set. Then rub with small piece of masonry followed by brushing to remove all traces.

On completion of masonry construction, after mortar is thoroughly set and cured, clean masonry thoroughly.

3.4.3. Protect windows, trim and metal from cleaning agents.

3.4.4. Remove mortar with wood paddles and scrapers before wetting. Saturate masonry with clean water and flush off loose mortar and dirt. Clean blockwork using water, scrubbing brushes and wood paddles only.

3.4.5. Clean masonry to be left exposed, using procedures as outlined herein and, where this is inadequate, try following recommendations outlined in BIA's Technical Notes.

3.4.6. Particular care should be taken when cleaning lighter coloured clay bricks even with non-acid based cleaning solutions. Dark red or brown residue resulting from cleaning operations when allowed to run down face of brick could streak and discolour exterior facing. Protect lighter coloured Products by masking them from run off or by taking measures recommended by brick manufacturers.

3.4.7. Should these methods prove inadequate consult masonry manufacturer before undertaking unusual cleaning procedures and obtain Consultant's prior consent.

3.4.8. Clean adjacent surfaces completely, which have been soiled or otherwise marred.

3.5. PROTECTION

3.5.1. Protect masonry from absorbing water from precipitation and condensation.

3.5.2. Keep masonry materials and Products completely free from frost, snow and ice.

3.5.3. Protect masonry with protective coverings continuously from placement to 10 Days after placement.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

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

1.1.1.1. Wood casework.

1.1.1.2. Change room bench.

1.2. REFERENCES

1.2.1. Abbreviations and Acronyms:

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

1.2.1.2. NAAWS: North American Architectural Woodwork Standards

1.2.2. Reference Standards:

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

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

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

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

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

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

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

1.3. ADMINISTRATIVE REQUIREMENTS

1.3.1. Preinstallation Meetings:

1.3.1.1. Conduct a pre-installation meeting in accordance with Division 01.

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

1.3.1.2.1. Verify project requirements.

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

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

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

1.3.1.2.5. Coordination requirements with other subtrades.

1.3.2. Coordination:

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

1.4. SUBMITTALS

1.4.1. Shop Drawings:

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

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

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

1.4.1.4. Clearly indicate material being supplied.

1.4.2. Samples: Submit samples in following sizes:

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

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

1.4.2.3. Each type of hardware.

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

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

1.5. QUALITY ASSURANCE

1.5.1. Qualifications:

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

1.5.1.2. Requirements of this Section govern and modify NAAWS.

1.5.1.3. Woodwork Manufacturer Qualifications:

1.5.1.3.1. Member in Good Standing of AWMAC.

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

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

1.5.1.4. Installers:

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

1.6. DELIVERY, STORAGE AND HANDLING

1.6.1. Delivery and Acceptance Requirements:

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

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

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

1.6.1.4. Do not deliver damaged Products.

1.6.2. Storage and Handling Requirements:

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

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

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

1.7. WARRANTY

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

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

PART 2 - PRODUCTS

2.1. MANUFACTURERS

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

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

2.1.1.1.1. Arborite; www.arborite.com

2.1.1.1.2. Formica Inc.; www.formica.com

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

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

2.1.1.1.5. Pionite Decorative Laminates; www.pionite.com

2.1.1.1.6. Wilsonart Canada; www.wilsonart.com

2.2. PERFORMANCE/DESIGN CRITERIA

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

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

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

2.3. MATERIALS

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

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

2.4. PANEL MATERIALS

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

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

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

2.4.2. Plywood:

2.4.2.1. Backing grade, veneer core:

2.4.2.1.1. Softwood plywood to CSA O151

2.4.2.1.2. Douglas Fir plywood to CSA O121.

2.4.3. Particleboard; medium density:

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

2.4.4. Particle board; fire retardant:

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

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

2.5. PLASTIC AND COMPOSITE MATERIALS

2.5.1. Melamine:

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

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

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

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

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

2.6. FASTENERS AND ADHESIVES

2.6.1. Fasteners:

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

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

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

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

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

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

2.7. HARDWARE

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

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

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

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

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

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

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

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

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

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

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

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

2.7.1.12. Change room safety hook: “HDB003IP” by Richelieu; www.richelieu.com, simple hook style for children in white plastic. Size: 41.3mm width and 95mm height. Load capacity: 12kg.

2.7.2. Hardware finish:

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

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

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

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

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

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

2.7.2.1.6. Satin Stainless Steel: BHMA 630.

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

2.8. FABRICATION

2.8.1. General:

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

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

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

2.8.1.4. Fabricate to conceal fastenings.

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

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

2.8.2. Plastic Laminate Millwork:

2.8.2.1. Construction Type: Frameless.

2.8.2.2. Cabinet and door interface: flush overlay.

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

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

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

2.8.2.6. Edgeband: PVC

2.8.3. Drawers:

2.8.3.1. Sides: Particle board with LPDL surfaces.

2.8.3.2. Bottoms: MDF with melamine surfaces.

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

2.8.4. Countertops:

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

2.8.4.2. Fabricate cutouts for services penetrations as required.

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

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

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

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

2.8.4.7. Laminated Plastic Countertops:

2.8.4.7.1. Core material: Water resistant particle board.

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

2.8.4.7.3. Front edges: As shown on plans.

2.8.4.8. Solid Surface Countertops:

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

2.8.4.8.2. Front edges: As shown on plans.

2.8.5. Exposed wood construction:

2.8.5.1. Fabricate joints carefully matched for grain and colour.

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

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

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

2.8.5.5. Wood bench: 2x4 Clear birch slats (Trimmed to 3" wide) c/w pencil radiused top edges, clear seal and topcoat finish c/w 1x4 birch supports mechanically fastened to angle below with 2" wood screws through supports into underside of birch slats above (TYP), clear seal and top coat finish c/w triangular steel support bracket below bench to be 2"x2"x3/16" steel angles welded together to suit (36" o/c max or as shown on elevations), Anchored into wall behind with (2) 3/16" diameter x3" toggle bolts, washers to suit, seat above to be secured to steel support as per detail to suit

PART 3 - EXECUTION

3.1. EXAMINATION

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

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

3.2. INSTALLATION

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

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

3.2.3. Mitre exposed corners.

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

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

3.2.6. Mechanical and Electrical Fittings:

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

3.2.6.1.1. Mechanical services and fittings.

3.2.6.1.2. Washroom accessories.

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

3.2.7. Installation of Hardware:

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

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

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

3.3. ADJUSTING & TOUCH UP

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

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

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

1.1.1. Section Includes:

1.1.1.1. Provide firestopping and smoke seals at penetrations and at joints in fire rated assemblies.

1.1.1.2. Make repairs to existing fire rated assemblies as necessary.

1.2. ADMINISTRATIVE REQUIREMENTS

1.2.1. Coordination:

1.2.1.1. Coordinate construction of openings and penetrating items to ensure that through-penetration fire-stop systems are installed according to specified requirements.

1.2.1.2. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate through-penetration fire-stop systems.

1.2.1.3. Do not cover up through-penetration fire-stop system installations that will become concealed behind other construction until manufacturer's representative and building inspector, if required by Authorities Having Jurisdiction, have examined each installation.

1.2.2. Preinstallation Meetings:

1.2.2.1. Arrange preinstallation meeting 1 week prior to commencing work with all parties associated with trade as designated in Contract Documents or as requested by Consultant. Presided over by Contractor include Consultant who may attend, Subcontractor performing work of this trade, Owner’s representative, testing company's representative and consultants of applicable discipline.

1.3. SUBMITTALS

1.3.1. Product Data:

1.3.1.1. Submit manufacturers’ specifications and technical data for each material including compositions, limitations, documentation conforming ULC and/or cUL firestop system proposed for this Project and manufacturers’ installation instructions.

1.4. QUALITY ASSURANCE

1.4.1. Ensure firestopping systems conform to requirements of CAN/ULC-S115 tested assemblies that provide fire rating as shown.

1.5. SITE CONDITIONS

1.5.1. Ambient Conditions:

1.5.1.1. Comply with manufacturer's recommended requirements for temperature, relative humidity, moisture content and presence of any sealer or release agents on substrate during application and curing of materials. Ensure surfaces are dry and frost free.

1.5.1.2. Maintain minimum temperature of 5 deg C (40 deg F) for minimum period of 1 week before application, during application and until application is fully cured.

1.5.1.3. Ventilate areas in which firestopping is being applied. Protect water-soluble material from wetting until fully cured.

PRODUCTS

1.6. FIRE RESISTIVE JOINT PRODUCTS

1.6.1. For pipe penetrations in vertical assemblies, horizontal assemblies and smoke barrier:

1.6.1.1. 3M Fire Barrier Sealant FD 150+: Single-part, acrylic latex sealant. No-sag, low-shrinkage, low VOC.

1.6.1.2. Fire Resistance: For use in 1, 2, 3 or 4-hour fire-rated systems.

1.6.1.3. Compression/Extension Recovery: Up to +/- 19 percent of original joint width.

1.6.1.4. Meets optional L rating requirements.

1.6.1.5. STC rating of 56 when tested in STC 56-rated wall assembly.

1.6.2. For filling voids in concrete gypsum, metal, plastic, wood and insulation:

1.6.2.1. 3M Fire Barrier Water Tight Sealant 3000 WT: intumescent silicone firestop sealant.

1.6.2.2. Fire Resistance: For use in 1, 2 or 3 hour fire rated systems.

1.6.2.3. Meets UL Water Leakage Test, W Rating – Class 1 requirements.

1.6.2.4. STC-Rating of 53 when tested in STC-53-rated wall assembly.

1.6.3. For horizontal floor openings:

1.6.3.1. 3M Fire Barrier Water Tight Sealant 1003 SL: Single-part, self-leveling elastomeric silicone sealant. Sag-resistant, low VOC.

1.6.3.2. Fire Resistance: For use in 1, 2, 3 or 4 hour fire rated systems.

1.6.3.3. Meets UL Water Leakage Test, W Rating – Class 1 requirements.

1.6.3.4. Compression/Extension Recovery: Up to +/- 15 percent of original joint width.

1.6.3.5. STC-Rating of 56 when tested in STC-56-rated wall assembly.

1.6.4. For mechanical, electrical and plumbing pipe, conduit, communication cabling, and telephone wiring in vertical and horizontal assemblies:

1.6.4.1. 3M Fire Barrier Sealant 2000 NS: Silicone Sealant: Single-part, elastomeric silicone sealant. Sag-resistant, low VOC.

1.6.4.2. Fire Resistance: For use in 1, 2, 3 or 4-hour fire rated systems.

1.6.4.3. Compression/Extension Recovery: Up to +/- 13 percent of original joint width.

1.6.5. For pipes, cables, cable tray, blank opening and other penetrations along with mineral wool or other fire-rated assembly products in vertical assemblies, horizontal assemblies and smoke barrier:

1.6.5.1. 3M Fire Barrier Moldable Putty+: one-part, 100 percent solids intumescent firestop

1.6.5.2. Fire Resistance: For use in 1, 2, or 3-hour fire rated systems

1.6.5.3. For sealing large or complex openings such as cable bundles, cable trays and conduit banks:

1.6.5.4. 3M Fire Barrier 2001 Silicone RTV Foam, Two-part, liquid-silicone elastomer foam

1.6.5.5. Fire Resistance: For use in 1, 2, or 3-hour fire rated systems

1.6.6. For use at head-of-wall, wall-to-wall, floor-to-floor, bottom-of-wall, floor-to-wall and perimeter joints:

1.6.6.1. 3M FireDam Spray 200, Water-based, paintable, low VOC, freeze/thaw resistant spray applied fire resistive product. Applied with conventional airless spray equipment:

1.6.6.2. Fire Resistance: For use in 1, 2, 3 or 4-hour fire rated systems.

1.6.6.3. Compression/Extension Recovery: Up to +/- 50 percent of joint width.

1.6.6.4. STC-Rating of 56 when tested in STC 56-rated wall assembly.

PART 2 - EXECUTION

2.1. EXAMINATION

2.1.1. Verification of Conditions:

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

2.1.1.2. Verify openings, dimensions and surfaces conform to fire and smoke seal assembly.

2.1.1.3. Examine sizes of penetrating service, percentage fill and sleeve or opening sizes with exact annular space calculations, anticipated movement and conditions necessary to establish correct type, thickness and installation of back-up materials and seals.

2.1.1.4. Since firestop systems do not re-establish structural integrity of load bearing partitions/ assemblies, or support live loads and traffic, consult structural engineer prior to penetrating any load bearing assembly.

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

2.2. PREPARATION

2.2.1. Surface Preparation:

2.2.1.1. Provide primer or surface conditioner if required by Product manufacturer. Prime surfaces in accordance with manufacturer's directions.

2.2.1.2. Remove combustible material and loose material detrimental to bond from edges of penetration. Clean, prime or otherwise prepare substrate material to manufacturer's recommendation.

2.2.1.3. Remove insulation from insulated pipe and duct where such pipes or ducts penetrate a fire separation unless ULC certified assembly permits such insulation to remain within assembly, or where mechanical trades have installed special fire rated insulated sleeves. Ensure continuity of thermal and vapour barriers where such are removed, altered or replaced, to satisfaction of Mechanical and Electrical and Consultant.

2.2.1.4. Alternatively, ensure pipe and duct insulation and wrappings occurring within openings to receive firestopping and smoke seals under this Section are installed prior to work of this Section and insulation and wrappings within fire seals are ULC listed components of system to be installed under this Section, unless ULC certified assembly permits such other insulation and wrappings to remain within assembly. Coordinate work of this Section with Mechanical and Electrical.

2.2.1.5. Clean bonding surfaces to remove deleterious substances including dust, paint, rust, oil, grease, moisture, frost and other foreign matter which may otherwise impair effective bonding.

2.3. INSTALLATION

2.3.1. Install in strict accordance with manufacturer's detailed installation instructions and procedures.

2.3.2. Install so that openings are completely filled and material is securely adhered.

2.3.3. Where firestopping surface will be exposed to view, finish to a smooth, uniform surface flush with adjacent surfaces.

2.3.4. After installation is complete, remove combustible forming materials and accessories that are not part of the listed system.

2.3.5. Repair or replace defective installations in accordance with manufacturer’s recommendations, listed systems details and applicable code requirements.

2.3.6. At each through penetration or fire-resistive joint system, attach identification labels on both sides in location where label will be visible to anyone seeking to remove penetrating items or firestopping.

2.3.7. Clean firestop materials off surfaces adjacent to openings as work progresses, using methods and cleaning materials approved in writing by firestop system manufacturer and which will not damage the surfaces being cleaned.

2.3.8. Notify Authority Having Jurisdiction when firestopping installation is ready for inspection; obtain advance approval of anticipated inspection dates and phasing, if any, required to allow subsequent construction to proceed.

2.3.9. Do not cover firestopping with other construction until approval of authority having jurisdiction has been received.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

1.1.1. Section Includes: Provide joints sealants including but not limited to following:

1.1.1.1. Exterior control joints between new brick masonry and existing

1.1.1.2. Interior control joints, joints in tiling, joints between millwork and walls, joints around door frames, and were shown in the drawings.

1.1.1.3. Acoustical joint sealants.

1.2. ADMINISTRATIVE REQUIREMENTS

1.2.1. Coordination:

1.2.1.1. Coordinate installation of joint sealants with sequence of work by other Sections.

1.2.2. Preinstallation Meeting:

1.2.2.1. Prior to start of work, arrange for Project site meeting of parties associated with work of this Section. Presided over by Contractor, include Consultant who may attend, Subcontractor performing work of this trade, Contractor's consultants of applicable discipline and Owner's representative.

1.2.2.2. Review Specification for work included under this Section and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials, materials to be used, installation of materials, sequence and quality control, Project staffing, restrictions on areas of work and other matters affecting construction, to permit compliance with intent of this Section. Discuss also following items:

1.2.2.2.1. Verify with sealant manufacturer that specified sealants are compatible with and will satisfactorily adhere to substrates.

1.2.2.2.2. Weather conditions under which work will be done.

1.2.2.2.3. Anticipated frequency and extent of joint movement.

1.2.2.2.4. Joint design.

1.2.2.2.5. Suitability of durometer hardness and other properties of material to be used.

1.2.2.2.6. Recommendations of manufacturer for mixing of multi-component sealants.

1.2.2.2.7. Number of beads to be used in sealing operation and priming operation if required.

1.3. ACTION SUBMITTALS

1.3.1. Product Data:

1.3.1.1. Submit Product information from sealant manufacturer prior to commencement of work of this Section including:

1.3.1.1.1. Preparation instructions and recommendations.

1.3.1.1.2. Standard drawings illustrating manufacturer's recommended sealant joint profiles and dimensions applicable to Project.

1.3.1.1.3. Composition and physical characteristics.

1.3.1.1.4. Surface preparation requirements.

1.3.1.1.5. Priming and application procedures.

1.3.1.1.6. Suitability of sealants for purposes intended and joint design.

1.3.1.2. Joint sealant schedule: indicating application, joint location, sealant type, manufacturer and product name, and colour, for each application. Utilize joint sealant designations included in this Section.

1.4. QUALITY ASSURANCE

1.4.1. Qualifications:

1.4.1.1. Installers: Provide work of this Section executed by competent installers who have a membership in good standing with SWRI and have minimum of 5 years experience in application of Products, systems and assemblies specified and with approval and training of sealant manufacturer.

1.5. DELIVERY, STORAGE AND HANDLING

1.5.1. Delivery and Acceptance Requirements: Deliver caulking and sealant materials to site in original, unopened containers with manufacturers' labels and seals intact. Labels to identify manufacturer's name, brand name of Product, grade and type, application directions and shelf life or expiry date of Product.

1.6. PROJECT CONDITIONS

1.6.1. Ambient Conditions:

1.6.1.1. Do not apply any sealant under adverse weather conditions, when joints to be sealed are damp, wet or frozen or when at ambient temperatures below 5 deg C (40 deg F). Maintain minimum temperature of application during application and for 8 hours after application. Consult manufacturer for specific instructions before proceeding and obtain Consultant's approval.

1.6.1.2. Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated and until contaminants capable of interfering with adhesion are removed from joint substrates.

1.6.2. Joint-Width Conditions: Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.

1.6.3. Joint-Substrate Conditions: Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

PART 2 - PRODUCTS

2.1. PERFORMANCE/DESIGN CRITERIA

2.1.1. Compatibility:

2.1.1.1. Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.

2.1.2. Provide Products with capability, when tested for adhesion and cohesion under maximum cyclic movement in accordance with ASTM C719, to withstand required percentage change in joint width existing at time of installation and remain in compliance with other requirements of ASTM C920 for uses indicated.

2.2. JOINT SEALANTS

2.2.1. Exterior control joints in unit masonry: Nonsag, Neutral-Curing Silicone Joint Sealant:

2.2.1.1. Hardness, ASTM C661: 15 durometer Shore A.

2.2.1.2. Volatile Organic Compound (VOC) Content: 26 g/L maximum.

2.2.1.3. Staining, ASTM C1248: None on concrete, granite, limestone, and brick.

2.2.1.4. Color: As selected by Consultant.

2.2.1.1. Basis of Design Product: “DOWSIL 790 Silicone Building Sealant” by Dow.

2.2.1.2. Acceptable Alternatives:

2.2.1.2.1. “Spectrem 1” by Tremco

2.2.1.2.2. “SCS2700 SilPruf LM” by Momentive Performance Materials

2.2.1.2.3. “890NST” by Pecora

2.2.1.2.4. “290 DC PRO” by Sika Canada

2.2.2. Interior control joints in masonry and gypsum board: Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant.

2.2.2.1. Hardness, ASTM C661: 15 durometer Shore A.

2.2.2.2. Volatile Organic Compound (VOC) Content: 22 g/L maximum

2.2.2.3. Staining, ASTM C510: None.

2.2.2.4. Color: As selected by Consultant.

2.2.2.5. Basis of Design Product: “DOWSIL CCS” by Dow.

2.2.2.6. Acceptable Alternatives:

2.2.2.6.1. “Dymonic FC”, by Tremco

2.2.2.6.2. “Sikaflex 1a” by Sika

2.2.3. Interior joints in ceramic tile, at sinks, urinals, and casework: Mildew-Resistant, Single-Component, Nonsag, Acid-Curing Silicone Joint Sealant:

2.2.3.1. Basis of Design Product: “DOWSIL 786 Silicone Sealant” by Dow.

2.2.3.2. Hardness, ASTM D2240: 25 durometer Shore A

2.2.3.3. Volatile Organic Compound (VOC) Content: 36 g/L maximum.

2.2.3.4. Color: As selected by Consultant.

2.2.3.5. Basis of Design Product: “DOWSIL 786 Silicone Sealant” by Dow.

2.2.3.6. Acceptable Alternatives:

2.2.3.6.1. “Tremsil 200” by Tremco

2.2.3.6.2. “SCS1700 Sanitary” by Momentive Performance Materials

2.2.3.6.3. “KB 4800” by Adfast“

2.2.4. Interior non-moving paintable joints: Acrylic Latex or Siliconized Acrylic Latex Products: Single-Component, comply with ASTM C834.

2.2.4.1. Products: provide products by one of the following:

2.2.4.1.1. “Chem-Calk 600”; by Bostik Inc.

2.2.4.1.2. “AC-20+”; by Pecora Corporation

2.2.4.1.3. "Sonolac"; BASF Building Systems

2.2.4.1.4. "Tremflex 834"; by Tremco Incorporated.

2.2.4.1.5. "Bondaflex 600"; by May National Associates, Inc.

2.2.4.1.6. "EcoTex 25"; by Everkem Diversified Products, Inc.

2.2.4.1.7. "Titebond GREENchoice Acoustical Smoke and Sound Sealant"; by Franklin International, Inc.

2.2.4.1.8. "White Lightning Bolt Quick Dry Siliconized Acrylic Latex Sealant"; by Sherwin-Williams Company.

2.2.4.2. Colour: as selected by Consultant.

2.2.5. Interior concealed joints in acoustic assemblies: Acoustical Joint Sealant Standard: Manufacturer's standard non-sag, paintable, non-staining latex sealant:

2.2.5.1. Volatile Organic Compound (VOC) Content: 31 g/L maximum

2.2.5.2. Products: provide products by one of the following:

2.2.5.2.1. "AC-20 FTR" or "AIS-919"; by Pecora Corporation.

2.2.5.2.2. "SHEETROCK Acoustical Sealant"; by USG Corporation.

2.3. JOINT-SEALANT BACKING

2.3.1. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

2.3.2. Cylindrical Sealant Backings: ASTM C1330, of type indicated below and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance. Provide any Type schedule below, as approved in writing by joint-sealant manufacturer for joint application indicated.

2.4. MISCELLANEOUS MATERIALS

2.4.1. Primer: Material recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

2.4.2. Bond Breaker Tape: As recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.4.3. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants with joint substrates.

2.4.4. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints. Leave no residue.

PART 3 - EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions:

3.1.1.1. Examine joints for compliance with requirements for joint configuration, installation tolerances and other conditions affecting joint sealant performance. Ensure joints are suitable to accept and receive sealants.

3.1.1.2. Examine joint sizes and where depth of joint exceed required depth of sealant correct to achieve proper following width/depth ratio:

3.1.1.2.1. Maintain 2:1 Width/Depth Ratio: Ensure maximum sealant depth is 13 mm (1/2”) and minimum contact width with each substrate is 6 mm (1/4"). Confirm width/depth ratios with sealant manufacturers.

3.1.1.3. Verify joint surfaces are clean, sound, free of defects and dimensions are within sealant manufacturer’s size requirements.

3.1.1.4. Proceed with installation only after unsatisfactory conditions have been corrected.

3.1.1.5. Do not apply sealant to masonry until mortar has cured.

3.1.2. Preinstallation Testing: Before any sealing work is commenced, test materials for indications of staining or poor adhesion.

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

3.2. PREPARATION

3.2.1. Protection of In-Place Conditions: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.2.2. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint sealant manufacturer's written instructions and the following requirements:

3.2.2.1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.

3.2.2.2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.

3.2.3. Joint Priming: Prime joint substrates where recommended in writing by joint sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

3.3. INSTALLATION OF JOINT SEALANTS

3.3.1. General: Comply with joint sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

3.3.2. Sealant Installation Standard: Comply with recommendations of ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

3.3.3. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

3.3.3.1. Do not leave gaps between ends of sealant backings.

3.3.3.2. Do not stretch, twist, puncture, or tear sealant backings.

3.3.3.3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

3.3.4. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and back of joints.

3.3.5. Install sealants by proven techniques to comply with the following and at the same time backings are installed:

3.3.5.1. Place sealants so they directly contact and fully wet joint substrates.

3.3.5.2. Completely fill recesses provided for each joint configuration.

3.3.5.3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

3.3.6. Force sealant into joint and against sides of joints to obtain uniform adhesion. Use sufficient pressure to completely fill voids in joint regardless of variation in joint widths and to proper joint depth as prepared. Ensure full firm contact with interfaces of joint. Superficial pointing with skin bead is not acceptable.

3.3.7. Finish face of compound to form smooth, uniform beads. At recesses in angular surfaces, finish compound with flat face, flush with face of materials at each side. At recesses in flush surfaces, finish compound with concave face flush with face of materials at each side.

3.3.8. Compound may be tooled, provided such tooling does not damage seal or tear compound. Avoid pulling of sealant from sides.

3.3.9. Tool surfaces as soon as possible after sealant application or before any skin formation has occurred, particularly when using silicone sealants.

3.3.10. Ensure joint surfaces are straight, neatly finished, free from ridges, wrinkles, sags, dirt, stains, air pockets and embedded foreign matter or other defacement and be uniform in colour, free from marbling and/or colour streaking due to improper mixing or use of out of shelf life Products.

3.3.11. Tooling of Non sag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

3.3.11.1. Remove excess sealants from surfaces adjacent to joint.

3.3.11.2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.

3.3.11.3. Provide concave joint configuration per Figure 8A in ASTM C1193, unless otherwise indicated.

3.4. CLEANING

3.4.1. Clean off excess sealants or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

1.1.1. This Section includes:

1.1.1.1. Hollow metal doors

1.1.1.2. Metal frames.

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

1.1.2.1. Installation of snap-in clips and frames in gypsum board partitions: Section 09 22 16 - Non-Structural Metal Framing.

1.2. ADMINISTRATIVE REQUIREMENTS

1.2.1. Coordination:

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

1.2.2. Preinstallation Meetings:

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

1.2.2.1.1. Verify project requirements.

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

1.2.2.1.3. Inspection of surfaces to receive the work.

1.2.2.1.4. Coordination requirements with other subtrades.

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

1.2.2.2.1. Steel door and frame installer subtrade personnel.

1.2.2.2.2. Related work subtrade personnel.

1.3. ACTION SUBMITTALS

1.3.1. Product Data Sheets:

1.3.1.1. Submit manufacturer’s product data sheets for products to be used in the work of this section. Manufacturer’s product data sheets shall include:

1.3.1.1.1. Material and product physical properties and characteristics including size.

1.3.1.1.2. Performance criteria.

1.3.1.1.3. Limitations of products.

1.3.2. Shop Drawings:

1.3.2.1. Indicate door location using numbering system per door and frame schedule.

1.3.2.2. Include size, and hand of each door, elevation of each door type; beveling of door edges, construction type core and edge construction not covered in product data.

1.3.2.3. Indicate dimensions and locations of cut-outs including requirements for louver openings.

1.3.2.4. Provide details of door hardware locations, anchorage and fastening methods.

1.4. DELIVERY, STORAGE, AND HANDLING

1.4.1. Comply with CSDMA, Guide Specification For Installation and Storage of Hollow Metal Doors and Frames.

1.4.2. Inspect materials thoroughly upon receipt and report immediately any discrepancies, deficiencies and damages incurred during shipment on carriers' bill of lading and report immediately, in writing, to Supplier and Consultant.

1.4.3. Store materials properly on planks, in a dry area, out of water and covered to protect from damage from adverse weather conditions. Remove wet packaging immediately.

1.4.4. Remove wrappings or coverings from doors upon receipt at the Project Site, and store in a vertical position, spaced with blocking to permit air circulation between them.

1.5. WARRANTY

1.5.1. Manufacturer Warranty: Warrant work manufactured from ASTM A653/A653M, A40 galvannealed steel, touched up only with zinc-rich rust inhibitive primer where coating was removed during its manufacture for period of 10 years against defects and/or deficiencies in accordance with General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of Consultant. Defects include but are not limited to; rust perforation when stored, installed and finish painted in accordance with manufacturer’s written instructions.

PART 2 - PRODUCTS

2.1. MANUFACTURERS

2.1.1. Steel door and frames manufacturer list: Products of the following manufacturers are acceptable subject to conformance to requirements of drawings, schedules and specifications:

2.1.1.1. Baron Steel Doors & Frames; www.baronmetal.com

2.1.1.2. Ceco Door: www.cecodoor.com

2.1.1.3. Daybar Industries Limited; www.daybar.com

2.1.1.4. Fleming Door Products Ltd.; www.flemingdoor.com

2.1.1.5. Gensteel Doors, Inc.; www.gensteeldoors.com

2.1.1.6. Shanahan’s Limited Partnership; www.shanahans.com

2.1.2. Basis of Design:

2.1.2.1. This Specification is based on “Imperial/Versador” by Ceco Door. Comparable Products from manufacturers listed herein will be accepted provided they meet requirements of this Specification.

2.2. PERFORMANCE/DESIGN CRITERIA

2.2.1. Ensure Product is manufactured by a firm experienced in design and production of standard and custom commercial metal door and frame assemblies.

2.2.2. Cycle Test Acceptance Criteria: Ensure door and frame assembly is testing in accordance with ANSI/SDI A250.4 for “High Usage” and is certified as Level “A” (1,000,000 cycles).

2.2.3. Twist Test Acceptance Criteria: Maximum permanent deflection not to exceed 3 mm (1/8”) under a maximum 136 kg (300 lb) load, total deflection not to exceed 32 mm (1-1/4") when tested in accordance with ANSI/SDI A250.4. Ensure tests are conducted by an independent nationally recognized accredited laboratory.

2.3. MATERIALS

2.3.1. Steel:

2.3.1.1. Fabricated from tensioned levelled steel to ASTM A924/A924M-18, galvanized to ASTM A653/A653M, Commercial Steel CS, Type B.

2.3.1.2. Steel shall be free of scale, pitting, coil breaks, surface blemishes, buckles, waves, and other defects.

2.3.1.3. Minimum sheet thickness; coated sheet steel complying with ASTM A653/A653M in accordance with Appendix 1: Steel Thicknesses and gauges of CSDMA “Recommended Specifications for Commercial Steel Door and Frame Products”.

2.3.1.4. Galvanneal coating finish, designation ZF120 (A40).

2.3.2. Door Core Materials:

2.3.2.1. Honeycomb:

2.3.2.1.1. Structural small cell, 25 mm maximum Kraft paper 'honeycomb', sanded to required thickness.

2.3.2.1.2. Minimum weight of 36.3 kg per ream.

2.3.2.1.3. Minimum density of 16.5 kg/m².

2.3.2.2. Steel stiffeners:

2.3.2.2.1. Continuous vertical formed steel sections, 0.813 mm minimum thickness, spaced not more than 150 mm apart, welded at 150 mm on center maximum to each face sheet.

2.3.2.2.2. Fill voids with minimum density of 24 kg/m3 fibreglass insulation conforming to with ASTM C665.

2.3.3. Primer: Rust inhibitive for touch-up.

2.3.4. Door Silencers (Bumpers): Single stud rubber/neoprene type.

2.3.5. Fasteners for Stops: Cadmium plated steel, counter sunk flat or oval head sheet metal Phillips screws.

2.3.6. Mortar Guard Boxes: Minimum 0.8 mm thick (22 ga) steel.

2.3.7. Frame Anchors:

2.3.7.1. Floor Anchors: Minimum 3 mm (1/8") thick adjustable floor anchors with 2 holes for bolting to floor.

2.3.7.2. Wall Anchors:

2.3.7.2.1. Masonry T-strap Type Wall Anchors: Minimum 1.2 mm thick (18 ga) steel

2.3.7.2.2. Existing Masonry/Concrete Wall Type Anchors: Minimum 0.912 mm thick (20 ga) steel.

2.3.7.2.3. Masonry Stirrup-strap Type 50 mm x 250 mm (2" x 10"): Minimum 1.519 mm thick (16 ga) steel.

2.3.7.2.4. Steel Stud Type: Minimum 0.912 mm thick (20 ga) steel.

2.3.7.2.5. Steel Stud Tension and Associated Wall Type: Minimum 0.912 mm thick (20 ga) steel.

2.4. FABRICATION

2.4.1. Welding: Carry out welding in accordance with CSA W59.

2.4.2. Grind exposed welds smooth and flush. Fill open joints, seams and depressions with filler or by continuous brazing or welding. Grind smooth to true sharp arises and profiles and sand down to smooth, true, uniform finish.

2.4.3. Hardware Requirements: Blank, mortise, reinforce, drill and tap doors and frames to receive mortised templated hardware. Check hardware list for requirements.

2.4.4. Frames - General:

2.4.4.1. Fabricate frames for doors to profiles indicated.

2.4.4.2. Ensure door frames are welded type construction. Knock-down frames are not permitted.

2.4.4.3. Reinforce frame as required for surface mounted hardware.

2.4.4.4. Protect mortise cut outs with mortar guard boxes. Omit for gypsum board applications.

2.4.4.5. Where frames occur in masonry provide strip strap, T-strap or wire type anchors. Where frames occur in gypsum board provide stud type anchors.

2.4.4.6. Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb. Provide 2 anchors for rebate opening heights up to and including 1500 mm (5') and 1 additional anchor for each additional 760 mm (30") of height or fraction thereof, except as indicated below. For frames in previously placed concrete, masonry or structural steel provide anchors located not more than 150 mm (6") from top and bottom of each jamb and intermediate anchors at 660 mm (26") on centre maximum.

2.4.4.7. Where floor finishes allow, fabricate frames to extend 38 mm (1-1/2") below finished floor level. Where frames are to terminate at finished floor level, provide plates for anchorage to slabs.

2.4.4.8. Prepare each door opening for single stud door silencers: 3 for single door openings placed opposite hinges.

2.4.4.9. Provide 0.912 mm thick (20 ga) steel snap-in or welded-in “Z” type stud anchors for door frames installed in steel stud gypsum board partitions. Ensure snap-in clips are supplied to Section 09 21 16.

2.4.4.10. Factory apply touch-up primer to areas where zinc coating has been removed during fabrication.

2.4.5. Hollow Metal Door Frames:

2.4.5.1. Steel:: Minimum 1.519 mm thick (16 ga) steel.

2.4.5.2. Reinforcements:

2.4.5.2.1. Lock and Strike Reinforcements: Minimum 1.519 mm thick (16 ga) steel.

2.4.5.2.2. Hinge Reinforcements: Minimum 3.4 mm thick (10 ga) steel.

2.4.5.2.3. Flush Bolt Reinforcement: Minimum 1.519 mm thick (16 ga) steel.

2.4.5.2.4. Reinforcement for Surface Applied Hardware: Minimum 1.2 mm thick (18 ga) steel.

2.4.5.2.5. Concealed Door Closer or Holder Reinforcements: Minimum 2.6 mm thick (12 ga) steel.

2.4.5.2.6. Top and Bottom End Channels: Minimum 1.2 mm thick (18 ga) steel.

2.4.5.3. Jamb Shipping Bars: Minimum 0.912 mm thick (20 ga) steel.

2.4.5.4. Mitre corners of frames. Cut frame mitres accurately and weld continuously on returns and inside of frame faces.

2.4.5.5. When required due to site access or due to shipping limitations, fabricate frame Product for large openings in sections, with splice joints for field assembly. Provide alignment plates or angles at each joint, fabricated of same metal thickness as frame. Indicate joints for field assembly on Shop Drawings.

2.4.5.6. Accurately cope and securely weld butt joints of mullions, transom bars, centre rails and sills. Grind welded joints to a smooth, uniform finish.

2.4.5.7. Securely attach floor anchors to inside of each jamb profile.

2.4.5.8. Weld in 2 temporary jamb shipping bars at each frame to maintain alignment during shipment.

2.4.6. Doors - General:

2.4.6.1. Fabricate doors to be swing type flush with 1 continuous face free from joints, tool markings and abrasions and with provisions for glass and/or louvre openings as indicated on Door Schedule and Drawings.

2.4.6.2. Coordinate louvre openings with Mechanical and Consultant.

2.4.6.3. For hollow metal doors, ensure longitudinal edges have continuously welded seams, filled and sanded flush full height of door.

2.4.6.4. Fabricate doors with top and bottom inverted recessed spot welded channels.

2.4.6.5. Reinforce, blank, drill and tap doors for mortised, templated hardware.

2.4.6.6. Reinforce doors for surface mounted hardware.

2.4.6.7. Undercut 19 mm (3/4") for air intake at washrooms.

2.4.6.8. Factory prepare holes 13 mm (1/2") diameter and larger. Factory prepare holes less than 13 mm (1/2") when required for function of device for knob, lever, cylinder, turn pieces or when these holes overlap function holes.

2.4.7. Interior Hollow Metal Doors:

2.4.7.1. Face Sheets: 1.519 mm thick (16 ga) minimum galvannealed steel sheet.

2.4.7.2. Vertical Stiffeners: 0.912 mm thick (20 ga) minimum unprimed steel sheet.

2.4.7.3. Glazing Stops: 1.519 mm thick (16 ga) minimum unprimed steel sheet, formed, drilled and countersunk for fastenings.

2.4.7.4. Fabricate each face sheet for exterior door using a sheet steel laminated under pressure to polyurethane core. Ensure core completely fills inside hollow of door.

2.4.7.5. Fabricate each face sheet for interior door using a sheet steel laminated under pressure to honeycomb core.

2.4.7.6. Reinforce, stiffen and sound deaden doors with core laminated to inside faces of panels. Ensure core completely fills inside hollow of door.

2.4.8. Fabrication Tolerances:

2.4.8.1. Frames:

2.4.8.1.1. Width and Height: +1.6 mm (+1/16”), -0.8 mm (-1/32”).

2.4.8.1.2. Face, Stop and Rabbet: +/-0.8 mm (+/-1/32”).

2.4.8.1.3. Jamb Depth: +/-1.6 mm (+/-1/16”).

2.4.8.2. Doors:

2.4.8.2.1. Width and Height: +/-1.2 mm (+/-3/64”).

2.4.8.2.2. Thickness: +/-1.6 mm (+/-1/16”).

2.4.8.2.3. Edge Flatness: 1.6 mm (1/16”) maximum.

2.4.8.2.4. Surface Flatness: 3 mm (1/8”) maximum.

2.4.8.2.5. Door Twist: +/-1.6 mm (+/-1/16”).

2.4.8.3. Hardware:

2.4.8.3.1. Cutouts: Template dimension +0.38 mm (+0.015”), -0 mm (-0”).

2.4.8.3.2. Location: +/-0.8 mm (+/-1/32”).

2.4.8.3.3. Between Hinge Centrelines: +/-0.4 mm (+/-1/64”).

2.4.9. Prime Painting: Apply factory touch up primer at areas where zinc coating has been damaged during fabrication.

PART 3 - EXECUTION

3.1. INSTALLATION

3.1.1. Hollow Metal Doors:

3.1.1.1. Install hollow metal doors in accordance with manufacturer's instructions.

3.1.2. Hollow Metal Frames:

3.1.2.1. Install hollow metal frames in accordance with manufacturer's instructions.

3.1.2.2. Set frames plumb, square, level and at correct elevation, maintaining uniform door width and height. Check and correct as necessary opening width, opening height, square, alignment, twist and plumb, in accordance with the CSDMA, "Recommended Dimensional Standards for Commercial Steel Doors and Frames".

3.1.2.3. Secure anchorages and connections to adjacent construction.

3.1.2.4. Remove temporary steel shipping jamb spreaders prior to setting 1-piece welded frames. Brace frames rigidly in position while being built in. Use precisely-dimensioned installation spreaders at sill and third-points of door opening height to maintain door opening width during building-in. Follow manufacturer’s instructions regarding proper use of floor and jamb anchors. Remove installation spreaders only after mortar has set, where applicable.

3.1.2.5. Allow for deflection to prevent structural loads from being transmitted to frame.

3.1.2.6. Provide batt insulation to completely fill pressed steel frames of exterior doors and adjacent cavities.

3.1.2.7. Spot Grouting:

3.1.2.7.1. Coordinate spot grouting with Section 09 22 16 - Non-Structural Metal Framing.

3.1.2.7.2. Provide spot grout to increase rigidity of frame and improve resistance to frame rotation caused by weight of door.

3.1.2.7.3. Comply with manufacturer’s recommendations for surface preparation, cleaning, forming, mixing, placement and curing of grout.

3.1.2.7.4. Mix grout in accordance with ASTM C305 requirements.

3.1.2.7.5. Spot grout at strike and hinge side jambs at steel door frames set in gypsum board partitions, walls and other similar locations in accordance with manufacturer’s recommendations. Immediately insert gypsum panels

into jamb and attach to framing. Do not terminate gypsum board against trim.

3.1.2.7.6. Do not use pumped slurry method to perform spot grouting.

3.1.2.8. Continuous Grouting:

3.1.2.8.1. Coordinate continuous grouting with Section 04 20 00.

3.1.2.8.2. Comply with manufacturer's recommendations for surface preparation, cleaning, forming, mixing, placement and curing of grout.

3.1.2.8.3. Mix grout in accordance with ASTM C305 requirements.

3.1.2.8.4. Provide grouting employing established procedures recommended by manufacturers. Use minimum water required to produce placement consistency.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

1.1.1. Section Includes: Provide access doors and frames including but not limited to following:

1.1.1.1. Access doors and frames.

1.2. ADMINISTRATIVE REQUIREMENTS

1.2.1. Coordination:

1.2.1.1. Verification: Determine specific locations and sizes for access doors needed to gain access to concealed equipment and indicate on schedule specified in "Submittals" Article.

1.2.2. Preinstallation Meetings:

1.2.2.1. Conduct a pre-installation meeting in accordance with requirements of Section 01 10 00.

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

1.2.2.2.1. Verify project requirements.

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

1.2.2.2.3. Inspection of surfaces to receive the work.

1.2.2.2.4. Coordination requirements with other subtrades.

1.3. ACTION SUBMITTALS

1.3.1. Product Data Sheets:

1.3.1.1. Submit manufacturer’s product data sheets for products to be used in the work of this section.

1.3.2. Shop Drawings:

1.3.2.1. Submit Shop Drawings for work of this Section. In addition to the minimum requirements indicate following:

1.3.2.1.1. Face or ceiling placement.

1.3.2.1.2. Tolerances and clearances.

1.3.2.1.3. Method of attaching door frames to surrounding construction.

1.3.2.1.4. Finishes.

1.3.2.1.5. Hardware.

PART 2 - PRODUCTS

2.1. MANUFACTURERS

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

2.1.1.1. Acudor Products, Inc.; www.acudor.com

2.1.1.2. Bar-Co, Inc. by Alfab, Inc.; www.alfabinc.com

2.1.1.3. Cendrex Inc.; www.cendrex.com

2.1.1.4. Cesco Products; www.cescoproducts.com

2.1.1.5. Elmdor/Stoneman Manufacturing Company; www.elmdorstoneman.com

2.1.1.6. Jensen Industries; www.jensen-ind.com

2.1.1.7. Karp Associates, Inc.; www.karpinc.com

2.1.1.8. Larsen's Manufacturing Company; www.larsensmfg.com

2.1.1.9. Nystrom Building Products Co.; www.nystrom.com

2.1.1.10. Williams Brothers Corporation of America; www.wbdoors.com

2.2. MATERIALS

2.2.1. Steel Plates, Shapes and Bars: ASTM A36/A36M.

2.2.2. Hot-Dip Galvanized Steel: Coat to comply with ASTM A123/A123M for steel and iron products and ASTM A153/A153M for steel and iron hardware.

2.2.3. Steel Sheet:

2.2.3.1. Hot-Rolled: ASTM A1011/A1011M, Commercial Steel (CS), Type B; free of scale, pitting, and surface defects; pickled and oiled.

2.2.3.2. Cold-Rolled: ASTM A1008/A1008M, Commercial Steel (CS); stretcher-leveled standard of flatness.

2.2.3.3. Electrolytic Zinc Coated: ASTM A879/A879M, Commercial Steel (CS), with Class C coating and phosphate treatment to prepare surface for painting.

2.2.3.4. Metallic Coated: ASTM A653/A653M, Commercial Steel (CS), Type B, with A60 zinc-iron-alloy (galvannealed) coating or G60 mill-phosphatized zinc coating; stretcher-leveled standard of flatness.

2.2.4. Drywall Beads: Edge trim formed from 0.759 mm (22 ga) zinc-coated steel sheet formed to receive joint compound and in size to suit thickness of gypsum panels indicated.

2.3. MANUFACTURED UNITS

2.3.1. Flush Access Doors and Frames with Exposed Trim (AD-FDET):

2.3.1.1. Material: Prime-painted steel sheet.

2.3.1.2. Surface Type: Masonry.

2.3.1.3. Locations: Walls and ceilings.

2.3.1.4. Door: Minimum 0.912 mm (20 ga) thick sheet metal, set flush with exposed face flange of frame.

2.3.1.5. Frame: Minimum 1.519 mm (16 ga) thick sheet metal with 32 mm (1-1/4”) wide, surface-mounted trim.

2.3.1.6. Hinges: Spring-loaded concealed pin type.

2.3.1.7. Latch: Screwdriver- operated cam latch.

2.3.2. Flush Access Doors and Trimless Frames (AD-FDTF):

2.3.2.1. Material: Prime-painted steel sheet.

2.3.2.2. Surface Type: Gypsum board.

2.3.2.3. Locations: Walls and ceilings.

2.3.2.4. Door: Minimum 1.519 mm (16 ga) thick sheet metal, set flush with surrounding finish surfaces.

2.3.2.5. Frame: Minimum 1.519 mm (16 ga) thick sheet metal with bead for type of surface indicated.

2.3.2.6. Hinges: Spring-loaded concealed pin type.

2.3.2.7. Latch: Screwdriver- operated cam latch.

2.3.3. Recessed Access Doors and Trimless Frames (AD-RDTF):

2.3.3.1. Material: Prime-painted steel sheet.

2.3.3.2. Surface Type: Gypsum board.

2.3.3.3. Locations: Walls and ceilings.

2.3.3.4. Door: Minimum 1.519 mm (16 ga) thick sheet metal in the form of a pan recessed 16 mm (5/8”) for infill of finish matching surface type indicated.

2.3.3.5. Reinforce panel as required to prevent buckling.

2.3.3.6. Frame: Minimum 1.519 mm (16 ga) thick sheet metal with bead or edge for surface type indicated.

2.3.3.7. Hinges: Spring-loaded concealed pin type.

2.3.3.8. Latch: Screwdriver-operated cam latch with plastic grommet for access through pan recess.

2.4. FABRICATION

2.4.1. Shop Assembly: Latching Mechanisms: Furnish number required to hold doors in flush, smooth plane when closed as follows:

2.4.1.1. For cylinder lock, furnish 2 keys per lock and key locks alike.

2.4.1.2. For recessed panel doors, provide access sleeves for each locking device. Furnish plastic grommets and install in holes cut through finish.

2.5. FINISHES

2.5.1.1. Shop Primer for Ferrous Metal: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with performance requirements in SSPC-Paint 25; selected for good resistance to normal atmospheric corrosion, compatibility with finish paint systems indicated and capability to provide sound foundation for field-applied topcoats despite prolonged exposure.

2.5.1.2. Shop Primer for Metallic-Coated Steel: Organic zinc-rich primer complying with SSPC-Paint 20 and compatible with topcoat.

2.5.1.3. Galvanizing Repair Paint: High-zinc-dust-content paint for re-galvanizing welds in steel, complying with SSPC-Paint 20.

PART 3 - EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions:

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

3.1.1.2. Size and Location Verification: Determine specific locations and sizes for access doors needed to gain access to concealed equipment and indicate on schedule.

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

3.2. INSTALLATION

3.2.1. Advise installers of other work about specific requirements relating to access door and floor door installation, including sizes of openings to receive access door and frame, as well as locations of supports, inserts and anchoring devices.

3.2.2. Set frames accurately in position and attach securely to supports with plane of face panels aligned with adjacent finish surfaces.

3.2.3. Install access doors flush with adjacent finish surfaces or recessed to receive finish material.

3.3. ADJUSTING

3.3.1. Adjust doors and hardware after installation for proper operation.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

1.1.1. Section Includes: Work requirements for flooring restoration including but not limited to following:

1.1.1.1. Refurbish and repair existing terrazzo flooring where indicated in the drawings

1.2. REFERENCES

1.2.1. Terrazzo, Tile and Marble Association of Canada: Specification Guide, Tile Installation Manual

1.3. ADMINISTRATIVE REQUIREMENTS

1.3.1. Pre-Installation Meetings:

1.3.1.1. Prior to commencement of work, arrange for Project site meeting of all parties associated with work of this Section in accordance with project meetings specified in Section 01 10 00.

1.3.1.2. Include manufacturer’s technical representative, Contractor, Installers performing work of this Section, subcontractors installing finishes over these products (if applicable).

1.3.1.3. Review Specification for work included under this Section and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials, materials to be used, installation of materials, sequence and quality control, Project staffing, restrictions on areas of placement and other matters affecting construction.

1.4. SUBMITTALS

1.4.1. Submittals in accordance with Submittal Procedures specified in Section 01 10 00.

1.4.2. Product Data:

1.4.2.1. Submit manufacturer's Product data, performance criteria, application instructions, and other documentation for each material specified in this Section proposed for use.

1.4.2.2. Include product characteristics, performance criteria, finish and limitations.

1.4.2.3. Safety: Provide WHMIS Safety Data Sheets.

1.5. QUALITY ASSURANCE

1.5.1. Execute work of this Section by professionals who are specialized in the use of specific equipment and materials, trained in terrazzo finishing, and have minimum 5 years experience in this work.

1.5.2. Applicator to be a member of the Terrazzo, Tile and Marble Association of Canada (TTMAC). Submit evidence of this if requested.

1.6. DELIVERY, STORAGE AND HANDLING

1.6.1. Deliver materials in manufacturer's packaging including application instructions.

1.7. SITE CONDITIONS

1.7.1. Ventilation: Provide continuous ventilation during and after coating application.

PART 2 - PRODUCTS

2.1. MATERIALS

2.1.1. Terrazzo refurbishing materials:

2.1.1.1. Stripper: propose environmentally friendly cleaner.

2.1.1.2. Grout: General Polymers 5271 Terrazzo Grout Filler.

2.1.1.3. Sealer: General Polymers 4401 Terrazzo Sealer.

2.1.1.4. Water: clean and potable.

PART 3 - EXECUTION

3.1. PREPARATION

3.1.1.1. Thoroughly clean surfaces by scrubbing to remove dirt, dust, and wax. Use stripper in accordance with manufacturer's printed instructions.

3.1.1.2. Remove dirty solution with wet vacuum or mop.

3.1.1.3. Rinse with clean water and allow to dry thoroughly.

3.2. REFURBISH EXISTING TERRAZZO

3.2.1. Grind existing terrazzo floor and base with No. 80 grit abrasive stones using floor machine and base grinding machine for base. Keep area wet with water at all times. Wash surfaces with clean water.

3.2.2. Remove excess rinse water and apply grout to fill pinholes, cracks and voids. Allow grout to remain on surface and cure for minimum 24 hours before final grinding.

3.2.3. Grind existing terrazzo floor and base with No. 120 grit carborundum using floor machine and base grinding machine for base. Keep area wet with water at all times. Wash surfaces with a neutral cleaner. Rinse with clean water and allow to dry thoroughly.

3.2.4. Apply 2 coats sealer.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

1.1.1. Section Includes:

1.1.1.1. Testing and preparation of substrate for installation of flooring.

1.1.1.2. Moisture vapour control topping.

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

1.1.2.1. Filling of major holes, crack repairs, patching chases and trenches in concrete substrate Flatness and levelness requirements for floor to receive resilient sheet flooring: Section 03 01 30 – Repairs to Concrete.

1.1.2.2. Ceramic and porcelain tile: Section 09 30 00 - Tiling

1.1.2.3. Vinyl flooring: Section 09 65 19 – Resilient Tile Flooring

1.2. ADMINISTRATIVE REQUIREMENTS

1.2.1. Coordination:

1.2.1.1. Coordinate preparation of concrete flooring with installation of flooring materials. Ensure that proposed materials are compatible and will achieve correct results.

1.2.1.2. Determine acceptable limits for moisture vapour emissions, and pH with each of the finish flooring manufacturers.

1.2.1.3. Schedule surface preparation work with the concrete trade and flooring installation trade.

1.2.2. Preinstallation Meeting:

1.2.2.1. Prior to start of concrete work, arrange for Project site meeting of all parties associated with work of this Section, including Contractor, various flooring installers, and concrete finisher in accordance with Section 01 10 00.

1.2.2.2. Review Specification for work included under this Section and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials, materials to be used, installation of materials, sequence and quality control, Project staffing, restrictions flooring installation and other matters affecting construction, to permit compliance with intent of this Section. Ensure Division 03 requirements for concrete are compatible with requirements of this Section; floor flatness and floor levelness requirements for various floor finishes and their acceptability by flooring manufacturer; surface texture of finished floor required for various floor finishes; acceptable approaches to remediation of high moisture and high pH floors; adhesive application and floor covering installation.

1.3. SUBMITTALS

1.3.1. Product Data Sheets:

1.3.1.1. Submit product data sheets for all products proposed for use in this Section.

1.3.1.2. Submit WHMIS Safety Data Sheets for each product.

1.3.2. Shop Drawing: submit floor plan showing the locations of all field testing of concrete floors.

1.3.3. Test and Evaluation Reports:, submit field test reports from recognized approved independent testing laboratory for following requirements:

1.3.3.1. Submit letters of acceptance from each manufacturer of flooring products specified in related Sections that the combination of products and methods used in the overall flooring preparation and installation are compatible and appropriate for their intended application.

1.3.3.2. Submit moisture vapour emissions testing for all concrete floor areas.

1.3.3.3. Submit calcium chloride test results in accordance with requirements specified herein.

1.3.3.4. Submit pH test results and verify their acceptability to resilient sheet flooring manufacturer in accordance with requirements specified herein.

1.4. CLOSEOUT SUBMITTALS

1.4.1. Update floor plan shop drawing with notes to confirm field testing locations and final test readings.

1.5. QUALITY ASSURANCE

1.5.1. Qualifications:

1.5.1.1. Field Testing Inspectors: Independent 3rd party inspectors with minimum three years experience with concrete testing.

1.5.1.2. Installers: Provide work of this Section executed by competent installers with minimum of 5 years experience in concrete preparation and application of concrete Products specified.

1.6. DELIVERY, STORAGE AND HANDLING

1.6.1. Delivery and Acceptance Requirements:

1.6.1.1. Deliver materials in good condition to site in manufacturer’s original unopened containers that bears name and brand of manufacturer, Project identification, shipping and handling instructions.

1.7. SITE CONDITIONS

1.7.1. Ambient Conditions:

1.7.1.1. Maintain appropriate environmental conditions and protect work during and after installation. Comply with trade standards and manufacturer’s Product instructions. Follow Product SDS and label instructions concerning safety, health and other related precautionary and environmental protection.

1.7.1.2. Maintain relative humidity in accordance with manufacturer’s instructions.

1.7.1.3. Exhaust temporary heaters to building exterior to prevent health hazards and damage to work from toxic fumes and emanations.

1.7.1.4. Maintain ambient air temperature and temperature of floor covering areas at not less than 10 deg C (50 deg F) or more than 29 deg C (85 deg F) 48 hours before, during installation and for 48 hours after application unless otherwise required in Product instructions.

1.8. WARRANTY

1.8.1. Manufacturer Warranty: Warrant work of this Section for period of 25 years against defects and/or deficiencies in accordance with General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, at no expense to Owner.

1.8.2. Defects include but are not limited to; failure of floor finish remaining in place and bonding to structural slab and finish becoming defective and spalling and/or cracking.

PART 2 - PRODUCTS

2.1. MANUFACTURERS

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

2.1.1.1. Ardex Canada, Inc.; www.ardex.ca

2.1.1.2. Flextile Ltd.; www.flextile.net

2.1.1.3. Laticrete International, Inc.; www.laticrete.com

2.1.1.4. Mapei Corporation; www.mapei.ca

2.2. MATERIALS

2.2.1. Concrete Moisture Emission Reducer: Characteristics, performance requirements:

2.2.1.1. Epoxy cement, compliant with ASTM F3010.

2.2.1.2. Antimicrobial additive

2.2.1.3. Reduce the moisture vapour emission rate of concrete slabs ≤ 3 lbs. per 1,000 ft^2 per 24 hours.

2.2.1.4. Reduce the surface alkalinity of concrete slabs down to pH levels of 9

2.2.1.5. Provide 1 of following:

2.2.1.5.1. “Planiseal™ VS” by Mapei Corporation.

2.2.1.5.2. “Sikafloor® 81 EpoCemCA” by Sika Canada Inc.

2.2.1.5.3. “Ardex MC Rapid” by Ardex Canada

2.2.2. Primer:

2.2.2.1. Provide 1 of following:

2.2.2.1.1. “4040 Acrylic Primer” by Flextile Ltd except where epoxy moisture mitigation systems.

2.2.2.1.2. “Primer X” by Mapei Corporation

2.2.2.1.3. “Sikafloor 155 WN” by Sika Canada

2.2.2.1.4. “Ardex P4” by Ardex Canada

PART 3 - EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions for New Concrete:

3.1.1.1. Ensure new concrete slab has been properly cured and dry for minimum of 28 Days and has reached minimum compressive strength of 25 MPa (3625 psi) and a minimum of 1.5 MPa (218 psi) in tension.

3.1.1.2. Ensure no curing and sealing compounds, hardeners or other chemical additives have been used on concrete.

3.1.1.3. Notify Consultant in writing of any conditions which would be detrimental to the installation.

3.2. TESTING FOR ALL CONCRETE FLOORS:

3.2.1. Conduct concrete testing on all concrete floors prior to application of moisture vapour control topping and following corrective work.

3.2.2. Moisture Vapour Testing:

3.2.2.1. Perform calcium chloride test no earlier than 28 Days after concrete has been placed in accordance with requirements of ASTM F1869 for new and existing concrete floors, and in-situ probe RH testing in accordance with ASTM F2170 for new concrete prior to installation of flooring material.

3.2.2.2. Conduct 3 tests for each of the RH test methods for first 93 m2 (1000 sq ft) and 1 additional test for every 93 m² (1000 sq ft) of flooring. Ensure moisture emission from concrete floor does not exceed 2.27 kg/93 m² (5 lbs/1000 sq ft) in 24 hours or has a maximum RH of 80%.

3.2.2.3. Provide results to Consultant prior to commencement of installation including diagram of area tested showing location of each moisture test.

3.2.2.4. When concrete moisture emission rate is between 2.27 kg/93 m² (5 lbs/1000 sq ft) and 6.79 kg/93 m² (15 lbs/1000 sq ft) and in 24 hours use a concrete moisture emission reducer.

3.2.2.5. Do not proceed with installation until moisture problem has been corrected.

3.2.3. Alkalinity Testing (pH):

3.2.3.1. Measure pH of concrete in accordance with ACI PRC-364.17: How to Measure pH of a Concrete Surface Prior to Installation of a Floor Covering.

3.2.3.2. Perform pH test no earlier than 28 Days after concrete has been placed to ensure alkali salt residue is within limitation acceptable to manufacturer and to avoid adhesive failure, discoloration, shrinkage and softening of floor covering. If pH results are higher than 9.0, report to Consultant, Contractor or Owner for investigation and remedial work.

3.2.3.3. Perform at least three pH tests must be performed for the first 93 m² (1,000 square feet) of space. One additional test should be performed for each additional 93 m² (1,000 square feet 0 thereafter.

3.2.3.4. Refer to manufacturer for ways to neutralize floor prior to beginning of installation. Neutralize by sanding, vacuuming and/or by water plus mild sulfuric or sulfamic acid application as recommended by manufacturer.

3.2.3.5. Retest to assure pH has been neutralized.

3.2.4. Capillary Moisture Testing:

3.2.4.1. Moisture content of concrete substrate must be ≤ 4 % by mass (PBW – part by weight) as measured with a Tramex®CME / CMExpert type concrete moisture meter.

3.2.4.2. Before proceeding with application, test surfaces for moisture content in accordance with ASTM D4263 and in consultation with manufacturer to ensure they are suitable for application.

3.2.4.3. Provide all test results to Consultant prior to commencement of installation including diagram of area tested showing location of each moisture test, alkalinity test and capillary moisture test.

3.2.5. Evaluation and Assessment:

3.2.5.1. Report all testing results to manufacturer's representative and submit written acceptance of these results approval before proceeding.

3.2.5.2. Commencement of work implies acceptance of previously completed work.

3.3. SURFACE PREPARATION

3.3.1. For all new and existing concrete floor areas:

3.3.1.1. Prepare existing and new concrete floors over entire area with steel shot blasting or other method recommended by manufacturer. Remove uneven joints, rough areas, foreign and projection off surfaces. Surface to be hard, sound and roughened to irregular surface with weak concrete removed and surface holes and voids exposed. Equip dry blasting machine with vacuum to minimize dust.

3.3.1.2. Shot blast floor to remove soft material and to achieve a profile equivalent to ICRI / CSP 3 – 4.

3.3.1.3. Shot blast to expose cracks in concrete surface. For cracks lesser than 1.5 mm (1/16") employ crack reinforcing tape in accordance manufacturer's recommendations. Repair cracks, holes or other deficiencies in accordance with manufacturer's recommendations.

3.3.1.4. Blow clean control joints, sawcuts and cracks with compressed air.

3.3.1.5. Prepare concrete floors to receive sheet flooring in accordance with requirements of ASTM F710. Achieve CSP of #2 - #3. Consult individual manufacturer for their specific recommendations and follow them as required.

3.4. MOISTURE BARRIER APPLICATION

3.4.1. If moisture levels exceed acceptable limit, apply moisture emission reducer in accordance with ASTM F710 and ASTM F3010.

3.4.2. Follow manufacturer's recommendations to determine whether cracks are filled before or after application of moisture barrier cement.

3.4.3. Mix moisture barrier in accordance with manufacturer's printed instructions.

3.4.4. Material components minimum 15°C (60°F) at time of mixing.

3.4.5. Apply coating using roller to achieve thickness as per manufacturer's instructions. Allow to cure.

3.4.6. Apply second coat of moisture barrier coating, dry film thickness of 12.8 mils. Allow to cure.

3.4.7. Re-test for moisture vapour emission and pH level.

3.5. CLEANING

3.5.1. Remove excess adhesive from floor, base and wall surfaces without damage.

3.5.2. Clean floor and base surface to flooring manufacturer's instructions.

3.6. PROTECTION

3.6.1. Protect installed flooring as recommended by flooring manufacturer against damage from rolling loads, other trades or placement of fixtures and equipment.

3.6.2. Prohibit foot traffic on floor for 24 hours after installation. Prohibit heavy traffic, rolling loads and furniture or appliance placement for a minimum of 72 hours after installation.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

1.1.1. Section Includes: Provide gypsum board assemblies work including but not limited to following:

1.1.1.1. Interior metal support systems for gypsum board partitions, ceilings, and other assemblies as Indicated on drawings.

1.1.1.2. Supplementary steel supports for ceilings.

1.1.1.3. Reinforcement for suspension systems for lighting fixtures.

1.1.1.4. Concealed sheet steel reinforcing for mounting accessories

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

1.1.2.1. Miscellaneous steel sections and/or framing required to provide additional structural support to suit Project requirements: Section 05 50 00 Metal Fabrications.

1.1.2.2. Installation of hollow metal door frames and frame anchors in gypsum board partitions: Section 08 11 13 - Hollow Metal Doors and Frames.

1.1.2.3. Firestopping, smoke seals and penetration firestopping: Section 07 84 00 Firestopping and Smoke Seals.

1.1.2.4. Gypsum board, acoustic insulation: Section 09 29 00 Gypsum Board.

1.2. ADMINISTRATIVE REQUIREMENTS

1.2.1. Coordination:

1.2.1.1. Coordinate wall mounted equipment requirements and locations with HWDSB Project Manager. Provide suitable blocking to support equipment and unistruct mounting supports.

1.2.2. Sequencing:

1.2.2.1. Coordinate installation and cooperate with mechanical and electrical trades to accommodate mechanical electrical items and any other work required to be incorporated into or coordinated with ceiling systems.

1.2.2.2. Cooperate and coordinate with Sections applying wet trades and trades installing mechanical and electrical services. Coordinate stud layout at partitions accommodating wall mounted fixtures by other trades.

1.3. INFORMATIONAL SUBMITTALS

1.3.1. Submit submittals in accordance with Submittal Procedures specified in Section 01 10 00.

1.3.2. Product Data Sheets:

1.3.2.1. Submit manufacturer’s product data sheets for products to be for used in the work of this section. Manufacturer’s product data sheets shall include:

1.3.2.1.1. Material and product physical properties and characteristics including physical size, finish.

1.3.2.1.2. Performance criteria.

1.3.2.1.3. Limitations of products.

1.3.3. Shop Drawings:

1.3.3.1. Submit engineered shop drawings prepared, stamped, and signed by Professional Structural Engineer for non-structural metal framing.

1.3.3.2. Submit engineered shop drawings prepared, stamped, and signed by Professional Structural Engineer for the seismic design of connections and restraint of the non-structural metal framing.

1.3.3.3. Include the manufacturer's load test data and design tables for the metal support system and hanger supports.

1.3.3.4. Submit drawings to locate all expansion and control joints in partitions and ceilings.

1.3.3.5. Submit drawings to locate all fire rated partitions.

1.4. QUALITY ASSURANCE

1.4.1. Qualifications:

1.4.1.1. Installers: Provide work of this Section executed by competent installers with minimum 5 years experience in the application of Products, systems and assemblies specified and with approval and training of the Product manufacturers.

1.4.1.2. Licensed Professionals: Employ a licensed engineer registered in the Province of Ontario.

PART 2 - PRODUCTS

2.1. DESIGN / PERFORMANCE REQUIREMENTS

2.1.1. Design Requirements:

2.1.1.1. Design non-structural metal framing to withstand own dead load, super-imposed dead loads, to maximum allowable deflection of L/360, without permanent deformation.

2.1.1.2. Design steel stud reinforcements from hollow structural steel, stud, angle and steel plate sections, galvanized sheet steel minimum 1.214 mm (18 ga) where required to support of manufactured components without limitations items such as washroom accessories, expansion control covers and similar items. Design weld connections ensuring rigid and secure installation capable of offering resistance to minimum 227 kg (500 lb) pull force. Do not design using wood blocking for this purpose.

2.1.1.3. Sound rated construction shall have STC rating tested in accordance with ASTM E90. Coordinate with Section 09 29 00 Gypsum Board.

2.1.2. Structural Design:

2.1.2.1. Professional Structural Engineer shall design non-structural metal framing for work of this Section.

2.1.2.2. Professional Structural Engineer shall design seismic connections and restraint of the non-structural metal framing for work of this Section.

2.1.2.3. Ceiling suspension systems:

2.1.2.3.1. Design ceiling suspension system in accordance with manufacturer’s printed directions and conforming to ASTM C754 requirements. Do not suspend and items from structural steel deck. Do not support work of this Section from, nor make attachments to, ducts, pipes, conduits or support framing of other trades.

2.1.2.3.2. Design suspended ceiling systems for adequate support of electrical fixtures as required by current bulletin of Electrical Inspection Department of Ontario Hydro.

2.1.2.3.3. Design hanger anchor and entire suspension system static loading not to exceed 25% of their ultimate capacity including lighting fixture dead loads.

2.1.2.3.4. Design suspension system to support weight of mechanical and electrical items such as air grilles, lighting fixtures, drapery track, drapes and with adequate support to allow rotation/ relocation of light fixtures.

2.1.2.4. Design interior partitions and ceilings using a maximum deflection criteria of L/240 with a minimum lateral load of 0.239 kPa (5 psf) unless otherwise specified herein. Where tile is being applied or height is greater than 3 m (10') use L/360 with a minimum lateral load of 0.239 kPa (5 psf).

2.1.2.5. Determine appropriate steel stud size and thickness as required for height and loading.

2.1.2.6. Ensure partitions acting as guards, including walls around shafts or where floor elevation on 1 side of a wall is more than 600 mm (23-5/8") higher than elevation of floor or ground on other side complies with OBC, Division B, Part 4, Article 4.1.5.16. Provide Shop Drawings bearing seal of a licensed engineer registered in Province of Ontario confirming this requirement.

2.1.2.7. Design sub-framing as necessary to accommodate and circumvent conflicts and interfaces where ducts or other equipment prevent regular spacing of hangers.

2.2. PARTITION SUPPORT MATERIALS

2.2.1. General:

2.2.1.1. Metal framing shall comply with ASTM C645 and as specified.

2.2.1.2. Metal framing shall be galvanized sheet steel, zinc coating designation Z120 (G40) unless otherwise specified.

2.2.1.3. Metal framing in shower rooms, other wet areas shall be galvanized sheet steel, zinc coating designation Z275 (G90) unless otherwise specified.

2.2.2. Steel Studs:

2.2.2.1. Steel Studs: CSA S136 and ASTM C645, galvanized sheet steel, minimum 18 mils designation thickness (0.455 mm (0.0179") minimum base steel thickness) (previously 25 ga), minimum Z120 (G40) zinc coating, screw able with crimped web and returned flange, of depth shown in maximum continuous lengths possible. Provide thicker steel where required due to height.

2.2.2.2. Heavy Duty Steel Studs at Openings: CSA S136 and ASTM C645, galvanized sheet steel, minimum 54 mils designation thickness 1.367 mm (0.0538") minimum base steel thickness) (previously 16 ga), minimum Z120 (G40) zinc coating, screw able with crimped web and returned flange, of depth shown in maximum continuous lengths possible. Provide thicker steel where required due to height.

2.2.2.3. Studs Supporting Cement Boards, Abuse Resistant Gypsum Boards: CSA S136 and ASTM C645, galvanized sheet steel, minimum 33 mils designation thickness (0.836 mm (0.0329") minimum base steel thickness) (previously 20 ga structural). Provide 50 mm (2") deep flanges on ceiling tracks to allow for deflection of structure. Use 92 mm (3-5/8") width unless otherwise noted. Use 0.914 mm (20 ga) solid web members at ceiling and floor tracks.

2.2.2.4. Provide knockout openings in web at 460 mm (18") oc to accommodate (if required) horizontal mechanical and electrical service lines and bracing.

2.2.3. Floor and Ceiling Partition Track for Gypsum Board:

2.2.3.1. CSA S136 and ASTM C645, galvanized sheet steel, minimum 18 mils designation thickness (0.455 mm (0.0179") minimum base steel thickness) (previously 25 ga), minimum

Z120 (G40) zinc coating, with minimum 30 mm (1-1/4") legs, top track having longer legs where required to compensate for deflection of structure above. Width to suit steel studs.

2.2.3.2. For openings wider than 914 mm (3'-0"), provide 0.91 mm (0.035") (20 gauge) minimum thickness for header except at heavy duty studs, header shall match metal thickness of heavy duty studs.

2.2.4. Runner Fasteners:

2.2.4.1. To concrete and masonry: Use stub nails or power-driven fasteners.

2.2.4.2. To metal concrete inserts: Use 10 mm (0.393") Type S-12 pan head screws.

2.2.4.3. To suspended ceilings: Use prefinished clips to match ceiling grid in accordance with Section 09 51 13 - Acoustical Panel Ceilings

2.2.5. Bracing Channels:

2.2.5.1. 19 mm (3/4") x 10 mm (0.393") x 1.22 mm (0.048") cold rolled galvanized steel.

2.3. CEILING SUPPORT MATERIALS

2.3.1. General:

2.3.1.1. Metal framing and support materials shall comply with ASTM C645 and as specified.

2.3.1.2. Metal framing shall be galvanized sheet steel, zinc coating designation Z120 (G40) unless otherwise specified.

2.3.1.3. Size ceiling support components to comply with ASTM C754 unless otherwise Indicated on drawings or specified.

2.3.2. Main Runners:

2.3.2.1. Steel channels, hot or cold rolled; galvanized where used in shower rooms, other wet areas, with rust inhibitive paint finish where used elsewhere indoors.

2.3.3. Hanger Wire:

2.3.3.1. ASTM A641/A641M, soft, Class 1 galvanized, minimum 3.26 mm (0.128") (8 AWG).

2.3.4. Hanger Rods and Flats:

2.3.4.1. Galvanized steel.

2.3.4.2. Size devices for 5 times load imposed by completed system as determined in accordance with ASTM E488/E488M.

2.3.4.3. Inserts for Concrete Slabs: Tie wire anchors, "Red Head TW-1614" by ITW Canada Inc., "Parabolt Wire Hanger" distributed by Acrow-Richmond Ltd., "T-14 Eyebolt" by Ramset Ltd. or "Tie Wire Drive TW-932" by Isometric Ltd. Powder actuated fastening systems are not permitted.

2.3.4.4. Screws, clips, bolts, concrete inserts or other devices for ceiling hangers whose suitability for use intended has been proven through standard construction practices or by certified test data.

2.3.4.5. Hangers: Comply with ASTM C754 for maximum ceiling area and loads to be supported.

2.3.4.6. Tie wire: 1.519 mm (16 ga) nominal diameter galvanized, soft annealed steel.

2.3.4.7. Zinc-plated or stainless steel fasteners exposed to condensation, and corrosion.

2.3.4.8. Runner (Carry) Channels:

2.3.4.8.1. Minimum 1.50 mm (16 gauge) thick cold rolled steel, primer painted or zinc coated for interior locations:

2.3.4.8.2. 38 mm (1.5”) x 12.7 mm (1/2”) where supported at maximum 914 mm (3’-0”) on centre.

2.3.4.8.3. 38 mm (1.5”) x 19 mm (3/4”) where supported at maximum 1,220 mm (4’-0”) on centre.

2.3.5. Proprietary Direct Hung Ceiling Framing Suspension System (optional):

2.3.5.1. Fire rated and non-fire rated, provide factory fabricated, proprietary system in lieu of channel and cross furring framing system.

2.3.5.2. Provide interlocking cold-rolled sheet steel grid, ASTM C635/C635M, heavy duty.

2.4. FURRING SUPPORT MATERIALS

2.4.1. General:

2.4.1.1. Metal framing shall comply with ASTM C645 and as specified.

2.4.1.2. Metal framing shall be galvanized sheet steel, zinc coating designation Z120 (G40) unless otherwise specified.

2.4.2. Furring Channels:

2.4.2.1. CSA S136 and ASTM C645, galvanized sheet steel, minimum 33 mils designation thickness (0.836 mm (0.0329") minimum base steel thickness) (previously 20 ga structural) or minimum 18 mils designation thickness (0.455 mm (0.0179") minimum base steel thickness) (previously 25 ga), minimum Z120 (G40) zinc coating, screw channels, 67 mm (2-5/8") wide x 22 mm (7/8") deep.

2.4.3. Carrying Channels for Gypsum Board:

2.4.3.1. CSA S136 and ASTM C645, galvanized sheet steel, minimum 43 mils designation thickness (1.087 mm (0.0428") minimum base steel thickness) (previously 18 ga), minimum Z120 (G40) zinc coating, 38 mm (1-1/2") high with 19 mm (3/4") flanges, for primary carrying member in suspended ceilings and as horizontal stiffeners or bracing in steel stud systems.

2.4.4. Carrying Channels for Cement Board: CSA S136 and ASTM C645, galvanized sheet steel, minimum 54 mils designation thickness (1.367 mm (0.0538") minimum base steel thickness) (previously 16 ga), minimum Z120 (G40) zinc coating, 38 mm (1-1/2") high with 19 mm (3/4") flanges, for primary carrying member in suspended ceilings and as horizontal stiffeners or bracing in steel stud systems.

2.4.5. “Z”-Furring:

2.4.5.1. Manufacturer's standard screw type galvanized steel, z-shaped furring members; ASTM A653/A653M G60, 0.914 mm (0.035”) (20 gauge) minimum thickness of base metal, of depth Indicated, designed for mechanical attachment of insulation boards or blankets.

2.4.6. Fasteners:

2.4.6.1. Type and size recommended by furring manufacturer for substrate and application Indicated.

2.4.7. Furring Isolator:

2.4.7.1. Basis of design:

2.4.7.1.1. “Kinetics IsoMax Sound Isolation Clips for Walls and Ceilings” by Kinetics Noise Control.

2.4.7.1.2. Substitutions in accordance with Section 01 25 00 Submittal Procedures.

2.4.8. Furring Anchorages:

2.4.8.1. 1.62 mm (16 AWG) galvanized wire ties, wire type clips, bolts, nails or screws as recommended by furring manufacturer.

2.5. ACCESSORIES

2.5.1. Backer Plates:

2.5.1.1. Galvanized steel, 1.214 mm (18 ga) thick minimum, Z275 (G90) zinc coated by hot-dip process, minimum 150 mm (6”) wide x 1.50 mm (6”) thick x lengths to suit size of items to be attached; fastened to studs for attachment of surface mounted fittings and accessories.

2.5.1.2. Elimination of backer plates or direct attachment of accessories or equipment to metal framing will not be permitted.

2.5.2. Insulating strip: rubberized, moisture resistant 3 mm thick foam strip, width equal to track width, with self sticking adhesive on one face, lengths as required.

PART 3 - EXECUTION

3.1. INSTALLATION

3.1.1. General:

3.1.1.1. Non-structural metal framing shall comply with ASTM C754 and product manufacturer’s written requirements.

3.1.1.2. Do not bridge building expansion joints with support system; frame both sides of joints.

3.1.1.3. In double stud walls, do not bridge across the studs on the opposite sides of the wall with gypsum board or metal cross bracing.

3.1.1.4. Place studs vertically at 400 mm (16") oc unless otherwise specified, not more than 50 mm (2") from abutting walls, and at each side of openings and corners. Position studs in tracks. Cross brace studs as required to provide rigid installation.

3.1.1.5. Provide heavy duty double boxed studs at each side of openings to extend in 1 piece from floor to underside of structure above.

3.1.1.6. Thermally separate the metal studs from the exterior concrete or masonry.

3.1.1.7. Provide sufficient clearances between the work of this section and structural elements to prevent the transference of structural loads.

3.1.1.8. Attach backer plates to the framing to support the load of, and to withstand, the withdrawal and shear forces imposed by the items installed upon the work of this section.

3.1.1.9. Install insulating strip under stud shoe tracks of partitions on slabs on grade.

3.1.2. Furring:

3.1.2.1. Shim furring to achieve the required installation tolerances specified in this section.

3.1.2.2. Erect the resilient furring as follows:

3.1.2.2.1. to a maximum of 610 mm (2’-0”) on centre;

3.1.2.2.2. not more than 150 mm (6”) from a ceiling/wall juncture, unless otherwise specified on the drawings;

3.1.2.2.3. secure to the framing support with 25 mm (1”) gypsum board screws;

3.1.2.2.4. with a 150 mm (6”) continuous strip of 13 mm (1/2”) interior gypsum board along the base of the partitions where resilient furring is installed unless

otherwise required by resilient furring manufacturer's written installation requirements.

3.1.2.2.5. with the resilient furring channel transverse to the framing members; and

3.1.2.2.6. with the outer leg of the resilient furring oriented upwards on the partitions.

3.1.3. Suspended and Furred Ceilings:

3.1.3.1. Space the hangers at a maximum of 914 mm (3'-0") on centre along the runner channels and not more than 150 mm (6") from the ends unless otherwise required by engineered shop drawings.

3.1.3.2. Space the runner channels at a maximum of 1,220 mm (4'-0") on centre and not more than 150 mm (6") from boundary walls, interruptions in the continuity; and changes in direction unless otherwise required by engineered shop drawings

3.1.3.3. Run the runner channels transversely to the structural framing members.

3.1.3.4. Lap the members by at least 200 mm (8") and wire each end with two loops where there is splicing.

3.1.3.5. Stagger the splices throughout the framing system.

3.1.3.6. Bend the hanger sharply under the bottom flange of the runner channel and securely wire with a saddle tie to attach to the rod hangers.

3.1.3.7. Erect the cross furring channels transversely across the runner channels at a maximum of 400 mm (1-3.75") on centre except at a maximum of 305 mm (12") on centre at fire rated assemblies.

3.1.3.7.1. Erect the cross furring channels not more than 150 mm (6") from boundary wall openings, interruptions in the ceiling continuity, and changes in direction.

3.1.3.8. Size GWB acoustic spring hangers to suit design loads in accordance with reviewed shop drawings.

3.1.4. Partition Framing Installation

3.1.4.1. Install partition tracks at the floor and underside of the structure.

3.1.4.2. Secure partition tracks to the concrete with screwed or shot fasteners located 50 mm (2") from each end and spaced at a maximum of 610 mm (2'-0") on centre.

3.1.4.3. Extend one (1) runner to the end of the partition corner and butt the other runner to it, minus the clearance for the gypsum board thickness.

3.1.4.4. Place interior studs as follows, unless otherwise Indicated on drawings:

3.1.4.4.1. A minimum of 400 mm (1-3.75") on centre;

3.1.4.4.2. A maximum of 50 mm (2") from abutting walls, abutting openings and each side of corners;

3.1.4.4.3. A minimum of 19 mm (3/4") on centre for the deflection under beams and structural slabs to avoid the transmission of structural loads to the studs, or install 50 mm leg ceiling tracks.

3.1.4.5. Install three studs at the corners and intermediate intersections of the partitions.

3.1.4.6. Extend partition framing above the ceilings to the underside of the structure, unless otherwise Indicated on the drawings.

3.1.4.7. Install chase walls consisting of two parallel steel stud partitions.

3.1.4.8. Install lateral support bracing channels:

3.1.4.8.1. For partitions over 3 m (10’-0”) in vertical span;

3.1.4.8.2. At mid-height to a maximum vertical spacing of 2,440 mm (8’-0”) on centre;

3.1.4.8.3. With at least one (1) 19 mm (3/4”) horizontal bracing channel;

3.1.4.8.4. To extend the full length of the partition; and

3.1.4.8.5. To overlap at least two (2) stud spaces at the ends of the bracing channels.

3.1.4.9. Stiffen partitions a maximum of 150 mm (6”) from the top and bottom of the openings and across two full stud spaces at each side of the openings with a horizontal bracing channel.

3.1.5. Concrete Anchors:

3.1.5.1. Provide anchorage points in reinforced concrete floor slab underside in accordance with gypsum board manufacturer’s written suspension requirements.

3.1.5.2. Provide anchors; minimum installation depth, and method of expansion as recommended by the anchor manufacturer’s written requirements.

3.1.6. Installation Tolerances:

3.1.6.1. Install non-structural metal framing plumb, level, straight, tight and secured, to the following maximum tolerances:

3.1.6.1.1. Plumb and level: 3 mm (1/8") in 3 m (10’-0”).

3.1.6.1.2. Variation from Indicated position: 10 mm (3/8").

3.1.6.1.3. Variation between the planes of abutting edges or ends: 1.5 mm (1/16”)

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

1.1.1. Section Includes: Provide gypsum board assemblies work including but not limited to following:

1.1.1.1. Gypsum board ceilings, partitions and repairs to existing gypsum board.

1.1.1.2. Corner beads, casing beads, trim, control joints and corner reinforcement.

1.1.1.3. Taping and filling.

1.1.1.4. Sound attenuation batts.

1.1.1.5. Installation of access doors, and panels supplied by other Sections in gypsum board walls and ceilings as required.

1.2. QUALITY ASSURANCE

1.2.1. Qualifications:

1.2.1.1. Installers: Provide work of this Section executed by competent installers with minimum 5 years experience in the application of Products, systems and assemblies specified and with approval and training of the Product manufacturers.

1.3. DELIVERY, STORAGE AND HANDLING

1.3.1. Storage and Handling Requirements:

1.3.1.1. No outside storage permitted. Store in clean, dry area, off ground. Provide adequate ventilation to avoid excess moisture, surface relative humidity and mould or fungal growth. Remove immediately any board showing signs of mould, mildew or fungal growth.

1.3.1.2. Stack gypsum board flat on level and dry surface without overhanging boards. Prevent sagging and damage to edges, ends and surfaces. Protect bagged Products from moisture or wetting.

1.4. SITE CONDITIONS

1.4.1. Ambient Conditions:

1.4.1.1. Do not install work of this Section in any area unless satisfied that work in place has dried out and that no further installation of materials requiring wetness, moisture or dampness is contemplated. Ensure relative humidity in area of work of this Section does not exceed 55% for duration of Project.

1.4.1.2. Ensure temperature of surrounding areas is min 13 deg C (55 deg F) and max 21 deg C (70 deg F) for 7 Days before and during application of gypsum board; maintain for 4 Days thereafter. Ensure heat is provided at appropriate time before work has started to bring surrounding and adjacent materials up to required temperature and maintained as specified. Avoid concentrated or irregular heating during drying by means of deflectors or protective screens.

1.4.1.3. Ensure ventilation is provided for proper drying of joint filler and adhesive and to prevent excessive humidity. Do not force dry adhesives and joint treatment.

PART 2 - PRODUCTS

2.1. MANUFACTURERS

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

2.1.1.1. Bailey Metal Products Ltd.; www.bmp-group.com

2.1.1.2. CertainTeed Corporation; www.certainteed.com

2.1.1.3. CGC Inc; www.cgcinc.com

2.1.1.4. Georgia-Pacific Canada, Inc.; www.gpgypsum.com

2.1.1.5. Johns Manville; www.jm.com

2.1.1.6. Roll Formed Specialty; www.rollformed.com

2.1.1.7. Trim-Tex Inc.; www.trim-tex.com

2.2. GYPSUM BOARD

2.2.1. Gypsum Board: Conforming to ASTM C1396/C1396M. Unless indicated otherwise use 1200 mm (4') wide standard facing board in maximum continuous lengths up to 3600 mm (12'), beveled and/or tapered edges to suit design requirements with butted square ends:

2.2.1.1. Gypsum Board (Walls): Provide 15.9 mm (5/8") thick with tapered edges unless otherwise specified as follows:

2.2.1.1.1. Provide 9.5 mm (3/8") thick gypsum board on curved walls.

2.2.1.2. Gypsum Board (Ceiling): Provide 15.9 mm (5/8") thick with tapered edges unless otherwise specified as follows:

2.2.1.2.1. Use anti sag sheets.

2.2.2. Moisture Resistant Gypsum Board: ASTM C1658/C1658M, glass mat faced, silicone treated core gypsum board, ASTM D3273 with a rating of 10, no mould growth after 4 weeks exposure, 12.7 mm (1/2") or Type X, 15.9 mm (5/8"). Acceptable products:

2.2.2.1. “DensArmor Plus® High Performance Interior Panel” by Georgia-Pacific Canada, Inc.

2.2.2.2. “CGC Sheetrock® Brand Glass-Mat Panels Mold Tough®” by CGC Inc.

2.2.3. Fire Rated Gypsum Board having Testing Agency Fire Rating Identification Stamp on Each Sheet: ASTM C1396/C1396M, Type X, 12.7 mm (1/2") and/or 15.9 mm (5/8") thick gypsum board 1200 mm (4') wide, maximum practical length and tapered edge as required by each fire resistance assembly. Acceptable products:

2.2.3.1. “Gyproc Fireguard Type X or Type C” by Georgia-Pacific Canada, Inc.,

2.2.3.2. “CGC Sheetrock Firecode X or Firecode C” by CGC Inc.

2.2.3.3. “ProRoc Type X or Type C” by CertainTeed Corporation.

2.2.4. Gypsum Board Tile Backer Board: ASTM C1178/C1178M, glass mat faced, water-resistant gypsum core board, with a rating of 10 in accordance with ASTM D3273, no mould growth after 4 weeks exposure, 15.9 mm (5/8") thick plain or Type X;. Acceptable products:

2.2.4.1. “DensShield® Tile Backer” by Georgia-Pacific Canada, Inc.

2.2.4.2. “Durock® Glass-Mat Tilebacker” by CGC Inc.

2.2.4.3. “GlasRock® Diamondback® Tile Backer” by CertainTeed Corporation.

2.2.5. Abuse Resistant Gypsum Board: Provide 1 of following:

2.2.5.1. Enhanced gypsum core encased in heavy duty paper facers on front and back, 15.9 mm (5/8"), conforming to ASTM C1396/C1396M and attaining a maximum of 0.014" as tested to ASTM D4060 (H-18 abrasion wheel, 500 grams, 200 cycles), a maximum of 0.123" indentation as tested to ASTM D5420 (72 in lbs) and a minimum of (133 ft lbs) as tested to ASTM E695 (50 lb bag) and ASTM C1629/C1629M Type X in fire rated assemblies. Acceptable products:

2.2.5.1.1. “Extreme Abuse with M2Tech” by CertainTeed Corporation

2.2.5.1.2. “CGC Sheetrock® Brand Mold Tough® AR Firecode Core” by CGC Inc.

2.2.5.2. Enhanced gypsum core encased in fibreglass facers on front and back, 15.9 mm (5/8"), conforming to ASTM C1396/C1396M and attaining a maximum of 0.014" as tested to ASTM D4060 (H-18 abrasion wheel, 500 grams, 200 cycles), a maximum of 0.123" indentation as tested to ASTM D5420 (72 in lbs) and a minimum of (133 ft lbs) as tested to ASTM E695 (50 lb bag) and ASTM C1629/C1629M Type X in fire rated assemblies. Acceptable products:

2.2.5.2.1. “DensAmor Plus® Abuse Guard” by Georgia-Pacific Canada, Inc.

2.2.5.2.2. “Sheetrock Mold Tough Glass Mat Abuse Resistant” by CGC Inc.

2.3. FASTENERS

2.3.1. Screws for Sheet Steel Members: ASTM C954, self-drilling, self-tapping gypsum board screws, 25 mm (1") long #6 for single layer application, 41 mm (1-5/8") long #7 for double layer application and as follows:

2.3.1.1. For single layer application over steel framing; self-drilling, self-tapping, case hardened, No. 6 contoured Phillips head or Type S bugle head, sized for minimum 15.9 mm (5/8") penetration into steel framing. Ensure fasteners are corrosion resistant. Use drill point screws for abuse resistant gypsum fibre panels.

2.3.1.2. For double layer application over gypsum backing board and existing gypsum board; 38 mm (1-1/2") Type G bugle head. For each additional layer of board, increase length of fasteners proportionally.

2.3.2. Screws; for exterior sheathing board: in accordance with manufacturer’s installation instructions to comply with design wind loads.

2.3.3. Laminating Compound: Asbestos-free, as recommended by manufacturer. Manufacturer's standard, multi-purpose construction adhesive. At fire-rated construction, use adhesive which conforms to that used in applicable fire tests. Acceptable products:

2.3.3.1. “Sheetrock Brand Laminating Compound” by CGC Inc.,

2.3.3.2. “Dehydratine 9T” by Grace Construction Products

2.3.3.3. “Stangard Foamastic” by Standard Chemicals Ltd.

2.4. JOINT TREATMENT MATERIALS

2.4.1. Joint Tape: Conforming to ASTM C475/C475M, provide following:

2.4.1.1. Regular Gypsum Board: Use kraft paper joint tape with feathered edges and minute perforations 50 mm (2") wide.

2.4.1.2. Moisture Resistant Gypsum Board or Cement Board: Use glass fibre tape only, open weave, with pressure sensitive adhesive 1 side. Acceptable products:

2.4.1.2.1. “Durock Cement Board Tape” by CGC Inc.

2.4.2. Joint Fillers and Topping Compound: Either slow or fast setting, low shrinkage type free of asbestos fillers and as recommended by manufacturer. Use “Gyproc 90" by Georgia-Pacific Canada, Inc. or “Durabond 90" by CGC Inc. at exterior soffits.

2.4.3. Finish coat for level 5 finish: vinyl acrylic latex based coating to ASTM C840, spray applied, “Tuff-Hide Primer-Surfacer” by CGC Inc.

2.5. ACCESSORIES

2.5.1. Dust Barrier: Minimum 0.152 mm (6 mil) polyethylene, CAN/CGSB-51.33-M, Type 2.

2.5.2. Resilient Sponge Tape: Self-sticking adhesive on 1 side, closed cell neoprene sponge tape. Acceptable products:

2.5.2.1. “Rubatex®” by Rubatex Corp.,

2.5.2.2. “Foamflex # 1220” by Jacobs & Thompson Inc.; www.foamparts.com

2.5.2.3. “Backerseal™ (Greyflex)™” by Emseal LLC; www.emseal.com.

2.5.3. Sealant for Moisture Resistant Gypsum Board Edges: “Sheetrock Brand W/R Sealant” by CGC Inc., or similar type acceptable to Consultant.

2.5.4. Corner Beads: “PG1 Platinum Square Nose Tape-On Trims” by Bailey Metal Products Ltd. “No-Coat®” by CertainTeed or “Fast Edge” paper by Trim-Tex at corners, reveals, or similar. Provide custom shapes of similar materials and design as noted.

2.5.5. Trim: “PG4 Platinum Tape-On L-Trims” by Bailey Metal Products Ltd.

2.5.6. Flexible Casing Beads: 0.531 mm (25 ga) steel, wipe coated, angle shaped in size to fit over edge of gypsum board, to suit curved applications.

2.5.7. Control Joints: Pre-fabricated control joints prepared to suit site conditions. Certified by manufacturer for use at fire resistance rated assemblies. Acceptable products:

2.5.7.1. “No. 093” zinc alloy control joint by CGC Inc.

2.5.7.2. “DRM-50-25 2-PC” by Fry Reglet

2.5.7.3. “093V Expansion Bead” by Trim-Tex Drywall Products Inc.

2.5.8. Access Doors and Panels:

2.5.8.1. Supplied as part of Section 08 31 13 and Divisions 21, 22, 23, 26, 27 and 28 for installation as part of this Section.

2.6. SOUND CONTROL MATERIALS

2.6.1. Acoustical Insulation: CAN/ULC S702, Type 1， of sufficient thickness to meet required STC rating for sound-rated partitions and of width to suit metal framing spacing

2.6.1.1. Acoustical Insulation Batts in non-fire rated assemblies: glass fibre

2.6.1.1.1. Acceptable Products:

2.6.1.1.1.1. “EcoTouch™ QuietZone® PINK™ FIBERGLAS® Acoustical Insulation” by Owens Corning Canada LP; www.insulation-owenscorning.ca

2.6.2. Strip Impalement Clips: 25 mm (1") wide strip of “Insul-Hold” by Insul-Hold Co., Inc.; www.insulhold.com, fabricated from 0.531 mm (25 ga) galvanized sheet metal in 30 m (100') rolls with punch-out insulation securement arrows. Alternatively, use special studs with punch-out impalement strips.

2.6.3. Acoustic Sealant:

2.6.3.1. Concealed locations: Single component, non-hardening, non-skinning synthetic rubber sealant; “Tremco Acoustical Sealant” by Tremco Canada; www.tremcosealants.com.

2.6.3.2. Fire resistance locations: Smoke-seal sealant with flame-spread not more than 25 and smoke developed classification not more than 50 to CAN/ULC-S102.

2.6.4. Elastomeric Sealant: As recommended by manufacturer of fibre-reinforced gypsum sheathing board.

2.6.5. Gaskets: Closed cell neoprene, 3 mm (1/8") thick x 64 mm (2-1/2") wide.

PART 3 - EXECUTION

3.1. EXAMINATION

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

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

3.2. PREPARATION

3.2.1. Ensure that services, blocking and supports to be installed in partitions have been installed and inspected before closing in with gypsum board.

3.2.2. Vacuum clean stud track, suspended support framing, and spaces to be concealed before starting the days installation.

3.3. INSTALLATION

3.3.1. Gypsum Board Application:

3.3.1.1. Provide gypsum board in accordance with manufacturer's written installation instructions and finish to requirements of ASTM C840. Install Moisture Resistant Gypsum Board on any wall/partition with a paint finish containing a plumbing fixture (i.e. water closets, sinks, tubs, etc.). Install gypsum board tile backer board on any wall partition or ceiling requiring a tile finish.

3.3.1.2. Provide metal trim casing bead at junctions with dissimilar materials. Provide reveals at junctions with dissimilar materials where indicated.

3.3.1.3. Provide finished work plumb, level and true, free from perceptible waves or ridges and square with adjoining work.

3.3.1.4. Cut and fit gypsum board to accommodate or fit around other parts of the Work. Provide work of this Section accurately and neatly.

3.3.1.5. Butt gypsum board sheets together in moderate contact. Do not force into place. Place tapered or wrapped edges next to 1 another.

3.3.1.6. Provide gypsum board perpendicular to framing and in lengths that will span ceilings and walls without creating end (butt) joints. If butt joints do occur stagger and locate them as far from centre of walls and ceilings as possible. Accurately fit exposed butt joints together and make edges smooth.

3.3.1.7. Support ends and edges on framing.

3.3.1.8. Fasten gypsum board to metal furring and steel studs with screws. Space screws at 200 mm (8") oc at board edges and 300 mm (12") oc on board field.

3.3.1.9. Gypsum Board - Single Layer:

3.3.1.9.1. Ceilings: Apply gypsum board to metal furring with screws. Erect board with long dimension parallel to supports. Locate end joints over supporting members. Space screws at 200 mm (8") oc.

3.3.1.9.2. Partitions: Apply gypsum board to steel studs with screws. Erect board with long dimension parallel to supports. Locate end joints over supporting members. Locate vertical joints at least 300 mm (12") from jamb lines of openings. Space screws at 200 mm (8") oc at board edges and 300 mm (12") oc on board field.

3.3.1.9.3. Ceiling and Partition Fasteners: Ensure perimeter screws are not less than 9 mm (3/8") nor more than 13 mm (1/2") from edges and ends are opposite screws on adjacent boards. Drive screws with power screw-gun and set with countersunk head slightly below surface of board.

3.3.1.9.4. Joints: Finish all joints unless specified otherwise.

3.3.1.10. Gypsum Board - Double Layer:

3.3.1.10.1. Lay out work to minimize end joints on face layer; to offset parallel joints between face and base layers by at least 250 mm (10") and to apply face layer at right angles to base layer.

3.3.1.10.2. Base Layer: Ensure base layer is same as face layer, or backing board, and applied at right angles to framing members. Secure base layer with screws spaced 300 mm (12") oc to each member. Ensure perimeter screws are not more than 13 mm (1/2") from edges and ends are opposite screws on adjacent boards. Ensure surface of erected base layer is straight, plumb or level and without protrusions before face layer is applied.

3.3.1.10.3. Face Layer: Apply face layer at right angles to base layer with screws.

3.3.1.10.4. Joints: Finish joints in face layers only, unless otherwise required to achieve fire resistant ratings indicated, as hereinafter specified. Ensure setting compound for fire rated construction conforms to requirements of authorities having jurisdiction to obtain fire rating shown on Drawings.

3.3.2. Interior Ceilings:

3.3.2.1. Comply with recommendations of CGC Drywall Steel-Framed Systems Folder 09250-SA 923.

3.3.2.2. Provide hanger wires spaced at maximum 1200 mm (4') oc along carrying channels and within 150 mm (6") of ends of carrying channel runs. Secure hanger wires to inserts in structure above.

3.3.2.3. Provide carrying channels maximum 1200 mm (4') oc and within 150 mm (6") of walls. Secure with hanger wire saddle-tied along channels. Provide 25 mm (1") clearance between runners and walls. Provide splicers behind joints. Level channels to a maximum tolerance of 3 mm (1/8") over 3600 mm (12').

3.3.2.4. Provide metal furring channels at right angles to carrying channels at maximum 600 mm (24") oc and within 150 mm (6") of walls. Provide 25 mm (1") clearance between furring ends and abutting walls. Attach furring channels to carrying channels with saddle-tie of double strand tie wire.

3.3.2.5. Provide additional cross-reinforcing at bulkheads and other openings.

3.3.2.6. Provide ceiling gypsum board, smooth and level. In areas with a high humidity content (ie. Washrooms, janitor closets, etc.) install MRGB.

3.3.3. Metal Trim and Accessories:

3.3.3.1. Provide metal trim casing beads at reveals; at ceiling-wall intersections and partition perimeters; and at intersection of dissimilar constructions such as gypsum board to concrete.

3.3.3.2. Provide metal trim casing beads where gypsum board abutts against a surface having no trim concealing junction.

3.3.3.3. Provide a 13 mm (1/2") separation gasket between metal trim casing beads and window frames or other cold surfaces or provide sponge tape between gypsum board partition or furring framing, where such framing abuts exterior door or window frame, sponge tape between floor and gypsum board partition track. Ensure tape is either full width or 1 strip 9 mm (3/8") wide on each side of framing member.

3.3.3.4. Provide casing bead and sponge tape where gypsum board abuts materials other than itself and acoustic tile ceilings including at exterior door and window frames, where juncture is not concealed with trim; or elsewhere where indicated on Drawings. Unless indicated otherwise, use tape 3 mm (1/8") narrower than casing bead to provide recess at exposed side. Compress tape by 25%.

3.3.3.5. Provide metal trim casing beads where indicated on Drawings.

3.3.3.6. Access Doors and Panels: Install access doors and panels supplied as part of work of Divisions 22, 23 and 26 and where required as part of work of this Section in walls, bulkheads, ceilings and soffits.

3.3.4. Control Joints:

3.3.4.1. Provide either manufactured control joint devices or field fabricated control joints from suitable materials to suit site conditions in accordance with manufacturer's instructions and/or ASTM C840.

3.3.4.2. Set in gypsum facing board, supporting control joints with studs or furring channels on both sides of joint. Ensure double studs with discontinuous tracks and double suspended ceiling furring channels have been installed prior to commencing board and bead application at control joints. Provide control joints as required to prevent cracks at following locations:

3.3.4.2.1. Where a partition, wall or ceiling traverses a construction joint (expansion, seismic or building control element) in base building structure

3.3.4.2.2. Where a wall or partition runs in an uninterrupted straight plane exceeding 9.1 m (30') (Note: A full height door frame may be considered a control joint).

3.3.4.2.3. interior ceilings with perimeter relief: installed so linear dimensions between control joints do not exceed 15 m (50') and total area between control joints does not exceed 230 m^2 (2,500 sq ft).

3.3.4.2.4. Interior ceilings without perimeter relief: installed so linear dimensions between control joints do not exceed 9.1 m (30') and total area between control joints does not exceed 84 m^2 (900 sq ft).

3.3.4.2.5. Exterior ceilings and soffits: installed so linear dimensions between control joints do not exceed 15 m (50') and total area between control joints does not exceed 230 m^2 (2,500 sq ft).

3.3.4.2.6. At stress points (ie corners of openings or changes in direction of surfaces).

3.3.4.3. Provide additional control joints at long and narrow surfaces.

3.3.4.4. Provide control joints full height floor to ceiling or door header to ceiling in partitions and furring runs.

3.3.4.5. Provide control joints from wall to wall in ceiling areas.

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

3.3.4.7. Ensure Consultant reviews exact locations of control joints.

3.3.5. Sound Control:

3.3.5.1. Where indicated on Drawings, provide sound rated partitions and ceiling in locations indicated to meet required minimum STC rating. Apply gypsum board on both sides of sound-proofed partitions. Follow manufacturer's details and recommendations.

3.3.5.2. Provide sound attenuation insulation to completely fill height of stud cavities. Tightly butt ends and sides of blankets within cavities. Cut blankets to fit small spaces. Carefully fit blankets behind electrical outlets, bracing, fixture attachments and mechanical and electrical services.

3.3.5.3. Mechanically fasten blankets to back of gypsum board as recommended by gypsum board manufacturer.

3.3.5.4. At sound attenuating suspended ceiling and enclosures having spring isolator hangers, terminate ceiling or enclosure at adjacent construction by providing continuous isolator strip and sealed joint.

3.3.6. Joint Treatment - Gypsum Board:

3.3.6.1. Verify board is firm against framing members and screw heads are properly depressed.

3.3.6.2. Mix joint compound or ready-to-use compounds according to manufacturer's directions. Use pure, unadulterated, clean water for mixing. Permit mixed material to stand 30 minutes before using. Do not mix more material than can be used within 1 hour. Do not use set or hardened compound. Clean tools and equipment after mixing each batch.

3.3.6.3. Tape and fill joints and corners in accordance with gypsum board manufacturer's printed instructions. Fill either manually, using hand tools of trade, or by a mechanical taping and filling machine of proven efficiency.

3.3.6.4. Remove plastic tape from control joints after finishing with joint compound.

3.3.6.5. After final coats of filler have dried at least 24 hours, sand surface lightly with No. 00 sandpaper to leave it smooth, ready for decoration.

3.3.6.6. Provide finished work smooth, seamless, plumb and true, flush and with square plumb neat corners.

3.3.6.7. Levels of Finish: Provide Level 4 finish in accordance with ASTM C840.

3.3.7. Cutting and Patching: Cooperate and coordinate with other Sections to obtain satisfactory gypsum board finish work. Do cutting, patching and Make Good as required by installation of work of other Sections.

3.4. CLEANING

3.4.1. Clean off beads, casings, joint cement droppings and similar items and remove surplus materials and rubbish on completion and as directed.

3.5. PROTECTION

3.5.1. Provide protection of materials and work of this Section from damage by weather and other causes. Perform work in areas closed and protected from damage due to weather. Protect work of other trades from damage resulting from work of this Section. Make Good such damage immediately.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

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

1.1.1.1. Grouting control joints in floor slab under tile.

1.1.1.2. Uncoupling membrane.

1.1.1.3. Thin-set mortar bond coat.

1.1.1.4. Floor tile, base and fittings.

1.1.1.5. Wall tile.

1.1.1.6. Movement joints.

1.1.1.7. Grouting tile joints.

1.1.1.8. Caulking tile control joints.

1.1.1.9. Caulking penetrations through wall and floor tile.

1.2. ADMINISTRATIVE REQUIREMENTS

1.2.1. Coordination:

1.2.1.1. Provide Floor Flatness (FL) and Floor Levelness (FL) requirements to Section 03 01 30 – Repairs to Concrete.

1.2.1.2. Provide requirements to Section 09 05 61 – Common Work Results for Flooring Preparation for concrete testing. Coordinate testing, confirm acceptance of final preparations.

1.2.2. Preinstallation Meeting:

1.2.2.1. Prior to start of work, arrange for site meeting of parties associated with work of this Section. Attendance to include Contractor, Subcontractor, and manufacturer's representative.

1.2.2.2. Review work included under this Section and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials to be used, installation, methods and procedures, quality control, Project staffing, restrictions on areas of work and other matters affecting construction, to permit compliance with intent of this Section. Also discuss following items:

1.2.2.2.1. Substrate and backing surfaces flatness requirements

1.2.2.2.2. Installation techniques associated with specified materials

1.2.2.2.3. Compatibility between specified materials and between adjacent materials

1.2.2.2.4. Concerns arising from site conditions

1.2.2.2.5. Concerns of the installer or supplier arising from as-constructed conditions

1.3. SUBMITTALS

1.3.1. Product Data:

1.3.1.1. Submit manufacturer's technical data sheets, SDS and installation instructions for specified materials.

1.3.1.2. Where more than 1 manufacturer's Products are part of single tile assembly, arrange for each manufacturer to submit a written statement of compatibility with respect to other manufacturer's materials.

1.3.2. Shop Drawings: In addition to minimum requirements indicate following:

1.3.2.1. Special tile patterns or conditions affecting installation

1.3.2.2. Locations transitions and intersections between differing materials

1.3.2.3. Widths, details, and locations of expansion and contraction joints, and control and isolation joints in tile substrates and finished tile surfaces

1.3.3. Samples: Submit individual sample panels of each colour of ceramic tile, set with adhesive, grouting and bonding method as specified, showing quality, colour and finish of material, grout and pattern of tiles. Ensure each panel is minimum 600 mm x 600 mm (24" x 24").

1.4. QUALITY ASSURANCE

1.4.1. Project Quality Standard:

1.4.1.1. Tile Installation Manual published by the TTMAC, together with authorized additions and amendments will be used as a reference standard and forms part of this project specification

1.4.2. Qualifications:

1.4.2.1. Manufacturers: Obtain each specified material from one source with resources to provide products from the same production run for each contiguous area consistent in quality, appearance and physical properties.

1.4.2.2. Installers: Execute work of this Section using a company who is a member in good standing with TTMAC and has minimum 5 years successful experience in application of Products, systems and assemblies specified. Perform tile work using skilled mechanics trained and experienced in work of this complexity. Install waterproofing system using an applicator approved by system manufacturer.

1.5. SITE CONDITIONS

1.5.1. Ambient Conditions: Apply tile after completion of work by other Sections is complete; to surfaces sufficiently dry, clean, firm, level, plumb and free from oil or wax or any other material harmful to tile adhesion and as follows:

1.5.1.1. Temperature: Maintain tile materials and substrate temperature between TTMAC recommended minimum and maximum temperature range; unless indicated otherwise by manufacturer, as follows:

1.5.1.1.1. Tile and Cementitious Materials: Install tiles between 12 degrees C and 38 degrees C, meeting installation material manufacturer’s written recommendations.

1.5.1.1.2. Epoxy Materials: Install epoxy mortar and grouts between 18 degrees C and 35 degrees C, meeting installation material manufacturer’s written recommendations.

1.5.1.1.3. Curing Time: Maintain temperature range for 48 hours before and during installation and maintain temperature range until materials are fully set and cured in accordance with manufacturer’s recommendations, and as follows:

1.5.1.1.3.1. Provide additional heat when there is a risk that surface temperatures may drop below minimum recommended temperatures.

1.5.1.1.3.2. Provide cooling or wait until temperature range is below maximum recommended temperatures; do not install materials when temperature is at or above maximum recommended temperature.

1.5.2. Ventilation: Maintain adequate ventilation where Work of this Section generates toxic gases or where there is a risk of raising relative humidity to levels that could damage building finishes and assemblies.

1.6. WARRANTY

1.6.1. Manufacturer Warranty:

1.6.1.1. Warrant work of this Section against defects, excessive wear and loss of adhesion including replacement of defective tiling, materials, labour costs for demolition of defective work, accessories and installation systems at Owner's convenience. Cracks arising from normal shrinkage and/or expansion of concrete are not considered as structural failure. Hairline cracks in grout joints which result from these causes are considered normal and warranty is not voided as a result of these minor defects.

PART 2 - Products

2.1. MANUFACTURERS

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

2.1.1.1. Ardex Canada, Inc.; www.ardex.ca

2.1.1.2. Centura; www.centura.ca

2.1.1.3. Flextile Ltd.; www.flextile.net

2.1.1.4. Interstyle Ceramic & Glass Tile; www.interstyle.ca

2.1.1.5. Laticrete International, Inc.; www.laticrete.com

2.1.1.6. Mapei Corporation; www.mapei.ca

2.1.1.7. Schluter Systems (Canada) Inc.; www.schluter.com

2.1.2. Use proprietary Products in full compliance with manufacturer's recommendations. As far as possible obtain Product from single manufacturer ensuring compatibility with adjacent components while maintaining quality.

2.2. PERFORMANCE REQUIREMENTS:

2.2.1. Select suitable systems for tile setting according to TTMAC design details and tile manufacturer's recommendations.

2.2.2. Provide tile products manufactured and tested in accordance with ANSI A108/A118/A136.1, ANSI A137.1 as appropriate to the Basis-of-Design Materials listed in this Section.

2.2.3. Substrate and Backing Surface Flatness Tolerances: final measurement for flatness and level using mortar bed or self levelling screed materials to achieve minimum of FF50; equivalent to 3 mm with no more than 2 gaps under 3000 mm straightedge measurement. in accordance with ASTM E1155. Same requirement for wall tiles.

2.3. UNDERLAYMENTS

2.3.1. Uncoupling Membrane: Ensure membrane conforms to definition for uncoupling membranes in TTMAC's Specification Guide 09 30 00 Tile Installation Manual and meets or exceeds requirements of ANSI A108/A118/A136.1. Membrane uncouples the floorcovering from the substrate and prevents the transfer of stresses to the tiled surface, providing Shear Stress Control. Cracks in the substrate are bridged and not transferred to the tile installed. Membrane to allow for installations of both latex-modified and unmodified tile mortars, for proper installation and maximum strength of large format porcelain, tile and stone. Provide 1 of following:

2.3.1.1. "Schluter®-DITRA-XL" by Schluter Systems (Canada) Inc.; 7 mm (9/32") thick, orange, high-density polyethylene membrane with a grid structure of 12 mm x 12 mm (1/2" x 1/2") square cavities, each cut back in a dovetail configuration and a polypropylene anchoring fleece laminated to its underside.

2.3.1.2. “FLEXMAT” by Flextile Ltd; High Performance Universal Uncoupling Membrane, 0.5 mm (0.02”) thickness.

2.3.1.3. “Mapeguard UM” by Mapei Corporation; 3 mm (1/8”) thick, light green, polypropylene membrane with a tri-layered design of textured foil, backing fleece and mesh.

2.3.1.4. “Strata Matt Uncoupling Mat” by Laticrete International, Inc

2.3.2. Site Prepared Sanded Cement Mortar Mixture (Dry Pack):

2.3.2.1. Mortar Bed for Quarry Tile: A mixture of cement, sand and water (latex additive may be included) installed to thickness as required to provide an even substrate on which to apply tiling. Use mortar to correct irregularities in subsurface planes and slope accurately as required to meet design requirements. Reinforce mortar beds on floors with 50 mm x 50 mm x 1.6 mm (2” x 2” x 1/16”) galvanized or stainless steel square wire mesh and on walls expanded metal lath weighing not less than 1.4 kg/m2 (0.287 lbs/sq ft). Apply scratch coat where expanded metal lath is used before mortar bed is applied.

2.3.2.2. Conform to admixture manufacturer's recommendations for Products and mixtures.

2.3.2.3. Cement: CAN/CSA-A3000 grey or white Portland cement; white for grout.

2.3.2.4. “Fast-Setting”, Shrinkage Compensating, HCT Cement Binder for Interior Floors. Acceptable products:

2.3.2.4.1. “Ardex EB 2™ Fast Setting Screed Cement” by Ardex Canada, Inc.

2.3.2.4.2. “Mapecem Premix®” by Mapei Corporation.

2.3.2.4.3. “3701 Fortified Mortar Bed – Premixed” or “3701 Lite Mortar R – Rapid Curing & Lightweight” by Laticrete International, Inc.

2.3.2.5. Sand: ASTM C144 or CSA A23.1, sharp, screened mortar sand free from organic and deleterious materials.

2.3.2.6. Water: Potable.

2.3.2.7. Lime: ASTM C207, Type S, hydrated lime, except for “Mapecem®” products by Mapei Corporation.

2.3.2.8. Reinforcing Mesh: Conform to ASTM A1064/A1064M.

2.3.2.9. Reinforcing Metal Lath: Conform to ASTM C847.

2.3.2.10. Cleavage Membrane: CAN/CGSB-51.34-M, 0.10 mm (4 mil) thick polyethylene film or CSA A123.3, Type 1, asphalt saturated roofing felt.

2.4. ADHESIVES

2.4.1. Setting Bed and Thin-Set Adhesive:

2.4.1.1. Latex Mortar Bond Coat: ISO 13007-1 performance level (C2ES2P2); ANSI A108/A118/A136.1; for improved (C2) cement adhesive with (E) extended open time (S2) high-deformability (>5 mm) and improved (P2) for adherence to EGP characteristics, conforming to ANSI A108/A118/A136.1requirements. Acceptable products:

2.4.1.1.1. “Ardex X 77™ Microtec® Premium Microfiber Reinforced Polymer Modified Thin Set Mortar” by Ardex Canada, Inc.,

2.4.1.1.2. “Thin-Set Mortar 254 Platinum One-Step Thinset” by Laticrete International, Inc.,

2.4.1.1.3. “Kerabond/Keralastic" by Mapei Corporation

2.4.1.1.4. “#51 Floor and Wall Mix Thin-Set Mortar” and “#44 High Solids Latex Thin-Set Mortar Additive” by Flextile Ltd.

2.4.1.2. Latex Cement Mortars:

2.4.1.2.1. ISO 13007-1 (C2) performance level for improved cement adhesive with specific additional characteristics according to specified basis of design Project requirements; ANSI A108/A118/A136.1.

2.4.1.2.2. Full Contact Polymer-Modified Thin-Set Mortar Bond Coat for Horizontal Applications: ISO 13007-1 (C2) performance level improved cement adhesive; ANSI A108/A118/A136.1for EGP mortar installation over Plywood). Acceptable products:

2.4.1.2.2.1. “Ardex FB 9 L Pourable ShearFlex® Mortar” by Ardex Canada, Inc.

2.4.1.2.2.2. “"Keraflex Plus" Professional, Extra Smooth Large and Heavy Tile Polymer-Modified Mortar" by Mapei Corporation.

2.4.1.2.2.3. “61 Polymer Modified Full Coverage Mortar” by Flextile Ltd.

2.4.1.2.3. Polymer-Modified Thin-Set Mortar Bond Coat for Vertical Application of Large Modular Tiling: (300 mm x 300 mm (12” x 12”) and larger) ISO 13007-1 performance level (C2TES1) for improved cementitious (C2) for adhesive with (T) slip-resistant (E) extended open time (S1) deformable characteristics conforming to ANSI A108/A118/A136.1for single component latex cement mortar. Acceptable products:

2.4.1.2.3.1. “Ardex X 77™ Microtec® Premium Microfiber Reinforced Polymer Modified Thin Set Mortar” by Ardex Canada, In.

2.4.1.2.3.2. “Ultraflex™ LFT” by Mapei Corporation.

2.4.1.2.3.3. “56SR Premium Sag-Resistant LHT Mortar” by Flextile Ltd.

2.4.1.2.3.4. “4-XLT Polymer Fortified Adhesive Mortar” by Laticrete International, Inc.

2.4.1.2.4. Fast-setting Full Contact Polymer-Modified Thin-Set Mortar Bond Coat for Horizontal Applications: ISO 13007-1 performance level (C2FS1P1) for improved (C2) for cementitious adhesive (F) for fast-setting (S1) deformable (2.5 mm to 4.9 mm) with normal adherence (P1) for adherence to EGP characteristics, conforming to ANSI A108/A118/A136.1for EGP mortar installation over plywood). Acceptable products:

2.4.1.2.4.1. “"Keraflex RS" Rapid-Setting Extra Smooth Large & Heavy Tile Mortar” by Mapei Corporation

2.4.1.2.4.2. “62 Full Coverage Fast Set Mortar” by Flextile Ltd.

2.4.1.2.5. Polymer-Modified Thin-Set Mortar Bond Coat: ISO 13007-1 performance level (C2ES1P1) for improved (C2) for cementitious adhesive with (E) extended open time, (S1) deformable (2.5 mm to 4.9 mm) and normal (P1) for adherence to EGP characteristics, conforming to ANSI A108/A118/A136.1. Acceptable products:

2.4.1.2.5.1. “Ardex X 5™ Thin Set Mortar” by Ardex Canada, Inc.

2.4.1.2.5.2. “Ultraflex™ LFT” by Mapei Corporation.

2.4.1.2.5.3. “52 Versatile Premium-Grade, Polymer-Modified Mortar” by Flextile Ltd.

2.4.1.2.6. Fast-setting Polymer-Modified Thin-Set Mortar Bond Coat: ISO 13007-1 performance level (C2FS1P1) for improved (C2) for cementitious adhesive with (F) for fast-setting (S1) deformable (2.5 mm to 4.9 mm) and normal adherence (P1) for adherence to EGP characteristics, conforming to ANSI A108/A118/A136.1. Acceptable products:

2.4.1.2.6.1. “Ultraflex™ RS Premium-Grade, Rapid Setting, Single Component Polymer-Modified HCT™ Mortar” by Mapei Corporation.

2.4.1.2.6.2. “58 Fast-Set Polymer-Modified Mortar” by Flextile Ltd.

2.5. TILE

2.5.1. Wall tile: by Centura

2.5.1.1. Product number: refer to drawings

2.5.1.2. Size: refer to drawings

2.5.1.3. Colour: as noted in drawings

2.5.2. Floor tile: by Centura

2.5.2.1. Size: as noted in drawings

2.5.2.2. Finish: refer to drawings

2.5.2.3. Colour: as noted in drawings

2.6. GROUT

2.6.1. Epoxy Grout: Conforming to ANSI A108/A118/A136.1and ISO 13007-3 (RG) performance level for reactive resin grouts; 100% solids, 2 component water washable epoxy grout. Acceptable products:

2.6.1.1. “Ardex WA Easy to Use Epoxy Grout and Adhesive” by Ardex Canada, Inc.,

2.6.1.2. “100 Flex-Epoxy 100% Solids Epoxy Grout” by Flextile Ltd.,

2.6.1.3. “SpectraLOCK® PRO Premium Grout” by Laticrete International, Inc.

2.6.1.4. “Kerapoxy” by Mapei Inc.

2.6.2. Polymer-Modified Un-sanded Cement Wall Grout: Conforming to ANSI A108/A118/A136.1 and ISO 13007-3 (CG1) performance level for normal cementitious grout, joint width less than 3 mm (1/8") for porous and absorbent body glazed tiles, marbles or soft glazed wall tiles. Acceptable products:

2.6.2.1. “Ardex FG-C™ Microtec® Unsanded Floor & Wall Grout” by Ardex Canada, Inc.,

2.6.2.2. “500 Polymer Modified Unsanded Grout” by Flextile Ltd.,

2.6.2.3. “Laticrete 1600 Unsanded Grout, with “Stonetech Grout Up Additive” by Laticrete International, Inc.

2.6.2.4. “Keracolor-U” by Mapei Corporation.

2.6.3. Polymer-Modified Sanded Cement Tile Grout:

2.6.3.1. Normal Setting Grout: Conforming to ANSI A118.7 and ISO 13007-3 (CG2A) performance level for improved cementitious grout with high abrasion resistance for joint width 3 mm (1/8") to 9 mm (3/8") for impervious and vitreous type tiles. Acceptable products:

2.6.3.1.1. “600 Polymer Modified Sanded Grout” by Flextile Ltd.,

2.6.3.1.2. “Laticrete 1500 Sanded Grout” with optional “Stonetech GroutUp Additive” by Laticrete International, Inc

2.6.3.1.3. “Keracolor-S” by Mapei Corporation.

2.6.4. Do not add water or other materials to dilute mortar or grout additives unless recommended by admixture manufacturer.

2.7. MOVEMENT JOINT PROFILES

2.7.1. Field Joint Profile:

2.7.1.1. Provide profile with integrated trapezoid-perforated anchoring legs, connected by a 11 mm (7/16”) wide replaceable thermoplastic rubber movement zone, which together form the visible surface. Acceptable Product:

2.7.1.1.1. “Schluter®-DILEX-KSN (AKSN)” by Schluter Systems (Canada) Inc.

2.7.1.1.2. “Expansion Movement Joint Profiles – Style 1 EJ1” by Laticrete International, Inc.

2.7.1.1.3. "Equal Cerfix Projoint DIL NAN" by Mapei Corporation

2.7.2. Perimeter Joint Profile:

2.7.2.1. Provide profile with integrated trapezoid-perforated anchoring leg, connected by a 10 mm (3/8”) wide replaceable thermoplastic rubber movement zone with self-adhesive backing strip, which together form the visible surface. Acceptable Products:

2.7.2.1.1. “Schluter®-DILEX-KSA (AKSA)” by Schluter Systems (Canada) Inc.

2.7.2.1.2. “Perimeter Joint – Style 1 PJ1” by Laticrete International, Inc.

2.7.2.1.3. "Equal Cerfix Projoint DIL NIL" by Mapei Corporation

2.8. EDGE PROTECTION PROFILES

2.8.1. Transition Strip (TH-1): Provide profile with 6 mm (1/4”) wide top section (visible surface), 10 mm (3/8”) high integrated trapezoid-perforated anchoring leg and integrated grout joint spacer, satin anodized aluminum:

2.8.1.1. “Schluter -Deco”, by Schluter Systems (Canada) Inc., Product number: AE 100 D

2.8.2. Transition Strip between Different Heights (TH-2): anodized aluminum, with an integrated joint spacer, integrated trapezoid-perforated anchoring leg, 10 mm (3/8”) high integrated trapezoid-perforated anchoring leg and integrated grout joint spacer, satin anodized aluminum:

2.8.2.1. “Schluter -RENO-TK”, by Schluter Systems (Canada) Inc.

2.8.3. Edge Protector (TH-3): anodized aluminum, with an integrated joint spacer, integrated trapezoid-perforated anchoring leg, 3.5 mm high integrated trapezoid-perforated anchoring leg and integrated grout joint spacer, satin anodized aluminum:

2.8.3.1. “Schluter -RENO-U”, by Schluter Systems (Canada) Inc

2.8.4. Transition Strip between Different Heights (TH-4): anodized aluminum, with an integrated joint spacer, integrated trapezoid-perforated anchoring leg, 6 mm (1/4”) high integrated trapezoid-perforated anchoring leg and integrated grout joint spacer, satin anodized aluminum:

2.8.4.1. “Schluter -RENO-TK”, by Schluter Systems (Canada) Inc.

2.8.5. Edge-Protection and Transition Profiles for Floors: Provide L-shaped profile with 3 mm (1/8”) wide top section and vertical wall section that together form the visible surface, integrated trapezoid-perforated anchoring leg and integrated grout joint spacer. Acceptable Product:

2.8.5.1. “Schluter®-SCHIENE” by Schluter Systems (Canada) Inc.

2.8.5.2. “Finishing Edge Profile Style 4 FP4” by Laticrete International, Inc.

2.8.5.3. "Equal Cerfix Proangle" by Mapei Corporation

2.8.6. Finishing and Edge-Protection Profiles for Walls and Countertops: Provide L-shaped profile with 3 mm (1/8”) wide top section and vertical wall section that together form the visible surface, integrated trapezoid-perforated anchoring leg, and integrated grout joint spacer. Acceptable Product:

2.8.6.1. “Schluter®-JOLLY” by Schluter Systems (Canada) Inc.

2.8.6.2. “L-Shape Edging Profile LS4“ by Laticrete International, Inc.

2.8.6.3. "Equal Cerfix Proangle" by Mapei Corporation

2.9. TILE CLEANER

2.9.1. A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers. Acceptable products:

2.9.1.1. “Ultracare Concentrated Tile & Grout Cleaner” by Mapei Corporation.

2.9.1.2. “Stonetech Stone & Tile Cleaner” by Laticrete International, Inc

2.10. MIXING MORTARS AND GROUT

2.10.1. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.

2.10.2. Add materials, water, and additives in accurate proportions.

2.10.3. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions:

3.1.1.1. Ensure new concrete slab has been properly cured and dry for minimum of 28 Days and has reached minimum compressive strength of 25 MPa (3625 psi) and a minimum of 1.5 MPa (218 psi) in tension.

3.1.1.2. Ensure no curing and sealing compounds, hardeners or other chemical additives have been used on concrete.

3.1.1.3. Notify Consultant in writing of any conditions which would be detrimental to the installation.

3.1.2. Preinstallation Testing for all Concrete Floors:

3.1.2.1. Refer to Section 09 05 61 - Common Work Results for Flooring Preparation

3.1.2.2. Proceed only when moisture levels and pH reading are within acceptable tolerances.

3.2. PREPARATION

3.2.1. Surface Preparation:

3.2.1.1. Ensure substrates are structurally sound, solid, stable, level, plumb and true to a tolerance in plane of 6 mm in 3 m (1/4” in 10’ - 0”) in accordance with ANSI A108/A118/A136.1 specification requirements. Ensure substrates are clean and free of dust, oil, grease, paint, tar, wax, curing agent, primer, sealer, form release agent or any deleterious substance and debris which may prevent or reduce adhesion.

3.2.1.2. Mechanically sand, shot blast or scarify substrate as required to completely remove paint, loosely bonded topping, loose particles and contaminants. Surface etching or contaminant removal by chemical means is not permitted. When sanding or scarifying surfaces that may contain silica sand, wear an approved dust mask.

3.2.1.3. In all cases, structural design of substrate shall not allow a deflection greater than L/360 when tested to 136 kg (300 lb) concentrated loads in accordance with ASTM C627 test method. Deflection and curvature should be uniform over length of the span.

3.2.1.4. Review setting out point with Consultant for each location, verify patterns and edge condition.

3.2.1.5. Verify substrate expansion joints have been installed properly.

3.3. UNCOUPLING MEMBRANE:

3.3.1. Apply a thin-set mortar suitable for substrate (mixed to a fairly fluid consistency, but still able to hold a notch) using uncoupling membrane manufacturer's recommend trowel.

3.3.2. Apply uncoupling membrane to floor, fleece side down. Solidly embed uncoupling membrane into thin-set mortar using a float, screed trowel or manufacturer's recommended roller.

3.3.3. When using a roller, place weight not to exceed 34 kg (75 lbs) on roller shelf. Slowly move roller from 1 end of uncoupling membrane to other, slightly overlapping successive passes.

3.3.4. Lift up a corner of uncoupling membrane to check coverage. Proper installation results in full contact between fleece webbing and thin-set mortar. Simply abut end and side sections of adjacent sheets.

3.4. INSTALLATION - TILES

3.4.1. Provide tiling in accordance with TTMAC's "Specification Guide 09 30 00 Tile Installation" unless specified otherwise.

3.4.2. Extend tile work into recesses and under or behind equipment and fixtures to form a complete covering without interruptions:

3.4.2.1. Terminate Work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

3.4.2.2. Make cut edges smooth, even and free from chipping.

3.4.2.3. Do not split tile.

3.4.3. Accurately form intersections and returns; perform cutting and drilling of tile without marring visible surfaces:

3.4.3.1. Cut, drill, and fit tile to accommodate work of other subcontractors penetrating or abutting work of this Section.

3.4.3.2. Carefully grind cut edges of tile abutting trim, finish, or built in items for straight aligned joints.

3.4.3.3. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so that plates, collars, or covers overlap tile and to provide a uniform joint appearance.

3.4.4. Lay tile in pattern indicated on Drawings and as follows:

3.4.4.1. Align joints when adjoining tiles on floor, base, walls, and trim are the same size.

3.4.4.2. Lay out tile Work and centre tile sites in both directions in each space or on each wall area.

3.4.4.3. Centre tile patterns between control and movement joints; notify Consultant for further instructions where tile patterns do not align with control or movement joints.

3.4.4.4. Cut tile accurately and without damage.

3.4.4.5. Smooth exposed cut edges with abrasive stone, where exposed.

3.4.4.6. Chipped or split edges are not acceptable.

3.4.4.7. Minimum tile width is half unit size unless specifically indicated otherwise on Drawings.

3.4.4.8. Adjust tile layout to minimize tile cutting.

3.4.4.9. Provide uniform joint widths.

3.4.4.10. Make joints between tile sheets the same width as joints within tile sheets so joints between sheets are not apparent in finished Work.

3.4.4.11. Slope floor tile towards floor drains in thick-bed mortar installations.

3.4.5. Bonding Bed: Set tile in place while bond coat is wet and tacky and as follows:

3.4.5.1. With pressure, apply a coat of mortar by using the trowel's flat side to key the mortar into the substrate. Apply additional mortar, combing it in a single direction parallel to the tile's shortest dimension, with the trowel's notched side.

3.4.5.2. Use sufficient bond coat to provide a minimum 80% contact for tiles smaller than 300 mm x 300 mm and areas having Residential or Light Load Bearing Performance requirements with bonding material evenly dispersed and pressed into back of tile; refer to back buttering requirements for larger materials and installations having Moderate or higher Load Bearing Performance requirements.

3.4.5.3. Place tiles firmly into the wet mortar. Push the tiles back and forth in a direction perpendicular to trowel lines, to collapse the mortar ridges and to help achieve maximum coverage.

3.4.5.4. Verify that corner and edges are fully supported by bonding material by periodically picking up freshly installed tile and inspecting.

3.4.5.5. Set tiles to prevent lippage greater than 1 mm over a 3 mm grout joint.

3.4.5.6. Keep two-thirds of grout joint depth free of bonding materials.

3.4.5.7. Clean excess bonding materials from tile surface prior to final set.

3.4.5.8. Sound tiles after bonding materials have cured and replace hollow sounding tile before grouting.

3.4.6. Back Buttering: Obtain 100% mortar coverage in accordance with applicable requirements for back buttering of tile in referenced TTMAC and ANSI A108/A118/A136.1 series of tile installation standards.

3.4.7. Install prefabricated edge strips and control at locations indicated or where exposed edge of floor tile meets different flooring materials and exposed substrates.

3.4.8. Protect exposed edges of floor tile with properly sized transition strips, use sloped reducer strips where uneven transitions between 6 mm and 13 mm occur.

3.4.9. Control and Movement Joints: Install control joints and expansion joints in tile work in accordance with TTMAC Detail 301MJ-2019-2021; keep control and expansion joints free of bonding materials and as follows:

3.4.9.1. Cut tiles to establish line of joints; sawn joints after installation of tiles will not be acceptable to Consultant.

3.4.9.2. Locate joints in tile surfaces directly above joints in concrete substrates.

3.4.9.3. Provide floor control joints over structural control joints.

3.4.9.4. Install prefabricated joint profiles in accordance with manufacturer's written instructions, set with top surface of joint profile slightly below top surface of tile.

3.4.9.5. Prepare joints and apply sealants in accordance with requirements of Section 07 92 00.

3.4.9.6. Keep control and movement joints free from setting materials.

3.4.9.7. Form an open joint for sealant in tile wherever a change in backing material occurs, at all vertical interior corners, around penetrating pipes and fixtures, and where tile abuts other materials or fixtures.

3.4.10. Grouting: Install grout in accordance with manufacturer's written instructions, the requirements of TTMAC, and as follows:

3.4.10.1. Allow proper setting time before application of grout.

3.4.10.2. Pre-seal or wax tiles requiring protection from grout staining.

3.4.10.3. Force grout into the joints with a rubber grout float. Make sure all joints are well-compacted and free of voids and gaps.

3.4.10.4. Remove excess grout in accordance with manufacturer's written instructions and polish tile with clean cloths.

3.5. CLEANING

3.5.1. Remove grout and mortar residue immediately while work progresses and before materials harden on tiling surface.

3.5.2. Clean tiling completely leaving no apparent cement laitance on the surface. Do not acid wash especially where pigmented grouts are specified.

3.5.3. Clean adjacent surfaces that have been soiled or otherwise marred, to completely remove evidence of materials causing same.

3.5.4. Upon completion, remove protective coverings and clean down finished work of this Section leaving it in a correct condition according to industry standards. Correct defective jointing and grouting and other non-conformities.

3.6. PROTECTION

3.6.1. Remove and replace with new materials, sections of work that have become stained, soiled, broken, chipped or otherwise damaged.

3.6.2. Protect finished work from weather, freezing and complete water immersion for periods of at least 72 hours to 14 Days after completion of the Work depending on setting and grouting materials used. Follow Product instructions for requirements.

3.6.3. Walls: Protect walls from impact, vibration and hammering on adjacent and opposite walls for periods of at least 24 hours to 7 Days after installation depending on setting and grouting materials used. Follow Product instructions for requirements.

3.6.4. Floors: Protect floors from foot traffic for at least 4 hours to 48 hours after installation depending on the setting and grouting materials used. In all cases prohibit heavy commercial and equipment traffic for at least 48 hours to 7 Days depending on setting and grouting materials used. Follow product instructions for requirements.

3.6.5. Since temperature and humidity conditions during and after installation affect final curing time of cement based and epoxy materials, allow for extended periods of cure and protection when ambient and/or substrate temperatures drop below 15 deg C (60 deg F) and/or when relative humidity is higher than 70%.

3.6.6. Protect finished work from damage by other trades and general abuse until ready for takeover of the Work and acceptance.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

1.1.1. Section Includes: Provide acoustical panel ceilings including but not limited to following:

1.1.1.1. Ceiling suspension systems.

1.1.1.2. Lay-in acoustical ceiling panels.

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

1.1.2.1. Provision of suspended support framing: - Section 09 22 16 Non-Structural Metal Framing.

1.1.2.2. Provision of mechanical fixtures: refer to mechanical.

1.1.2.3. Provision of electrical, communication and security fixtures: refer to electrical.

1.2. ADMINISTRATIVE REQUIREMENTS

1.2.1. Coordination:

1.2.1.1. Do not begin installation of ceiling suspension system until work above ceiling has been completed and inspected.

1.2.1.2. Coordinate ceiling work to accommodate components of other Sections built into acoustical ceilings.

1.2.2. Preinstallation Meetings:

1.2.2.1. Arrange preinstallation meeting 1 week prior to commencing work with all parties associated with trade as designated in Contract Documents or as requested by Consultant. Presided over by Contractor include Consultant who may attend, Subcontractor performing work of this trade, Owner’s representative.

1.2.2.2. Purpose of meeting:

1.2.2.2.1. Verify Project requirements,

1.2.2.2.2. Discuss coordination with work of other Sections,

1.2.2.2.3. Review manufacturer's installation instructions [and warranty conditions],

1.2.2.2.4. Discuss and coordinate exact locations of ceiling-mounted components,

1.2.2.2.5. Discuss accepted shop drawings for special installation details, and

1.2.2.2.6. Review existing substrate conditions.

1.2.3. **ACTION AND INFORMATIONAL SUBMITTALS**

1.2.4. Product Data: Submit Product data on ceiling grid system, acoustical panels; clearly indicate specific items proposed for use if manufacturer's catalogues are submitted.

1.2.5. Shop Drawings: Submit Shop Drawings for work of this Section. In addition to minimum requirements indicate following:

1.2.5.1. Reflected plans of ceilings, joint pattern, position of suspension grids, seismic requirements, methods of suspension and termination at walls, partitions, bulkheads, lighting fixtures and mechanical fixtures.

1.2.5.2. Indicate insert and hanger spacing and fastening details, splicing method for main and cross runners, location of access splines, change in level details, access door dimensions and locations, lateral bracing and accessories.

1.2.5.3. Submit reflected ceiling plans detailed in measurement system (e.g. imperial or metric) to match Drawings.

1.2.5.4. Ensure a licensed engineer specified herein is responsible for:

1.2.5.4.1. Production and review of Shop Drawings.

1.2.5.4.2. Sealing and signing each Shop Drawing and any associated calculations performed.

1.2.6. Samples: Submit following samples in sizes indicated:

1.2.6.1. Submit 300 mm (12") long samples of suspension system parts, including trim and seismic items.

1.2.6.2. Submit 300 mm x 300 mm (12" x 12") samples of acoustical panels.

1.2.7. Delegated Design Submittals:

1.2.7.1. Submit delegated design shop drawings stamped and signed by professional engineer registered or licensed in Ontario, Canada.

1.2.7.2. Indicate that components and installation methods conform to specified seismic design and construction requirements of Contract Documents and in accordance with ASTM E580/E580M.

1.2.7.3. Include supporting details, treatment of cross runners, main runners, and wall closures at terminal ends, suspension wire, lateral force bracing, light fixtures, services within the ceiling, seismic isolation joints, and partition bracing.

1.3. CLOSEOUT SUBMITTALS

1.3.1. Operational and Maintenance Data: Submit maintenance instructions to Owner for recommended cleaning materials and methods for panels and trim. Include precautions for use of and composition of cleaning materials detrimental to acoustic materials and trim.

1.4. QUALITY ASSURANCE

1.4.1. Qualifications:

1.4.1.1. Installers: Provide work of this Section executed by competent installers with minimum 5 years experience in the application of Products, systems and assemblies specified and with approval and training of the Product manufacturers.

1.4.1.2. Licensed Professionals: Employ a licensed engineer registered in the Province of Ontario.

1.4.2. Mock-Ups:

1.4.2.1. Construct mock-up a minimum 10 m^2 of each type of acoustical ceiling assembly including one inside corner and one outside corner. Ceiling system mock-up to show basic construction and assembly, treatment at walls, splicing, interlocking, finishes, acoustical unit installation, seismic reinforcing, one recessed light fixture, and one sprinkler head.

1.4.2.2. Construct mock-up at Project site where directed by Consultant.

1.4.2.3. Allow minimum 48 hours for review of the mock-up.

1.4.2.4. Mock-up may remain as part of the finished work and serve as standard of workmanship for the balance of the work.

1.5. DELIVERY, STORAGE AND HANDLING

1.5.1. Delivery and Acceptance Requirements: Deliver materials in original packages, containers and bundles, bearing brand and manufacturer's name and ULC or cUL labels.

1.5.2. Storage and Handling Requirements:

1.5.2.1. Store materials in a covered area, off ground, on flat, smooth, dry surfaces. Protect from moisture. Remove damaged or deteriorated materials from site.

1.5.2.2. Comply with ceiling panel manufacturer's recommendations regarding temperature and humidity conditions before, during and after ceiling installation.

1.6. WARRANTY

1.6.1. Manufacturer Warranty: Warrant work of this Section for period of 3 years against defects and/or deficiencies in accordance with General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of Consultant and at no expense to Owner.

PART 2 - PRODUCTS

2.1. MANUFACTURERS

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

2.1.1.1. Armstrong World Industries Canada Ltd.; www.armstrongceilings.com

2.1.1.2. Bailey Metal Products Ltd.: www.bmp-group.com

2.1.1.3. CertainTeed Ceilings; www.certainteed.com

2.1.1.4. CGC Inc.; www.cgcinc.com

2.1.1.5. Rockfon; www.rockfon.com

2.1.2. Substitution Limitations: Comparable Products from manufacturers listed herein will be accepted provided they meet requirements of this Specification.

2.2. MATERIALS

2.2.1. Description:

2.2.1.1. Regulatory Requirements: Ensure complete ceiling assemblies including panel and suspension system are fire rated and labelled in accordance with ULC Design number noted on Drawings.

2.2.2. Performance/Design Criteria:

2.2.2.1. Design suspension system to support safely and without distortion, superimposed loads of:

2.2.2.1.1. Lighting fixtures.

2.2.2.1.2. Air supply diffusers, boots, fire alarm grilles and exhaust and return air grilles.

2.2.2.1.3. Curtain tracks and window blinds.

2.2.2.1.4. Power grid system, where indicated.

2.2.2.1.5. Suspended equipment where indicated.

2.2.2.2. Design suspension system to support lighting fixtures according to Hydro One regulations and submit certification in accordance with ESA Rule 30-302 (1).

2.2.2.3. Design suspension system to accommodate movement caused by thermal expansion or contraction.

2.2.2.4. Design and space hangers and carrying members to support entire ceiling system, including lighting fixtures, diffusers and equipment openings in locations indicated on Drawings.

2.2.2.5. Maximum Deflection: Limit deflection to L/360 in accordance with ASTM C635/C635M deflection test.

2.2.2.6. Prepare panels for sprinkler head penetrations and suspension members of curtain tracks.

2.2.2.7. Coordinate installation and cooperate with Mechanical and Electrical Subcontractors, to accommodate mechanical and electrical items, or any other Work required to be incorporated in or coordinated with the ceiling system.

2.2.2.8. Structural Design: Employ a licensed engineer specified herein to:

2.2.2.8.1. Design components for work of this Section requiring structural performance.

2.2.2.8.2. Be responsible for determining sizes, yield strengths, gauge thicknesses and joint spacing to allow thermal movement and loading of components in accordance with applicable codes and regulations.

2.2.2.8.3. Seismic Restraints: Design system to withstand seismic forces in accordance with CSA S832 and as outlined in Ontario Building Code for post-disaster Importance Category facilities based on a full uniform ceiling load acceleration in accordance with ASTM A580/A580M. Ceiling areas less than 13.4 m ² and surrounded by walls connected to structure above do not require seismic restraints.

2.3. MATERIALS

2.3.1. Unless otherwise indicated, manufacture ceiling suspension Products to minimum requirements of ASTM C635/C635M, for Medium Duty, modified as required to suit grid design shown.

2.4. ACOUSTICAL CEILING SUSPENSION

2.4.1. Exposed Grid System:

2.4.1.1. Factory finished satin white on Z90 (G30) hot dipped galvanized cold rolled steel. Ensure system provides lock joint intersections of cross and main tees

2.4.1.2. 15/16” exposed face

2.4.1.3. Acceptable products:

2.4.1.3.1. "DONN DX/DXL® Suspension System" by CGC Inc.,

2.4.1.3.2. "Prelude® XL” Exposed Tee System" by Armstrong World Industries,

2.4.1.3.3. “Chicago Metallic 1200 Seismic” by Rockfon

2.4.1.3.4. “15/16” Classic Stab Systems” by CertainTeed Ceilings.

2.4.2. Basic Steel Material and Finish: Commercial quality cold rolled steel 0.455 mm (26 ga) minimum thickness, galvanized to zinc coating designation Z90 (G30) for normal interior spaces, Z180 (G60) for high humidity spaces and Z275 (G90) for exterior spaces. Ensure exposed surfaces of metal products are factory finished in non-yellowing, low sheen satin white enamel to Consultant’s acceptance to match whiteness in panels. Provide paint formulation of grid system to lighting fixture, speaker grille, sprinkler and diffuser manufacturers to ensure consistency of colour, sheen and texture of all exposed metal components in the ceiling assemblies. Provide slip-on trim mouldings or metal mouldings with baked enamel finish, as standard with grid manufacturer, to trim around light fixtures.

2.4.3. Accessories for Suspension System: Complete with splices, clips and perimeter moulding of manufacturer's standard and aluminum types to suit the applicable conditions unless special conditions and access areas are shown or specified. In washroom area provide galvanized suspension system.

2.4.4. Hanger Wire: Minimum 2.642 mm (12 ga) overall thickness galvanized steel wire to zinc coating designation Z275 (G90), meeting "Heavy-duty" classification of ASTM C635/C635M.

2.4.4.1. Access Panel Ceilings: Minimum 3.6 -mm diameter

2.4.4.2. Fire-Rated Assemblies: To ULC design requirements,

2.4.4.3. Seismic assemblies. To seismic Design Category

2.4.4.4. Other Ceilings: Minimum 2.642 mm (12 ga) diameter

2.4.5. Main Tees: 3.66 m (12') long, 23.8 mm (15/16") face width double web design, rectangular bulb at top of web, 38 mm (1-1/2") web height. Expansion cut-outs in main tees controlling buckling caused by heat expansion.

2.4.6. Main Tee Splices: Designed to lock lengths of main tees together so joined lengths of tee function structurally as single unit with tee faces at joint perfectly aligned and presenting tight seam.

2.4.7. Cross Tees: 1220 mm (4') long, 25 mm (1") web height structural cross-section, design same as main tees, designed to connect at main tees forming positive lock without play, loss or gain in grid dimensions with offset over-ride of face flange over main tee flange to provide flush joint. Provide 38 mm (1-1/2") web height of cross-tee for fire rated assemblies.

2.4.8. Edge Moulding Around Ceiling Perimeters: Materials and finish to match tees.

2.4.9. Panel Hold-Down Clips: As recommended by lay-in panel manufacturer. Purpose made clips to secure panel to suspension system approved for use in fire-rated systems, and to resist wind uplift near exterior doors.

2.4.10. Inserts for Concrete Slabs: Certified type for setting in concrete or self drilling expansion inserts for placing afterwards. Tie wire anchors:

2.4.10.1. Red Head TW-1614 by ITW Canada, Inc.,

2.4.10.2. Parabolt Wire Anchor by Acrow Richmond

2.4.10.3. T-14 Eyebolt by Ramset Ltd., or Tire Wire Drive TW-932 by Isometric Ltd.

2.4.11. Fasteners: Galvanized and of size suited to loading conditions.

2.4.12. Metal Closures and Trim: Bonderized and with factory-applied white baked enamel finish. Provide anchors as standard with manufacturer.

2.4.13. Supplementary Steel Supports: Steel conforming to Section 05 50 00 - Metal Fabrications.

2.5. ACOUSTICAL CEILING PANELS

2.5.1. Acoustical Lay-in Panels: CAN/CGSB-92.1-M, acoustical units, prefabricated, with white painted textured and/or smooth face, qualified for use in fire rated ceiling assembly; ULC or cUL labelled and meeting following performance criteria as determined by CAN/ULC-S101 and as specified:

2.5.1.1. Flame Spread Rating: 25 or under to CAN/ULC S102.

2.5.1.2. Smoke Developed:50 or under to CAN/ULC S102.

2.5.1.3. Fire Rating: Class A

2.5.1.4. Acoustical Lay-In Panels in Corridors:

2.5.1.4.1. Basis of Design: “Radar Education Acoustic Panels”, by CGC:

2.5.1.4.2. Item no. 2407

2.5.1.4.3. Size: 24” x 48” x 5/8” thick

2.5.1.4.4. Edge: Square

2.5.1.4.5. Suspension grid: 15/16 in

2.5.1.4.6. Colour: 050 Flat White

2.5.1.4.7. Light Reflectance: 0.84

2.5.1.4.8. Ceiling Attenuation Class (CAC): 35

2.5.1.4.9. Noise Reduction Coefficient (NRC): Noise Absorption 0.55

2.5.1.4.10. Minimum Recycled Content: 26%

2.5.1.5. Acoustical Lay-In Panels in Music Room:

2.5.1.5.1. Basis of Design: “Mars High-NRC/High-CAC 60/40”, by CGC:

2.5.1.5.2. Item no. 87187

2.5.1.5.3. Size: 24” x 24” x 3/4” thick

2.5.1.5.4. Edge: Square

2.5.1.5.5. Suspension grid: 15/16 in

2.5.1.5.6. Colour: 050 Flat White

2.5.1.5.7. Light Reflectance: 0.90

2.5.1.5.8. Ceiling Attenuation Class (CAC): 40

2.5.1.5.9. Noise Reduction Coefficient (NRC): Noise Absorption 0.60

2.5.1.5.10. Minimum Recycled Content: 70%

PART 3 - EXECUTION

3.1. EXAMINATION

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

3.1.2. Do not start installation until exterior glazing has been completed and exterior openings are closed in. Ensure wet work is completed and dried out to a degree acceptable to panel manufacturer before installation is commenced. Maintain uniform temperatures of at least 21 deg C (72 deg F) for 72 hours prior to commencement of work and maintain temperature until 72 hours after completion.

3.1.3. Install ceiling panels and metal suspension system in accordance with applicable requirements of ASTM C636/C636M, seismic design and manufacturer's directions. Where manufacturer's directions are at variance with Contract Documents, notify Consultant before proceeding with work.

3.1.4. Do not commence installation until all work above suspended ceiling has been completed, inspected and accepted.

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

3.2. INSTALLATION - SUSPENSION SYSTEM

3.2.1. Comply with manufacturer's installation instructions and recommendations, including product technical bulletins, installation instructions, and data sheets.

3.2.2. Install suspension system in accordance with accepted shop drawings, and ASTM C636/C636M except where specified otherwise.

3.2.3. Install suspension system by suspending ceiling hangers from building's structural members, and as follows:

3.2.3.1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.

3.2.3.2. Attach hangers to structural members or intermediate structural supports.

3.2.3.3. Exposed Concrete Slab: Use anchors, cast-in hanger wires or inserts, specifically designed for hanger use. Do not use powder activated fasteners.

3.2.3.4. Suspension to Metal Floor Deck: Punch lower part of metal deck with special puncher at required distances. Put hanger wire through holes, turn down, make a loop and securely wrap 3 times.

3.2.3.5. Steel Beams: Use beam clips.

3.2.3.6. Steel Joists: Wrap hanger wire around lower chord member.

3.2.3.7. Permanent Metal Forms and Cellular Floor Deck: Tabs, holes or slots specifically provided for hanger attachment. Prevent hanger twisting or turning by cross tying.

3.2.4. If ductwork or equipment located in ceiling plenum area interferes with hanger spacing, provide a trapeze or other arrangement reviewed by Consultant to support main beams at proper spacing.

3.2.5. Do not secure hangers to metal roof deck, ductwork, conduit, piping, equipment or support system for any of these.

3.2.6. Provide an additional hanger at each corner of each opening to receive a recessed lighting fixture and each opening that has been framed by main beam members. Provide additional hangers at each diffuser, grille and other points of extra loading.

3.2.7. Lay out centre line of ceiling both ways, to provide balanced borders at room perimeter with border units not less than 50% of standard unit width.

3.2.8. Space hangers for suspended ceilings to support grillage independent of walls, columns, pipes and ducts at maximum 1220 mm (4') centres along support grillage and not more than 150 mm (6") from ends. Provide additional hangers at light fixtures and diffusers.

3.2.9. Run main tees at right angles to length of light fixtures.

3.2.10. Space main tees 1220 mm (4') oc in 1 direction and securely tie to hangers.

3.2.11. Space cross tees 610 mm (2') oc at right angles to main tees and properly lock at intersections.

3.2.12. Use longest practical lengths of tees, furring and running channels to minimize joints. Make joints square, tight, flush and reinforced with concealed splines. Assemble framework to form a rigid and interlocking system.

3.2.13. Use edge moulding where ceiling abutts vertical surface.

3.2.14. Use corner moulding along external edges at ceiling steps.

3.2.15. Level suspended systems with a maximum tolerance of 3 mm (1/8") over 3.66 m (12').

3.2.16. Expansion Joints:

3.2.16.1. Provide Z-shaped metal trim pieces at each side of expansion joint. Design to accommodate plus or minus 25-mm movement and maintain visual closure. Finish metal components to match adjacent exposed metal trim. Provide backing plates behind butt joints.

3.2.17. Fire-Resistance Rated Ceilings: Provide fire-resistance rated ceilings where required, including proper construction of framing and furring and proper thickness of acoustical units, to produce hourly fire-resistance ratings called for. Requirements for materials, methods of erection and application specified under appropriate headings of this Section apply, except where more stringent requirements are defined for particular fire-resistance rating by ULC.

3.3. INSTALLATION - ACOUSTICAL CEILING PANEL SYSTEM

3.3.1. Install lay-in acoustical panels in ceiling suspension system in accordance with manufacturer's instructions and as indicated.

3.3.2. Install panels with edges fully hidden from view by flanges of suspension system runners and mouldings.

3.3.3. In fire-rated ceiling systems, secure lay-in panels with hold-down clips and protect over light fixtures, diffusers, air return grilles and other appurtenances according to Certification Organizations design requirements.

3.4. SITE QUALITY CONTROL

3.4.1. Site Test and Inspection:

3.4.1.1. After interior finishing work has been substantially completed, or when directed by Consultant, inspect acoustical treatment work.

3.4.1.2. Structural Inspection: Ensure a licensed engineer specified herein inspects work of this Section during erection/installation and submits sealed and signed Field Review Report within 5 Days of site visit.

3.4.2. Manufacturer Services: Arrange for periodic site visits by manufacturer's representative to review installed work for conformity to manufacturer's installation instructions and recommendations.

3.4.2.1. Submit written site reports within three days of visit.

3.4.3. Non-Conforming Work:

3.4.3.1. Do not support ceilings directly from permanent metal forms, floor deck, or other non-structural framing.

3.4.3.2. Do not attach hangers to steel roof deck or steel deck tabs.

3.4.3.3. Do not level ceilings by putting kinks in suspension wires. Kinks in suspension wires are not acceptable.

3.4.3.4. Conceal fasteners including pop rivets on mouldings and trims.

3.4.4. Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of Consultant at no cost to Owner.

3.5. CLEANING

3.5.1. Clean exposed surfaces of acoustical panel ceilings, including trim and edge mouldings. Comply with manufacturer's written instructions for cleaning and touch-up of minor finish damage. Remove and replace tiles and other ceiling components that cannot be successfully cleaned or repaired to permanently eliminate evidence of damage.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

1.1.1. Section Includes: Provide resilient base and accessories including but not limited to following:

1.1.1.1. Resilient base.

1.1.1.2. Reducing strips.

1.2. SUBMITTALS

1.2.1. Samples: Submit following samples in sizes indicated:

1.2.1.1. Resilient base 300 mm (12") long.

1.2.1.2. Reducing strips 300 mm (12") long.

1.3. SITE CONDITIONS

1.3.1. Ambient Conditions:

1.3.1.1. Maintain appropriate environmental conditions and protect work during and after installation. Comply with trade standards and manufacturer's Product instructions.

1.3.1.2. Close doors and windows. Turn off radiant floor heating systems and protect work area from direct draft, sun and heat exposure during installation and for at least 72 hours after completion.

1.3.1.3. When necessary, build a temporary shelter and use indirect auxiliary heaters to maintain an adequate temperature level in work environment.

1.3.1.4. Exhaust temporary heaters to building exterior to prevent health hazards and damage to work from toxic fumes and emanations.

1.3.1.5. Maintain temperature of floor covering areas at not less than 18 deg C (65 deg F) or more than 38 deg C (100 deg F) 48 hours before, during installation and for 48 hours after application unless otherwise required in Product instructions.

PART 2 - PRODUCTS

2.1. MANUFACTURERS

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

2.1.1.1. American Biltrite (Canada) Ltd.; www.american-biltrite.com

2.1.1.2. Burke Flooring, a Division of Burke Industries; www.burkeflooring.com

2.1.1.3. Flexco; www.flexcofloors.com

2.1.1.4. Johnsonite; www.johnsonite.com

2.1.1.5. Roppe Corporation, USA; www.roppe.com

2.1.1.6. Tarkett; www.tarkett.com

2.1.2. Substitution Limitations: Comparable Products from manufacturers listed herein will be accepted provided they meet requirements of this Specification.

2.2. MATERIALS

2.2.1. Provide Products free from blisters, cracks, chipped edges, embedded foreign matter or other defects.

2.2.2. Resilient Base: 3 mm (1/8") thick x 150 mm (6") OR 100 MM (4") high in accordance with ASTM F1861, Type TS, Group 1, Style B, PVC-free vulcanized rubber, in coil lengths, colour selected from manufacturer's standard range.

2.2.2.1. Acceptable Products:

2.2.2.1.1. "Rubber Wall Base" by Johnsonite

2.2.2.1.2. "Marathon Cove Base" by American Biltrite (Canada) Ltd.

2.2.2.1.3. "PVC-Free Wallflowers Rubber Wall Base" by Flexco,

2.2.2.1.4. PVC-Free Burke Wall Base" by Burke Floors

2.2.2.1.5. "PVC-Free Pinnacle Rubber Wall Base" by Roppe Corporation, USA.

2.2.3. Reducing Strips: Vinyl, thickness to suit adjacent flooring; Johnsonite, American Biltrite (Canada) Ltd., Flexco or Roppe Corporation, USA.

2.2.4. Primers and Adhesives: As required for surfaces involved as recommended and supplied by resilient base manufacturer used.

2.2.5. Colours: Selected by Consultant from manufacturer's standard colour selection.

2.2.6. Sealant: ColorRite sealant, www.colorriteinc.com, color to match base.

PART 3 - EXECUTION

3.1. EXAMINATION

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

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

3.2. INSTALLATION

3.2.1. Resilient Base:

3.2.1.1. Provide resilient base to substrate surfaces in accordance with manufacturer's recommendations.

3.2.1.2. Select the appropriate adhesive for the application and job site conditions. Apply adhesive evenly and continuously for full base adhesion and contact. Do not apply adhesive in a manner which promotes induced waviness in resilient base.

3.2.1.3. Apply wall base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

3.2.1.4. Install wall base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.

3.2.1.5. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

3.2.1.6. Provide preformed inside and outside corners.

3.2.1.7. Do not stretch wall base during installation.

3.2.1.8. On masonry surfaces or other similar irregular substrates, fill voids along top edge of wall base with manufacturer's recommended adhesive filler material.

3.2.1.9. Ensure material is rolled appropriately into the adhesive using a hand roller.

3.2.1.10. Remove and replace base showing shrinkage or adhesion failure.

3.2.1.11. Apply sealant where base meets door frame.

3.2.2. Reducing Strips: Protect exposed edges of resilient flooring, where finished and unfinished area adjoin, by means of reducing strips butting to and flush with finished surface of floor covering material.

3.2.3. Remove and replace base showing shrinkage or adhesion failure.

3.2.4. Apply sealant where base meets door frame reveals.

END OF SECTION

PART 1 - General

1.1. SUMMARY

1.1.1. Section Includes:

1.1.1.1. Testing and preparation of substrate for installation of flooring.

1.1.1.2. Resilient vinyl tile flooring

1.1.1.3. Reducing strips and thresholds at junction with adjacent architectural finishes.

1.1.1.4. Resilient base.

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

1.1.2.1. Filling of major holes, chases and trenches in concrete substrate Flatness and levelness requirements for floor to receive resilient sheet flooring: Section 03 01 30 – Repairs to Concrete.

1.1.2.2. Moisture vapour control topping: Section 09 05 61 – Common Work Results for Flooring Preparation.

1.1.2.3. Resilient base: Section 09 65 13 – Resilient Base and Accessories

1.2. ADMINISTRATIVE REQUIREMENTS

1.2.1. Coordination:

1.2.1.1. Ensure that substrate treatments for moisture, repair, or levelling are compatible with the manufacturer of work in this Section.

1.2.2. Preinstallation Meeting:

1.2.2.1. Prior to start of work, arrange for site meeting of parties associated with work of this Section. Presided over by Contractor, include Consultant, Subcontractor, and manufacturer's representative.

1.2.2.2. Review work included under this Section and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials to be used, installation, methods and procedures, quality control, Project staffing, restrictions on areas of work and other matters affecting construction, to permit compliance with intent of this Section. Also discuss following items:

1.2.2.2.1. Surface preparation.

1.2.2.2.2. Concrete testing for RH, pH, and capillary moisture.

1.2.2.2.3. Installation.

1.2.2.2.4. Coordination with other Work.

1.3. SUBMITTALS

1.3.1. Make Submittals in accordance with Section Division 01 General Requirements

1.3.1.1. Product Data:

1.3.1.1.1. Submit manufacturer's product data sheets for products to be for used in the work of this section. Manufacturer's product data sheets shall include:

1.3.1.1.1.1. Material and product physical properties and characteristics including size and colour.

1.3.1.1.1.2. Limitations of products

1.3.2. Shop Drawings: Submit Shop Drawings for all areas indicating the following:

1.3.2.1. Each resilient floor tile type, installation method, locations of building movement joints, and intricate floor tile patterns.

1.3.2.2. Locations and types of edge strips and reducer strips at flooring penetrations.

1.3.3. Samples: Submit following samples in sizes indicated:

1.3.3.1. Resilient base 300 mm (12") long.

1.3.3.2. Reducing strips 300 mm (12") long.

1.3.4. Manufacturer's Instructions: Submit manufacturer's storage, handling, and installation instructions.

1.4. CLOSEOUT SUBMITTALS

1.4.1. Operating and Maintenance Data: Provide maintenance data for resilient flooring for incorporation into maintenance manual specified in Division 01. Include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance.

1.4.2. Record Documentation: Submit a list of materials installed, including adhesives, and accessories. Indicate manufacturers, products, types, patterns, and colour names and numbers. Indicate room/area where installed.

1.5. QUALITY ASSURANCE

1.5.1. Installers:

1.5.1.1. Provide work of this Section executed by competent installers with minimum of 5 years experience in application of Products, systems and assemblies specified and with approval and training of Product manufacturers.

1.5.1.2. Submit documentation signed by the manufacturer to show that installers have been trained and meet their warranty criteria for installation requirements.

1.5.2. Bond Test:

1.5.2.1. Install multiple bond tests using selected tile adhered with the appropriate adhesive to verify quality of adhesion. Remove 1 tile after 24 hours, then another after 48 hours.

1.6. SITE CONDITIONS

1.6.1. Ambient Conditions:

1.6.1.1. Maintain appropriate environmental conditions and protect work during and after installation. Comply with trade standards and manufacturer’s Product instructions. Follow product's SDS and label instructions concerning safety, health and other related precautionary and environmental protection. Comply with applicable federal, provincial, local and statutory regulations.

1.6.1.2. Close doors and windows. Turn off radiant floor heating systems and protect work area from direct draft, sun and heat exposure during installation and for at least 72 hours after completion.

1.6.1.3. When necessary, build a temporary shelter and use indirect auxiliary heaters to maintain an adequate temperature level in work environment.

1.6.1.4. Ventilation: Provide temporary ventilation:

1.6.1.4.1. Provide high ventilation rate with maximum outside air 24 to 48 hours before, during installation, and 48 to 72 hours after installation. If possible, vent directly to outside.

1.6.1.4.2. Do not let contaminated air recirculate through air distribution system. Continue high ventilation rate for at least four weeks after building occupation.

1.6.1.5. Maintain relative humidity in accordance with manufacturer's instructions.

1.6.1.6. Exhaust temporary heaters to building exterior to prevent health hazards and damage to work from toxic fumes and emanations.

1.6.1.7. Maintain temperature of floor covering areas at not less than 18 deg C (65 deg F) or more than 38 deg C (100 deg F) 48 hours before, during installation and for 48 hours after application unless otherwise required in Product instructions.

1.7. WARRANTY

1.7.1. Submit warranty, signed and issued in the name of Owner warranting the Work of this Section against defects in materials and workmanship for a period of 20 year from the date of Substantial Performance of the Work.

1.7.2. Warranty covers excessive wear, and defects in materials.

PART 2 - PRODUCTS

2.1. MATERIALS

2.1.1. Vinyl Tile Flooring:

2.1.1.1. Vinyl Composition Tyles, ASTM F1066, Class 2

2.1.1.2. Thickness 3.18 mm (0.125") ASTM F386

2.1.1.3. Tile Size: 305 mm X 305 mm

2.1.1.4. Colours and Patterns: allow for 2 different colours

2.1.1.5. Tile Squareness: Passes ASTM F2055

2.1.1.6. Tile Dimensional Stability: Passes ASTM F2199

2.1.1.7. Flexibility: Passes ASTM F137

2.1.1.8. Static Load Limit: 150 psi " ASTM F970

2.1.1.9. Slip Resistance: SCOF ≥ 0.5 ASTM D2048

2.1.1.10. Maintenance: Conventional VCT maintenance, 3-5 coats of finish.

2.1.1.11. Basis of Design: "Tarket VCT II" by Tarkett; www.tarkettna.com

2.1.2. Accessories:

2.1.2.1. Adhesive:

2.1.2.1.1. Water-resistant reactive adhesives or of types recommended by resilient homogenous flooring manufacturer for specific material on applicable substrate, above, on or below grade.

2.1.2.1.2. Vinyl Tile Flooring: "Tarkett 100 or 975 or 901" as recommended by the manufacturer.

2.1.2.2. Subfloor Filler and Leveler:

2.1.2.2.1. Fast setting, polymer-modified Portland cement based patching compound mixed with either a latex additive or water only depending on substrate conditions and Product instructions. "Self-Leveler Plus" by Mapei.

2.1.2.3. Reducing Strips: aluminum, Schluter, profile and thickness to suit adjacent flooring.

2.1.2.4. Metal edge strips:

2.1.2.4.1. Aluminum extruded, smooth, mill finish and polished with lip to extend under floor finish, shoulder flush with top of adjacent floor finish, Schluter, VPSL; thickness to match VCT flooring thickness.

PART 3 - EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions for New Concrete:

3.1.1.1. Ensure new concrete slab has been properly cured and dry for minimum of 28 Days and has reached minimum compressive strength of 25 MPa (3625 psi) and a minimum of 1.5 MPa (218 psi) in tension.

3.1.1.2. Ensure no curing and sealing compounds, hardeners or other chemical additives have been used on concrete.

3.1.1.3. Notify Consultant in writing of any conditions which would be detrimental to the installation.

3.2. SURFACE PREPARATION

3.2.1. For all new and existing concrete floor areas:

3.2.1.1. Prepare existing and new concrete floors over entire area with steel shot blasting or other method recommended by manufacturer. Remove uneven joints, rough areas, foreign and projection off surfaces. Surface to be hard, sound and roughened to irregular surface with weak concrete removed and surface holes and voids exposed. Equip dry blasting machine with vacuum to minimize dust.

3.2.1.2. Shot blast floor to remove soft material and to achieve a profile equivalent to ICRI / CSP 3 – 4.

3.2.1.3. Shot blast to expose cracks in concrete surface. For cracks lesser than 1.5 mm (1/16") employ crack reinforcing tape in accordance manufacturer’s recommendations. Repair cracks, holes or other deficiencies in accordance with manufacturer's recommendations.

3.2.1.4. Blow clean control joints, sawcuts and cracks with compressed air.

3.2.1.5. Prepare concrete floors to receive sheet flooring in accordance with requirements of ASTM F710. Achieve CSP of #2 - #3. Consult individual manufacturer for their specific recommendations and follow them as required.

3.3. INSTALLATION - GENERAL

3.3.1. Install materials of this section in accordance with material manufacture’s written requirements.

3.3.2. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation. Do not install resilient products until they are same temperature as space where they are to be installed.

3.3.3. Spray paints, permanent markers and other indelible ink markers shall not be used to write on the back of the flooring material or used to mark the substrate as they could bleed through and permanently stain the flooring material. If such contaminants are present on the substrate they shall be mechanically removed prior to the installation of the flooring material.

3.3.4. Terminate vinyl tile in straight lines at centreline of door in openings where adjacent floor finish or vinyl composite tile colour is dissimilar.

3.3.5. At door opening locations where finished flooring is adjacent to weather-stripping or automatic door bottoms provide patching and levelling compound to provide full contact between finished flooring and weather-stripping or automatic door bottoms. Taper patching and levelling compound

to transition with adjacent flooring substrate to be provide smooth and seamless transition at maximum slope of 3:1000 (height to distance) ratio.

3.3.6. Install vinyl tile accurately fitted at perimeter of rooms, cut with precision at columns, door frames and at other obstructions.

3.3.7. Extend floor coverings into toe spaces, door reveals, closets, and similar openings.

3.3.8. Maintain reference markers, holes, or openings that are in place or marked for future cutting by repeating on floor coverings as marked on substrates. Use chalk or other nonpermanent marking device.

3.3.9. Install floor coverings on covers for telephone and electrical ducts and similar items in installation areas. Maintain overall continuity of color and pattern with pieces of floor coverings installed on covers. Tightly adhere floor covering edges to substrates that abut covers and to cover perimeters.

3.3.10. Adhere floor coverings to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.3.11. Allow no traffic over installation until adhesives have fully cured, minimum twenty-four (24) hours.

3.4. INSTALLATION – TILE

3.4.1. Lay out tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.

3.4.2. Lay tiles square with room axis, unless otherwise indicated or directed.

3.4.3. Match tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.

3.4.4. Lay tiles with grain running in one direction as indicated on drawings.

3.4.5. Lay tiles in simple pattern as decided during construction

3.4.6. Tiles to be rolled with a 3 section coated 100 lb roller in accordance with manufacturer’s installation instructions.

3.4.7. Finished flooring installation shall not show telegraphing of defects in substrate. Finished flooring installation shall be homogenous free of substrate lines, adhesive trowel lines, pockets, bumps and unevenness which are outside of specified tolerances.

3.4.8. Reducing Strips: Protect exposed edges of resilient flooring, where finished and unfinished area adjoin, by means of reducing strips butting to and flush with finished surface of floor covering material.

3.5. CLEANING

3.5.1. Remove excess adhesive from floor, base and wall surfaces without damage.

3.5.2. Clean floor and base surface to flooring manufacturer's instructions.

3.5.3. Perform the following operations immediately after completing resilient product installation:

3.5.3.1. Remove adhesive and other blemishes from exposed surfaces.

3.5.3.2. Sweep and vacuum surfaces thoroughly.

3.5.3.3. Damp-mop surfaces to remove marks and soil.

3.5.4. 72 hours after installation is completed, initial maintenance procedures must be implemented in accordance with manufacturer's requirements. Refer to Tarkett Vinyl Composition Tile Maintenance Instructions for complete maintenance details. .

3.6. PROTECTION

3.6.1. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods recommended in writing by manufacturer.

3.6.2. Cover products installed on horizontal surfaces with undyed, untreated building paper until Substantial Performance.

3.6.3. Do not move heavy and sharp objects directly over surfaces. Place hardboard or plywood panels over flooring and under objects while they are being moved. Slide or roll objects over panels without moving panels.

3.6.4. Prohibit foot traffic on floor for 24 hours after installation. Prohibit heavy traffic, rolling loads and furniture or appliance placement for a minimum of 72 hours after installation.

END OF SECTION

PART 1 - GENERAL

1.1. GENERAL INSTRUCTIONS

1.1.1. Read and conform to:

1.1.1.1. Division 01 requirements and documents referred to therein.

1.2. SUMMARY

1.2.1. Section Includes: Provide resinous epoxy flooring including but not limited to following:

1.2.1.1. Provide labour, materials, tools and equipment required to install complete resinous flooring system specified in this Section including surface preparation.

1.2.1.2. Reducing strips and thresholds at junction with adjacent finishes.

1.2.1.3. Coved base cap.

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

1.2.2.1. Filling of major holes, chases and trenches in concrete substrate Flatness and levelness requirements for floor to receive resilient sheet flooring: Section 03 01 30 – Repairs to Concrete.

1.2.2.2. Testing and preparation of concrete to receive resinous flooring: Section 09 05 61 - Common Work Results for Flooring Preparation.

1.3. REFERENCES

1.3.1. Abbreviations and Acronyms:

1.3.1.1. ANSI; American National Standards Institute

1.3.1.2. CSP: Concrete Surface Profile

1.3.1.3. DCOF: Dynamic Coefficient of Friction

1.3.1.4. DFT: dry film thickness

1.3.1.5. IRCI: International Concrete Repair Institute

1.3.1.6. SDS: Safety Data Sheets.

1.3.1.7. RH: Relative Humidity.

1.3.1.8. WFT: wet film thickness.

1.3.2. Reference Standards:

1.3.2.1. ANSI A326.3-2021 - American National Standard Test Method For Measuring Dynamic Coefficient Of Friction Of Hard Surface Flooring Materials

1.3.2.2. ASTM C579-2023 - Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.

1.3.2.3. ASTM C580-18(2023) - Standard Test Method for Flexural Strength and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes.

1.3.2.4. ASTM C920-18 - Standard Specification for Elastomeric Joint Sealants

1.3.2.5. ASTM D635-22 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.

1.3.2.6. ASTM D638-22 - Standard Test Method for Tensile Properties of Plastics.

1.3.2.7. ASTM D695-23 - Standard Test Method for Compressive Properties of Rigid Plastics.

1.3.2.8. ASTM D2240- 15 (2021) - Standard Test Method for Rubber Property-Durometer Hardness.

1.3.2.9. ASTM D2369-20 - Standard Test Method for Volatile Content of Coatings.

1.3.2.10. ASTM D2794-93 (2024) - Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).

1.3.2.11. ASTM D3273-2021 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.

1.3.2.12. ASTM D4060-19 - Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser.

1.3.2.13. ASTM D4541-22 - Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers.

1.3.2.14. ASTM E303-22 - Standard Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester

1.3.2.15. ASTM G21-15(2021)e1 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi

1.4. ADMINISTRATIVE REQUIREMENTS

1.4.1. Coordination:

1.4.1.1. Ensure that substrate treatments for moisture, repair, or levelling are compatible with the manufacturer of work in this Section.

1.4.2. Preinstallation Meeting:

1.4.2.1. Prior to start of work, arrange for site meeting of parties associated with work of this Section. Presided over by Contractor, include Consultant, Subcontractor, and manufacturer’s representative.

1.4.2.2. Review work included under this Section and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials to be used, installation, methods and procedures, quality control, Project staffing, restrictions on areas of work and other matters affecting construction, to permit compliance with intent of this Section. Also discuss following items:

1.4.2.2.1. Surface preparation.

1.4.2.2.2. Priming.

1.4.2.2.3. Application.

1.4.2.2.4. Curing and protection.

1.4.2.2.5. Coordination with other Work.

1.5. SUBMITTALS

1.5.1. Submittals in accordance with Submittal Procedures specifies in Division 01.

1.5.2. Product Data:

1.5.2.1. Material List: An inclusive list of required coating materials. Identify each material by manufacturer's catalog number and general classification.

1.5.2.2. Manufacturer's Information: Manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material proposed for use.

1.5.2.3. SDS: Submit Manufacturer’s Safety Data Sheet for each Product being used.

1.5.3. Samples for Verification:

1.5.3.1. Submit samples of each colour and material being applied, with texture to simulate actual conditions, on representative samples of the actual substrate and as follows for Consultant's verification.

1.5.3.2. Use representative colours when preparing samples for review; resubmit until required sheen, colour, and texture are achieved.

1.5.3.3. List of material and application for each coat of each sample; label each sample for location and application.

1.5.3.4. Submit samples on 100 mm square hardboard for Consultant's review of colour and texture:

1.5.4. Certificates:

1.5.4.1. Installer Certificates: Signed by manufacturer certifying that installers comply with specified requirements.

1.5.4.2. Material Certificates: For each resinous floor coating component, signed by manufacturer.

1.6. CLOSEOUT SUBMITTALS

1.6.1. Operating and Maintenance Data: Provide maintenance data for resinous flooring for incorporation into maintenance manual specified in Closeout Submittals in Division 01.

1.6.1.1. Include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance.

1.6.1.2. Include name of original installer and contact information

1.7. QUALITY ASSURANCE

1.7.1. Applicator Qualifications:

1.7.1.1. Applicators: Use experienced applicators having a record of successful in-service resinous flooring system applications similar in material and extent to those specified in this Section and as follows:

1.7.1.1.1. Applicators must have completed flooring manufacturer's training program for Products specified.

1.7.1.1.2. Applicators must be licensed, certified or approved in writing by the flooring manufacturer for the Products specified.

1.7.1.2. Applicator Experience: Minimum 5 years' experience in the application of the type of system specified. Applicator shall submit a list of five (5) projects of similar size, scope and complexity.

1.7.2. Mock-Up:

1.7.2.1. Construct one 10 sq.m. (100 sq.ft.) mock-up of each type and colour of resinous flooring in location acceptable to Consultant to demonstrate quality of finished system, complying with manufacturer's installation instructions and requirements of this Section and in accordance with Quality Requirements specified in Division 01.

1.7.2.2. Arrange for Consultant's review and acceptance, obtain written acceptance before proceeding with Work.

1.7.2.3. Upon acceptance, mock-up shall serve as a minimum standard of quality for the balance of the Work of this Section. Mock-up shall be left in place for the duration of the Work.

1.8. DELIVERY, STORAGE AND HANDLING

1.8.1. Delivery:

1.8.1.1. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name, manufacturer, batch or lot number and date of manufacture.

1.8.1.2. Material should be delivered to job site and checked for completeness and shipping damage prior to job start.

1.8.2. Storage:

1.8.2.1. Store materials in accordance with manufacturer’s written instructions.

1.8.2.2. Keep containers sealed until ready for use. Material should be stored in a dry, enclosed, well-ventilated, protected area from the elements.

1.8.2.3. Do not subject material to excessive heat or freezing.

1.8.2.4. Shelf life: Established based on manufacturer’s written recommendation for each material being used.

1.8.3. Handling:

1.8.3.1. Protect materials during handling and application to prevent damage or contamination.

1.8.3.2. Condition materials for use accordingly to manufacturer’s written instructions prior to application.

1.8.3.3. Record material lot numbers and quantities delivered to jobsite/storage.

1.8.3.4. All materials used shall be pre-packaged in single, easy to manage batches to eliminate on site mixing errors. No on site weighing or volumetric measurements allowed.

1.9. SITE CONDITIONS

1.9.1. Ambient Conditions:

1.9.1.1. Maintain appropriate environmental conditions and protect work during and after installation. Comply with trade standards and manufacturer’s Product instructions. Follow Product SDS and label instructions concerning safety, health and other related precautionary and environmental protection. Comply with applicable federal, provincial, local and statutory regulations.

1.9.1.2. Close doors and windows. Turn off radiant floor heating systems and protect work area from direct draft, sun and heat exposure during installation and for at least 72 hours after completion.

1.9.1.3. When necessary, build a temporary shelter and use indirect auxiliary heaters to maintain an adequate temperature level in work environment.

1.9.1.4. Maintain relative humidity in accordance with manufacturer’s instructions. Maximum ambient humidity 85% during application and curing.

1.9.1.5. Exhaust temporary heaters to building exterior to prevent health hazards and damage to work from toxic fumes and emanations.

1.9.1.6. Maintain temperature of floor covering areas at not less than 18 deg C (65 deg F) or more than 38 deg C (100 deg F) 48 hours before, during installation and for 48 hours after application unless otherwise required in Product instructions.

1.9.1.7. Ensure adequate ventilation and air flow.

1.10. WARRANTY

1.10.1. Submit Applicator's written warranty, signed and issued in the name of Owner warranting the Work of this Section against defects in materials and workmanship for a period of one year from the date of Substantial Performance of the Work.

PART 2 - PRODUCTS

2.1. MANUFACTURERS

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

2.1.1.1. BASF; www.master-builders-solutions.basf.com

2.1.1.2. Dur-A-Flex; www.dur-a-flex.com

2.1.1.3. Neogard; www.neogard.com

2.1.1.4. Niagara Protective Coatings; www.niacoat.com

2.1.1.5. R & D Technical Solutions Ltd.; www.kelmar.com

2.1.1.6. Sherwin Williams; www.sherwin-williams.com

2.1.1.7. Sika Canada Inc.; www.sikacanada.com

2.1.1.8. Tnemec Inc.; www.tnemec.com

2.1.1.9. MPC Coatings; www.mpcoatings.ca

2.1.2. Products from manufacturers listed will be considered provided they meet the performance requirements.

2.1.3. Products from manufacturers not listed will not be considered. Proposed substitutions for products by any manufacturer not listed above will be rejected.

2.1.4. Source Limitations: Obtain primary resinous floor coatings through one source from a single manufacturer. Provide secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from source recommended by manufacturer of primary materials.

2.2. DESIGN/PERFORMANCE REQUIREMENTS

2.2.1. Slip Resistance for level surfaces in wet areas: 0.50 Dynamic Coefficient of Friction (DCOF) rating or greater to ANSI A326.3.

2.2.2. Material Compatibility: Provide primers, undercoats, and finish-coat materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

2.3. MATERIALS

2.3.1. Concrete primer for slab on grade:

2.3.1.1. Basis of Design: Sikafloor 1620 by Sika Canada Inc. one coat moisture vapour control clear epoxy primer

2.3.2. Suspended slab waterproofing:

2.3.2.1. Basis of Design: Sikalastic 390 by Sika Canada Inc. two-component, solvent-free, elastomeric and crack bridging polyurethane waterproofing membrane

2.3.2.2. Primer: Sika® MT Primer:

2.3.2.2.1. Applied thickness: 2 coats at 8 - 10 mils WFT per coat

2.3.3. Broadcast and sealed decorative epoxy floor, composed of multi-coloured decorative flakes:

2.3.3.1. Basis of Design Sikafloor Decoflake system by Sika Canada Inc. **(EF)**

2.3.3.2. Performance Requirements:

2.3.3.2.1. Compressive Strength: 70 MPa (10,152 psi) at 28 days in accordance with ASTM C579.

2.3.3.2.2. Flexural Strength: 83 MPa (12,038 psi) at 28 days in accordance with ASTM C580.

2.3.3.2.3. Hardness: 85 Shore D at 7 days in accordance with ASTM D2240.

2.3.3.2.4. VOC Content: ≤ 50 g/L in accordance with ASTM D2369.

2.3.3.2.5. Pull-off Strength: > 2.0 MPa (290 psi) with 100% concrete failure in accordance with ASTM D4541.

2.3.3.2.6. Flammability: Self-extinguishing in accordance with ASTM D635.

2.3.3.2.7. System Thickness: minimum 3 mm (1/8”)

2.3.3.3. Components:

2.3.3.3.1. Primer and Body Coat: two component, solid colour, high solids, silicone free, low viscosity, self-priming, glossy epoxy finish, Sikafloor® 261.

2.3.3.3.1.1. Applied Thickness:

2.3.3.3.1.1.1. Prime Coat: 203 µm (8 mils) WFT

2.3.3.3.1.1.2. Body Coat: 726 µm (30 mils) WFT

2.3.3.3.1.2. Compressive Strength: 56 MPa (8,122 psi) in accordance with ASTM D695.

2.3.3.3.1.3. Tensile Strength: 7.4 MPa (1,073 psi) in accordance with ASTM D638.

2.3.3.3.1.4. Pull-off Strength: 2 MPa (290 psi) in accordance with ASTM D4541.

2.3.3.3.1.5. Hardness: 76 Shore D in accordance with ASTM D2240.

2.3.3.3.1.6. VOC Content: ≤ 50 g/L in accordance with ASTM D2369.

2.3.3.3.1.7. Impact Resistance: 5.88 joules in accordance with ASTM D2794.

2.3.3.3.1.8. Abrasion Resistance: 0.11g loss in accordance with ASTM D4060 (CS17/1000cycles/1000g).

2.3.3.3.2. Aggregate: Colored vinyl chips, DecoFlakes, sizes to be determined by Consultant as per submitted and accepted samples.

2.3.3.3.3. Grout Coat: two component, high solids, low odour, low VOC, high strength, high gloss, clear epoxy resin, Sikafloor® 2002.

2.3.3.3.3.1. Applied Thickness: 254 µm (10 mils) WFT

2.3.3.3.3.2. Compressive Strength: 49.9 MPa (7250 psi.) in accordance with ASTM C579.

2.3.3.3.3.3. Tensile Strength: 39.5 MPa (5728 psi.) in accordance with ASTM D638.

2.3.3.3.3.4. VOC Content: ≤ 25 g/L in accordance with ASTM D2369.

2.3.3.3.3.5. Elongation: 11% in accordance with ASTM D638.

2.3.3.3.3.6. Hardness: 80 Shore D in accordance with ASTM D2240.

2.3.3.3.4. Top Coat: two-component, clear aliphatic urethane, Sikafloor® 942 with slip resistant aggregate. Gloss level: to be advised by Consultant.

2.3.3.3.4.1. Applied Thickness: 2 coats at 4 mils WFT per coat

2.3.3.3.4.2. Tensile Strength: 37.2 MPa (5400 psi.) in accordance with ASTM D638.

2.3.3.3.4.3. VOC Content: ≤ 240 g/L in accordance with ASTM D2369.

2.3.3.3.4.4. Elongation: 6.2% in accordance with ASTM D638.

2.3.3.3.4.5. Cove Mortar: three-component, solid colour, low odour, low VOC, vertical grade coving and detailing mortar with primer, Sikafloor® Morritex Epoxy Cove Mortar

2.3.3.3.4.6. Compressive Strength: 41 MPa (5946 psi) at 28 days in accordance with ASTM D695.

2.3.3.3.4.7. Tensile Strength: 36 MPa (5221 psi) at 28 days in accordance with ASTM D638.

2.3.3.3.4.8. Hardness: 83 Shore D in accordance with ASTM D2240.

2.3.3.3.4.9. VOC Content: ≤ 5 g/L in accordance with ASTM D2369.

2.3.3.3.4.10. Pull-off Strength: > 1.7 MPa (246 psi) with 100% substrate failure in accordance with ASTM D4541.

2.3.4. Epoxy Floor for Wet Areas **(EFW):**

2.3.4.1. Basis of Design: Sikafloor Quartzite HDB System by Sika Canada, two layer epoxy floor system.

2.3.4.2. Performance Requirements:

2.3.4.2.1. Hardness: 85 Shore D in accordance with ASTM D2240.

2.3.4.2.2. Tensile Strength: 6 MPa (870 psi.) in accordance with ASTM D638.

2.3.4.2.3. Compressive Strength: 91 MPa (13198 psi) at 28 days in accordance with ASTM C579.

2.3.4.2.4. Flexural Strength: 28 MPa (4061 psi) at 28 days in accordance with ASTM C580.

2.3.4.2.5. Hardness: 85 Shore D at 7 days in accordance with ASTM D2240.

2.3.4.2.6. VOC Content: ≤ 25 g/L in accordance with ASTM D2369.

2.3.4.2.7. Pull-off Strength: > 2.7 MPa (400 psi) with 100% concrete failure in accordance with ASTM D7234.

2.3.4.2.8. Flammability: Self-extinguishing in accordance with ASTM D635.

2.3.4.2.9. System Thickness: minimum 5 mm (3/16”)

2.3.4.3. Components:

2.3.4.3.1. Primer and Body Coat: two component, solvent free, low viscosity, epoxy, Sikafloor® 156.

2.3.4.3.1.1. Applied Thickness:

2.3.4.3.1.1.1. First coat: 3 mm (1/8 in).

2.3.4.3.1.1.2. Second coat: 2 mm (5/64 in)

2.3.4.3.2. Top Coat: two component, high solids, low odour, low VOC, high strength, high gloss, clear epoxy resin, Sikafloor® 2002 with non-slip aggregate:

2.3.4.3.2.1.1. Aggregate: Sikafloor Aggregate PT.

2.3.4.3.2.1.2. Applied Thickness: 20 mils WFT

2.4. ACCESSORY MATERIALS

2.4.1. Patching and Fill Material: Resinous product of or approved by resinous flooring manufacturer and recommended by manufacturer for application indicated.

2.4.2. Crack Reinforcing Tape: Elastic 100% nylon double weave tape that only stretches in 1 direction - sideways. Ensure tape is capable of imparting dimensional strength with elasticity. Ensure tape allows for crack movement. “Crack Reinforcing Tape (CRT)” by R & D Technical Solutions Ltd.

2.4.3. Silica Broadcast Aggregates: Medium texture #32 (spherical) 0.3 – 0.85 mm by Bell & MacKenzie Co. Ltd.

2.4.4. Divider Strips: 'L' shape to required floor thickness, white alloy zinc.

2.4.5. Cove Cap: stainless steel.

2.4.6. Base top strip: L shape white alloy or zinc base bead top strips as recommended by manufacturer.

2.4.7. Joint Backing: Preformed, compressible strips of closed cell polyethylene or urethane foam, rubber tubing or non-migrating plasticized vinyl with shore 'A' hardness of 20 and tensile strength between 140 kPa and 200 kPa. Sizes and shapes to suit various conditions, diameter 25% greater than joint width. Compatible with sealant, primer, resinous flooring and substrate.

2.4.8. Joint Sealant: Pour grade, multi-component, polyurethane sealant conforming to ASTM C920, Type M, Grade P, Class 25, Use T, M, A, I and O. Supply 1 of following:

2.4.8.1. “MasterSeal® SL 2™" by BASF.

2.4.8.2. “Sikaflex® 2c SL” by Sika Canada Inc.

2.4.8.3. “THC-900/901 or Vulkem® 245" by Tremco Canada.

2.4.9. Metal edge trim:

2.4.9.1. For junctions of resilient sheet vinyl and resinous flooring Aluminum extruded, smooth, mill finish, “Visedge DS & VR Series by Howegreen; www.howegreen.com

PART 3 - EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions for New Concrete:

3.1.1.1. Ensure new concrete slab has been properly cured and dry for minimum of 28 Days and has reached minimum compressive strength of 25 MPa (3625 psi) and a minimum of 1.5 MPa (218 psi) in tension.

3.1.1.2. Verify that moisture vapour emissions testing, pH testing has been completed and results are within manufacturers acceptable limits.

3.1.1.3. Examine flooring preparation work and levelling underlayment is suitable. Profile equivalent to ICRI / CSP 3 – 6.

3.1.1.4. Notify Consultant in writing of any conditions which would be detrimental to the installation.

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

3.2. SURFACE PREPARATION

3.2.1. Prepare surface to receive flooring systems in accordance with manufacturer's written instructions.

3.2.2. Remove dirt, oil, grease, wax, laitance, curing compounds, water-soluble concrete hardeners, and other surface contaminants.

3.2.3. Remove sealers, finishes, and paints.

3.2.4. All projections, rough spots, etc. should be removed and patched to achieve a level surface prior to the application.

3.2.5. Remove unsound concrete by appropriate mechanical means.

3.2.6. Concrete: Clean and prepare to achieve laitance-free and contaminant-free, open textured surface by shot blasting or equivalent mechanical means. Provide CSP level in accordance with ICRI Guideline No. 310-2R and manufacturer’s written recommendation.

3.2.7. Chemical Surface Preparation: Chemical surface preparation (acid etching) is unacceptable.

3.2.8. Control Joints and Cracks: Repair and treat control joints and surface cracks utilizing manufacturer’s standard materials and installation details.

3.3. INSTALLATION

3.3.1. General:

3.3.1.1. Prepare, mix materials and apply each component of resinous flooring system in accordance with manufacturer's printed directions to produce uniform monolithic wearing surface of thickness indicated, with integral cove bases, uninterrupted except at divider strips, sawn joints or other types of joints required.

3.3.1.2. Apply flooring with care to ensure no laps, pin holes, voids, crawls, skips or other marks or irregularities are visible and to provide uniform appearance.

3.3.1.3. Work coating into corners and other restricted areas, up and over equipment bases and into recesses in floors to ensure full coverage.

3.3.1.4. Make clean true junctions with no visible overlap between adjoining applications of coatings.

3.3.1.5. Match approved sample for colour, sheen, texture and slip resistance.

3.3.1.6. For large areas, stop each Day's production at metal dividing strip at lines reviewed by Consultant.

3.3.2. Application Moisture Control Primer:

3.3.2.1. Apply primer by squeegee at the rate of 105 - 135 ft2/ mixed US gal.(2.75 - 3.32 m2/ L) (at 12–15 mils (0.30-0.38 mm) WFT

3.3.3. Application Waterproofing Membrane:

3.3.3.1. Apply membrane at a rate of 1.6 m2/L (65 ft2/US gal.) using a notched squeegee and backroll to provide a uniform 30 mil (750 microns) WFT

3.3.3.2. Allow a minimum of 6 hours and maximum 24 hours cure time at 23 °C (73 °F) prior to installing wear course.

3.3.4. Application Screed Mortar:

3.3.4.1. Pour mortar onto surface and spread to appropriate thickness using a notched squeegee, trowel or screed bar.

3.3.4.2. Spread newly mixed materials across the transition of previous applied mixes before the surface begins to set.

3.3.4.3. Immediately spike roll the surface to release trapped air in the matrix.

3.3.4.4. Broadcast aggregates to the wet surface to rejection. Ensure complete aggregate coverage to all areas to avoid bald spots.

3.3.5. Application Cove Mortar:

3.3.5.1. Primer: Apply primer over prepared substrate, at manufacturer's recommended spreading rate with timing of application coordinated with subsequent application of cove mortar to ensure optimum adhesion between resinous flooring materials and substrate.

3.3.5.2. While primer is tacky, spread cove mortar onto vertical surfaces using steel trowels, ensuring the mortar is well compacted onto the primer and within itself.

3.3.5.3. Cove radius: 25 mm (1 in).

3.3.5.4. Install base bead top strips at heights indicated on drawings straight and level.

3.3.5.5. Shape fillets at wall/floor junctions using the appropriate tools, to match approved mock-up example. Round interior and exterior corners. Close any surface voids in accordance with manufacturer’s recommendations.

3.3.5.6. Install cove caps in locations where cove will remain exposed, not covered with wall protection sheets. Apply anti-microbial sealant.

3.3.6. Application Topcoat:

3.3.6.1. Apply topcoat in accordance with manufacturer’s recommendations to achieve satin anti-slip finish.

3.3.6.2. Sweep-up and vacuum loose unbonded silica aggregate.

3.3.6.3. Apply top coat using a squeegee, followed by backrolling to provide a uniform texture and finish.

3.3.6.4. Allow minimum 24 hours cure period at 20 °C (68 °F) before foot traffic.

3.3.7. Thresholds:

3.3.7.1. Where resinous flooring terminates at doorways and difference in height occurs between resinous flooring and other finishes, install tapered aluminum thresholds not less than 25 mm (1") wide and full thickness of difference in level.

3.3.7.2. Where resinous flooring terminates at doorways and difference in height occurs between polyurethane flooring and other floor finishes, cut back slab for 32 mm (1-1/4") width to allow full thickness of polyurethane flooring to be flush with adjacent floor finish (chasing).

3.3.7.3. Where resinous flooring terminates at doorways and floor finishes are of same thickness, provide metal divider strips flush with surfaces.

3.3.8. Floor Drains:

3.3.8.1. Slope flooring to drains minimum of 3 mm in 300 mm (1/8" in 12") from furthest surface point.

3.3.8.2. Grind concrete around perimeter to provide 6 mm (1/4") thickness of resinous flooring material which is flush with top of drain and slopes as indicated on Drawings.

3.3.9. Chasing: Provide chase where resinous flooring does not abut against vertical surface by chiseling out 38 mm (1-1/2") wide chase to straight saw-cut 13 mm (1/2") depth.

3.3.10. Joints: Where substrate is interrupted by isolation, control or expansion joints, provide saw-cut joint in polyurethane flooring after floor installation. Install backer rod and fill with manufacturer's recommended sealant.

3.3.11. Site Tolerances: Finish resinous flooring surfaces to produce plumb and level floor, or straight where sloped to drains, within tolerance of 3 mm in 3 m (1/8" in 10').

3.4. SITE QUALITY CONTROL

3.4.1. Non-Conforming Work: Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of Consultant at no cost to Owner.

3.4.2. Manufacturer Services:

3.4.2.1. Ensure resinous flooring manufacturer representative's presence at pre-installation site meeting and on site Day resinous flooring application is commenced and periodically thereafter, to ensure work is properly performed.

3.4.2.2. Submit field inspection reports. Submit final inspection report confirming that materials have been correctly applied, in accordance with the manufacturer's instructions and in accordance with warranty requirements for proper workmanship.

3.5. CLEANING

3.5.1. Remove promptly as work progresses spilled or splattered resinous flooring materials from adjacent surfaces. Clean resinous floors on completion of Work. Do not mar surfaces while removing splatters.

3.6. PROTECTION

3.6.1. Protect adjacent surfaces from damage resulting from work of this Section. If necessary, cover or mask adjacent surfaces to those receiving flooring including fixtures and equipment.

3.6.2. Protect freshly applied Products from dampness, condensation and water for at least seventy-two (72) hours.

3.6.3. Monitor air flow and changes in air flow. Protect against introduction of dust, debris, and particles, etc. that may result in surface imperfections and other defects.

3.6.4. Erect barriers to prevent entry and presence of workers not performing work of this Section during application of resinous flooring and for 72 hours following completion of application.

3.6.5. Post "No Smoking" signs while work is in progress and curing. Ensure sparkproof electrical equipment is used in areas where inflammable materials are being applied. Prevent use of open flames or equipment that may cause sparks during this phase of work.

3.6.6. Protect completed work from traffic for at least 1 week to allow proper curing of resinous floor finish. Protect work from any trades using area after completion of installation.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

1.1.1. Section Includes: painting new and existing surfaces as indicated on the drawings and specifications. Work under this contract shall also include, but not necessarily be limited to following:

1.1.1.1. Surface preparation of substrate: cleaning and preparation of surfaces for application of paint systems.

1.1.1.2. Priming except where pre-primed with an approved primer under other Sections of work and painting of structural steel, miscellaneous metal, ornamental metal and primed steel equipment.

1.1.1.3. Priming and back-priming of wood materials as noted herein.

1.1.1.4. Painting of all semi-concealed areas e.g. inside of light troughs and valances, behind grilles, and projecting edges above and below sight lines.

1.1.1.5. Painting and finishing of all door frames.

1.1.1.6. Provision of safe and adequate ventilation as required over and above temporary ventilation supplied by others, where toxic and/or volatile / flammable materials are being used.

1.2. REFERENCES

1.2.1. Definitions:

1.2.1.1. Exposed: Visible in completed work. In case of closets, cabinets and drawers, it includes their interiors.

1.2.1.2. Gloss or Sheen: Capacity of a finish on a surface to reflect light at specific angles as tested in accordance with ASTM D523.

1.2.1.3. Hazardous Waste: Construction and demolition materials that are regulated for disposal by local, city, county, province or federal authorities having jurisdiction.

1.2.1.4. Painting: In this Section refers to application of various types of paint, stain, varnishes and lacquers, etc.

1.2.1.5. Surface Preparation: Cleaning or treating of surface to be painted to ensure best possible bond between surface and painting to be applied to surface; remove surface contaminants that will affect performance of painting, without limitations such as oil, grease, salts, dust, dirt, rust, rust scale, mill scale and old coatings where applicable; remove surface imperfections without limitation including but not limited to such as weld spatter, sharp edges, burrs, slivers, laminations, pits, porosities and crevices; prepare surfaces to provide anchor profile or surface profile which improve mechanical bonding of coating to prepared surface by increasing surface area.

1.3. SUBMITTALS

1.3.1. Product Data:

1.3.1.1. Submit Product data and a Schedule of Finishes listing manufacturer's Product name, colour, textures, SDS and test reports requested for each paint system. Submit test reports for odourless, low or zero VOC Products when requested.

1.3.1.2. Painting Subcontractor to receive written confirmation of specific surface preparation procedures and primers used for fabricated steel items from fabricator/supplier to ensure appropriate and manufacturer compatible finish coat materials prior to commencement of painting.

1.3.1.3. Submit Product data for concrete and concrete block primers.

1.3.2. Samples: Submit samples 30 Days before materials are required.

1.3.2.1. Submit following samples in sizes indicated:

1.3.2.1.1. 2 copies of brushouts minimum 200 mm x 250 mm (8" x 10") of each finish including colour, sheen and texture. Identify each sample with job, finish, colour name, number, sheen and gloss values, substrate to be applied to, date and name of Subcontractor.

1.4. SITE CONDITIONS

1.4.1. Ambient Conditions:

1.4.1.1. Paint and finish in clean, dust-free, properly ventilated and adequately lit areas minimum 323 Lx (30 ft candles) on surfaces to be painted or decorated.

1.4.1.2. Provide each paint materials in accordance with manufacturer's recommended tolerances for:

1.4.1.2.1. Substrate Moisture Content: Perform tests with a properly calibrated electronic moisture meter to ensure compliance with manufacturer's recommendations. Without limitation, maximum moisture content as follows:

1.4.1.2.1.1. Concrete and Concrete Unit Masonry: Maximum 12 - 14% for solvent coatings and as recommended by manufacturer for each water based system.

1.4.1.2.1.2. Gypsum Based Board and Plaster: Maximum 12 - 14%.

1.4.1.2.1.3. Wood: Maximum 15%.

PART 2 - PRODUCTS

2.1. MANUFACTURERS

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

2.1.1.1. Benjamin-Moore www.benjaminmoore.com

2.1.1.2. Dulux Paints www.dulux.ca

2.1.1.3. Sherwin Williams www.sherwin-williams.com

2.1.2. Basis of Design: for interior latex applications (PT-1): “Promar 200 HP Zero VOC” by Sherwin Williams

2.1.3. Substitution Limitations: Substitution Limitations: Comparable Products from other manufacturers not listed herein will be considered provided:

2.1.3.1. They are submitted in accordance with Substitution Procedures specified in Division 01

2.1.3.2. Meet requirements of this Specification.

2.1.3.3. Acceptance by Consultant.

2.2. MATERIALS

2.2.1. General: paint systems for existing surfaces shall be same finish system as for new work as specified below, but primer for existing painted or wallpapered surfaces: 1 coat X-Pert Gripper 250 by PPG, or as otherwise recommended by the finish paint manufacturer.

2.2.2. Finishes:

2.2.2.1. Colours: to be selected by Consultant

2.2.2.2. Gloss Values Definition, as determined by ASTM D523:

		Light Reflection Unit
G1	Gloss Level 1 – Traditional matte finish, Flat	< 5
G2	Gloss Level 2 – High side sheen Flat, “Velvet-like” finish	< 10
G3	Gloss Level 3 – Traditional “Eggshell-like” finish	10 - 25
G4	Gloss Level 4 – “Satin-like” finish	20 - 35
G5	Gloss Level 5 – Traditional Semi-Gloss	35 - 70
G6	Gloss Level 6 – Traditional Gloss	70 - 85
G7	Gloss Level 7 – High Gloss	> 85

2.2.2.3. Gloss Values unless otherwise specified:

2.2.2.3.1. Walls: G4

2.2.2.3.2. Floors: G5 or G6

2.2.2.3.3. Ceilings: G1

2.2.2.3.4. Trim and Doors: G5

2.2.2.3.5. Signage: G1

2.2.3. Mixing and Tinting:

2.2.3.1. Unless otherwise specified herein or pre-approved, all paint shall be ready-mixed and pre-tinted. Re-mix all paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and color and gloss uniformity.

2.3. INTERIOR FINISH SCHEDULE:

2.3.1. Concrete Vertical Surfaces:

2.3.1.1. 1 coat primer alkali resistant water based: Dulux Gripper Universal Acrylic Primer/ Sealer code 60000A

2.3.1.2. 2 coats latex: Dulux Lifemaster code 59311

2.3.1.3. Finish: G3 -Eggshell.

2.3.2. Concrete Masonry Units (CMU’s): (concrete block and concrete brick):

2.3.2.1. 1 coat latex block filler: Dulux X-Pert Acryluc

2.3.2.2. 2 coats latex: Dulux Lifemaster code 59311

2.3.2.3. Finish: G3 -Eggshell.

2.3.3. Structural Steel and Metal Fabrications: (with existing shop coat primer):

2.3.3.1. Unexposed: No further finishing required except for touch-up of damaged surfaces.

2.3.3.2. Exposed:

2.3.3.2.1. 1 coat quick dry metal primer: PPG Pitt-Tech Plus EP WB Acrylic Primer

2.3.3.2.2. 2 coats quick dry enamel: PPG HPC Alkyd Industrial Semi-Gloss Enamel code 4336H

2.3.3.2.3. Finish: G5 - Semi-Gloss.

2.3.4. Galvanized Metal (Not Chromate Passivated): (High contact/high traffic areas (doors, frames, railings, pipes, etc.) low contact/low traffic areas (overhead decking, pipes, ducts, etc.):

2.3.4.1. 1 coat waterborne primer: PPG Pitt-Tech Plus EP WB Acrylic Primer

2.3.4.2. 2 coats latex: Dulux acrylic eggshell code 14220

2.3.4.3. Finish: G3 - Eggshell

2.3.5. Gypsum Board:

2.3.5.1. 1 coat latex primer sealer: Dulux X-Pert code 11000

2.3.5.2. 2 coats latex:

2.3.5.2.1. Walls: Dulux Lifemaster code 59311

2.3.5.2.1.1. Finish: G3 - Eggshell

2.3.5.2.2. Ceilings: Dulux Lifemaster code 59111

2.3.5.2.2.1. Finish: G1 - Flat.

2.3.6. Plywood Backer Panels:

2.3.6.1. 2 coats Albi Cote FRL-X

2.3.6.2. Finish: G1 – Flat

PART 3 - EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions:

3.1.1.1. Do work only when surfaces and conditions are satisfactory for production of quality work. Report to Consultant in writing any surfaces which are found to be unsatisfactory.

3.1.1.2. Ensure temperature of surfaces to be finished are as required for application of finish. Refer to “Temperature and Ventilation” article specified herein. Ensure surfaces are dry and free of dirt, grease or other contaminants that may affect applied finish.

3.1.1.3. Verify moisture content of surfaces with electronic moisture meter. Do not proceed without written directions if moisture reading is higher than as required for application. Refer to “Ambient Conditions” article specified herein for substrate moisture content requirements.

3.1.1.4. If substrate is masonry, allow to cure for 30 to 90 Days. Ensure moisture content is between 12% and 14% and test for alkalinity and neutralize (pH 6.5 - 7.5) before proceeding with priming.

3.1.1.5. If substrate is gypsum board, inspect to ensure joints are completely filled and sanded smooth. Inspect surfaces for "nail popping", screw heads not recessed and taped, breaks in surface or other imperfections and have repaired as required.

3.2. PREPARATION

3.2.1. Protection of In-Place Conditions:

3.2.1.1. Provide scaffolding, staging, platforms and ladders, as required for execution of work. Erect scaffolding to avoid interference with work of other trades. Comply with Occupational Health and Safety Act.

3.2.1.2. During work of this Section, provide drop cloths, plastic, plywood or metal sheets to protect floors in areas assigned for storage and mixing of paints. Cover finished floors, walls, ceilings and other work in vicinity and protect from paint and damage.

3.2.1.3. Protect work of other trades against paint splattering and Make Good at own expense any such damage.

3.2.1.4. Vacuum clean floors in areas to be painted.

3.2.1.5. Remove and securely store miscellaneous and finish hardware and surface fittings, electrical switch and outlet covers, receptacle plates, louvres, fittings and fastenings, to protect from paint splatter. Mask items not removable. Use sufficient drop cloths and protective coverings for full protection of floors, furnishings, mechanical, electrical and special equipment, other components of building which do not require painting or to be removed, from paint spotting and other soiling. Carefully clean and re-install items when paint is dry. Clean any components that are paint spotted or soiled. Do not use solvent or reactive cleaning agents on items that will mar or remove finishes (e.g. lacquer finishes).

3.2.1.6. Prohibit traffic, where possible, from areas where painting is being carried out and until paint is cured. Post “wet paint” or other warning signage during and on completion of work. Provide also warning signs at points of entry to areas where painting is applied and drying.

3.2.2. Surface Preparation:

3.2.2.1. Prepare defective surfaces to obtain a satisfactory substrate and in accordance with paint manufacturer's instructions.

3.2.2.2. Prior to painting, wipe down wall surfaces, vacuum clean floors, ensure all surfaces are dust-free.

3.2.2.3. Clean soiled surfaces to be painted. Wash existing surfaces with a biodegradable detergent, and bleach where applicable, and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants. Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface. Allow surfaces to drain completely and allow to dry thoroughly.

3.2.2.4. Remove efflorescence, chalk, dust, dirt, oil, grease, rust, form oil, release agents, loose mill scale and other extraneous matter from surfaces.

3.2.2.5. Remove mildew by scrubbing affected area with solution of 150 g (5.3 oz) TSP and 125 g (4.4 oz) bleach in 3.5 ℓ (0.92 gal) water. Rinse well with clean water and allow to dry. If condition is serious, source out finishes with extra mildew resistance.

3.2.2.6. Be responsible for surface preparation to suit surface condition and conform to level of cleaning based on SSPC, recommended metal cleaning procedures most commonly used to suit site conditions.

3.2.2.7. Existing surfaces - general: Remove or set screws, nails, hooks, tacks, and fasteners. Make repairs to damaged surfaces.

3.2.2.7.1. Existing gypsum board: Repair cracks and fissures by cutting away broken, damaged or loose material to expose substrate. Fill crack or damaged area with suitable new material in accordance with Section 09 29 00 – Gypsum Board.

3.2.2.8. Concrete and Masonry:

3.2.2.8.1. Form Oil Removal: Remove with Xylol or TSP.

3.2.2.8.2. Efflorescence Removal: Remove by dry brushing or washing with 1 part commercial muriatic acid to 20 parts water by volume and thoroughly rince with clean water.

3.2.2.8.3. Mildew Removal: Remove by scrubbing affected area with 1 part sodium hypochlorite to 3 parts water. Where dirt is also evident, add 1.36 kg (3 lbs) TSP to 6.8 ℓ (1.5 gal) of above solution.

3.2.2.8.4. Concrete Vertical Surfaces: Use sand blasting, high pressure water blasting, high pressure water blasting with abrasives, vacuum blasting with abrasives or alternatively, needle guns or power grinders equipped with suitable grinding stone, to remove concrete, loose mortar, fins, projections and surface contaminants. Vacuum or blow down and remove dust and loose particles from surface. Fill large cracks and/or voids in consultation with design engineer using either polyester, epoxy or acrylic resin, block filler or cement sand mixture in accordance with design engineer's written instructions. Fill only flush to surface and allow to set.

3.2.2.8.5. Concrete Block Masonry: Fill voids and cracks in masonry block wall to provide uniform surface for subsequent coats.

3.2.2.9. Metals:

3.2.2.9.1. Ensure application of paint and coatings occurs within appropriate time frame after cleaning when environmental conditions encourage flash-rusting, rusting, contamination or manufacturer's paint specifications require earlier applications.

3.2.2.9.2. SSPC-SP 3 (Power Tool Cleaning): Use of power sanders and wire brushes, impact tools, grinders and power chipping hammers to remove loose mill scale, loose rust, paint or other foreign matter. Do not employ power tool cleaning excessively causing burnished mill scale preventing primers to adhere properly.

3.2.2.9.3. Ferrous Metal: Clean to SSPC-SP 1/2/3, to suit site conditions. Remove loose rust and prime bare metal with rust inhibitive steel primer. Touch-up damaged shop applied primer using compatible Product. Provide full coat primer only if damage is extensive. Treat weld areas with phosphoric acid (5% solution).

3.2.2.9.4. Structural Steel/Miscellaneous Steel (previously painted and exposed by alterations work): Remove oil, grease, dirt, rust scale, loose mill scale, loose paint or coating by brush-off blast cleaning to SSPC-SP 7.

3.2.2.9.5. Hot Dipped Galvanized Steel (Unweathered): Allow to weather minimum of 26 weeks and Xylene clean to SSPC-SP 1 specified herein prior to coating to remove dust, dirt, grease, oxides and other foreign material. Remove silicates or similar surface treatments or any deposits of white rust by sanding or similar abrasive methods (bronze wool). Use of acetic acid to prepare galvanized surfaces is not acceptable.

3.2.2.9.6. Galvanized Steel (Weathered): Remove dust, dirt, grease, oxides and other foreign material and clean to SSPC-SP 1 specified herein prior to coating.

3.2.2.9.7. Galvanized Steel (Pre-Treated)(Non-Crystal Appearance): Follow manufacturer's recommendations for preparation, priming and coating of pre-treated galvanized steel.

3.2.2.9.8. Light Zinc Coated or Satin Coated Products (ZF075) mostly found in environmentally controlled areas. Follow manufacturer's recommendations for preparation, priming and coating.

3.2.2.9.9. Heavy Coated Zinc Z275 (G90) for high humidity areas and as specified. Follow manufacturer's recommendations for preparation, priming and coating.

3.2.2.9.10. Metal Doors: Remove doors before painting to paint bottom and top edges and re-hang once dry. Do not paint stainless steel or bronze door butts. Paint or finish top and bottom edges of doors. Touch-up or refinish tops and edges after fitting.

3.2.2.10. Previously Finished Surfaces:

3.2.2.10.1. Clean existing interior and exterior surfaces to be repainted or varnished to provide bond. Remove rust, scale, oil, grease, mildew, chemicals and other foreign matter. Remove loose paint and fill flush with suitable patching material. Clean off bubbled, cracked, peeling or otherwise defective paint by stripping with suitable environmental strippers or by burning. Do not burn off paints suspected of having lead content. Treat residue from stripping as Hazardous Waste.

3.2.2.10.2. Flatten gloss paint and varnish with sandpaper and wipe off dust. If previous coatings have failed so as to affect proper performance or appearance of coatings to be applied, remove previous coatings completely and prepare substrates properly and refinish as specified for new work.

3.2.2.10.3. Remove or set screws, nails, hooks, tacks, and fasteners. Make repairs to damaged surfaces.

3.2.2.10.4. Existing gypsum board: Repair cracks and fissures by cutting away broken, damaged or loose material to expose substrate. Fill crack or damaged area with suitable new material in accordance with Section 09 29 00 – Gypsum Board.

3.2.2.10.5. Leave entire surface suitable to receive designated finishes and in accordance with finish manufacturer's instructions.

3.2.2.11. Woodwork:

3.2.2.11.1. Verify and determine wood species, grain direction and structure, properties of finish, application method and exposure to elements. Check moisture content to avoid movement of wood caused by expansion and contraction due to changes in moisture content. Verify grain cut as it may interfere with adhesion of paint.

3.2.2.11.2. Apply wood finishing Product in following order and as needed for specific appearance and application specified herein. Sanding sealer to control penetration of subsequent coats to create more uniform finish. Stain to colour wood and highlight grain for final finish. Filler to fill pores of wood and control penetration of subsequent coats. Apply filler across grain forcing it into pores followed with rubbing and sanding when dried. For staining requirements mix stain with filler before applying for uniform finish. Finish coats to provide protection to wood.

3.2.2.11.3. Wood work for Opaque Coating: Seal knots and sapwood in surfaces to receive paint with alcohol-based primer-sealer. Seal door edges. Sand smooth rough surfaces of woodwork to be finished using No. 150 grit paper followed by a second sanding using No. 220 grit paper. Sand in direction of grain. Clean surfaces free of dust before applying first coat using brush, compressed air or tack rags. Fill nail holes, splits and scratches with non-shrinking filler after first coat is dry.

3.2.2.11.4. Prepare plywood surface by removing dirt and debris. Fill screw and nail holes or minor imperfections with recommended filler and sand properly to receive finish coating. Ensure plywood requiring stained or painted finish is primed with top quality alkyd primer. Use only penetrating quality stain over plywood.

3.2.2.11.5. Woodwork for Clear Finish or Stain: Sand smooth woodwork to be finished using No. 150 grit paper followed by a second sanding using No. 220 grit paper and clean surfaces free of dust using brush, compressed air or tack rags before applying first coat. Abrade surfaces with stiff brush to remove loose fibres and splinters. Fill nail holes, splits and scratches with non-shrinking filler tinted to match local grain condition after first coat is dry. Sand lightly between coats with No. 220 grit sandpaper and remove dust.

3.2.2.11.6. Remove salt deposits that may appear on wood surfaces treated with fire retarder.

3.2.2.11.7. Obtain inspection of glue laminated beams by assigned painting inspector to ensure shop sealer has been applied. Where non-specified shop sealer has been applied to beams or columns, remove and refinish in accordance with manufacturer's written instructions.

3.2.2.11.8. Wood Doors: Remove doors before painting to paint bottom and top edges and re-hang once dry. Paint or finish top and bottom edges of doors to be painted or stained. Touch-up or refinish tops and edges after fitting.

3.2.2.12. Gypsum Board:

3.2.2.12.1. Examine and ensure gypsum board surfaces are without defects or deficiencies and suit able to receive painting applications. Commencement implies acceptance of gypsum board work. Examine surfaces after for imperfections showing through and fill small nicks or holes with patching compound and sand smooth. Examine surfaces after priming for imperfections showing through.

3.2.2.12.2. Clean surfaces dry, free of dust, dirt, powdery residue, grease, oil, wax or any other contaminants.

3.3. APPLICATION

3.3.1. Safety Precautions: When handling solvent coating materials, wear approved vapour/particulate respirator as protection from vapours. Dust respirators do not provide protection from vapours.

3.3.2. Material Compatibility: Provide primers and finish coat materials compatible with each other and substrate including fillers.

3.3.3. Obtain colour chart giving colour schemes and gloss value for various areas from Consultant. Ensure colour chart gives final selection of colours and surface textures of finishes and whether finishes are transparent (natural) or opaque (paint).

3.3.4. Provide finish uniform in sheen, colour and texture, free from streaks, shiners and brush or roller marks or other defects.

3.3.5. Apply materials in accordance with manufacturer's directions and specifications paying particular attention to appropriate time frame after cleaning when environmental conditions encourage flash-rusting, rusting, contamination or manufacturer's paint specifications require earlier applications. Do not use adulterants. Do any reduction of coating’s viscosity in accordance with manufacturer’s directions.

3.3.6. Use up paints within period of shelf life recommended by paint manufacturer.

3.3.7. Ensure successive coatings are harmonious chemical compositions and materials of same manufacturer.

3.3.8. Apply primer coat soon after surface preparation is completed to prevent contamination of substrate.

3.3.9. Primer/Sealers: Apply primer-sealer coats by brush or roller. Permit to dry in accordance with manufacturer’s recommendations before applying succeeding coats. Touch up suction spots and sand between coats with No. 120 sandpaper.

3.3.10. Sand and dust between each coat to provide an anchor for next coat and to remove defects visible from a distance up to 1 m (39").

3.3.11. Ensure each coat is dry and hard before a following coat is applied.

3.3.12. Continue through paint finish behind wall-mounted items (e.g. chalk and tack boards).

3.3.13. Finish listed surfaces indicated on Room Finish Schedule(s) and/or noted on Drawing(s) and as specified. Refer to Finish Room Schedule for type, location and extent of finishes required and include touch-ups and field painting necessary to complete work shown, scheduled or specified.

3.3.14. Finishes and number of coats specified in Room Finish Schedule are intended as minimum requirements guide only. Refer to manufacturer's recommendations for exact instructions for thickness of coating to obtain optimum coverage and appearance. Some materials and colours may require additional coats and deeper colours may require use of manufacturers' special tinted primers. Apply additional paint coats, beyond number of coats specified for any surface, to completely cover and hide substrate and to produce a solid, uniform appearance

3.3.15. Painting previously painted surfaces:

3.3.15.1. Paint entire plane of wall or ceiling.

3.3.15.2. Where there has been patching or repair work – paint entire plane of wall or ceiling. Patching is not acceptable.

3.3.16. Do not paint baked paint surface, chrome plated, stainless steel, aluminum or other surfaces finished with final finish in factory. Finish paint primed surfaces.

3.3.17. Metals:

3.3.17.1. Apply primer coat to unprimed ferrous metal surfaces. Where sandblast preparation is specified, apply specified primer immediately after blast cleaning.

3.3.18. Woodwork:

3.3.18.1. Fill open grain woods with filler tinted to match wood and work well into grain. Wipe excess from surface before filler sets.

3.3.18.2. Sand smooth paint and varnish undercoats prior to recoating.

3.3.18.3. Prime woodwork designated for painting as soon as possible after delivery to site and before installation. Prime cut surfaces, whether exposed or not, i.e. 6 edges of wood doors, before installation. Prime cut surfaces of woodwork to receive transparent finish with 1 coat of transparent finish reduced 25% or as directed by manufacturer.

3.3.18.4. Apply final coats on smooth surfaces by roller or brush. Hand brush wood trim surfaces.

3.3.19. Allow each coat of paint to cure and become dry and hard before application of succeeding coats (unless manufacturer's directions require otherwise).

3.3.20. Before finishing paint coats are applied, inspect and touch-up shop coats of primers previously applied by other trades or fabricators.

3.3.21. Provide paint coating thicknesses indicated, measured as minimum DFT.

3.3.22. Apply a minimum of 4 coats of paint where deep or bright colours are used to achieve satisfactory results.

3.3.23. Ledges: Finish projecting ledges, both above and below sight lines, as specified for adjacent surfaces.

3.3.24. Light Coves: Paint light coves white whether a light lens is installed or not, unless otherwise indicated.

3.3.25. Interior Columns: Finish interior columns same as walls of room unless otherwise indicated.

3.3.26. Mechanical and Electrical Services:

3.3.26.1. Co-ordinate painting of mechanical and electrical equipment, piping, conduit, system Identification with appropriate Mechanical and Electrical Specification Sections. Unless otherwise specified or noted, paint "unfinished" conduits, piping, hangers, ductwork and other mechanical and electrical equipment with colour and texture to match adjacent surfaces, where exposed-to-view in exterior and interior areas.

3.3.26.2. Prime and paint exposed, unfinished electrical raceways, fittings, outlet boxes, junction boxes, pull boxes and similar items.

3.3.26.3. Take steps to protect gauges, identification plates and similar items from being painted over or paint splattered.

3.3.26.4. Remove grilles, covers, access panels for mechanical and electrical systems from installed location and paint separately, if these items are not factory finished. Paint adjacent surfaces after removal and reinstall when surfaces are dry.

3.3.26.5. Paint work to match surfaces they are seen against unless directed otherwise.

3.3.26.6. Paint interior surfaces of air ducts visible through grilles and louvres, with 1 coat of flat black metal paint to limit of sight line.

3.3.26.7. In unfinished areas leave exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment in original finish and touch up scratches and marks.

3.3.26.8. Touch up scratches and marks on factory painted finishes and equipment with paint as supplied by manufacturer of equipment.

3.3.26.9. Do not paint over nameplates.

3.3.26.10. Paint behind louvres grilles and diffusers for minimum of 460 mm (18”) or beyond sight line, whichever is greater, to be painted with primer and 1 coat of matt black (non-reflecting) paint.

3.3.26.11. Paint each surface inside of light valances.

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

3.3.26.13. Paint or band fire protection piping and sprinkler lines in accordance with mechanical requirements. Keep sprinkler heads free of paint.

3.3.26.14. Paint yellow or band natural gas piping in accordance with mechanical requirements.

3.3.26.15. Back prime and paint face and edges of plywood service panels for telephone and electrical equipment before installation to match adjacent wall surface. Leave equipment in original finish except for touch-up as required and paint conduits, mounting accessories and other unfinished items.

3.4. SITE QUALITY CONTROL

3.4.1. Non-Conforming Work:

3.4.1.1. Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction to Consultant at no cost to Owner. Touch up small affected areas, repaint large affected areas or areas without sufficient DFT of paint. Remove runs, sags of damaged paint by scraper or by sanding prior to application of paint.

3.4.1.2. Following are considered non-conforming qualities:

3.4.1.2.1. Lack of Uniformity:

3.4.1.2.1.1. Brush/roller marks, streaks, laps, runs, sags, drips, heavy stippling, hiding or shadowing by inefficient application methods, skipped or missed areas and foreign materials in paint coatings.

3.4.1.2.1.2. Evidence of poor coverage at rivet heads, plate edges, lap joints, crevices, pockets, corners and re-entrant angles.

3.4.1.2.1.3. Damage due to touching before paint is sufficiently dry or any other contributory cause.

3.4.1.2.1.4. Damage due to application on moist surfaces or caused by inadequate protection from weather.

3.4.1.2.1.5. Damage and/or contamination of paint due to blown contaminants (dust, spray paint, etc.).

3.4.1.2.2. Aesthetic Problems: If following are evident under final lighting source (including daylight) for interior surfaces:

3.4.1.2.2.1. Visible defects are evident on vertical surfaces when viewed at normal viewing angles from a distance of not less than 1 m (39”).

3.4.1.2.2.2. Visible defects are evident on horizontal surfaces when viewed at normal viewing angles from a distance of not less than 1 m (39”).

3.4.1.2.2.3. Visible defects are evident on ceiling, soffit and other overhead surfaces when viewed at normal viewing angles.

3.4.1.2.2.4. When final coat on any surface exhibits a lack of uniformity of colour, sheen, texture and hiding across full surface area.

3.5. CLEANING

3.5.1. Keep waste rags in covered metal drums containing water and remove from building at end of each Day. Remove other combustible rubbish materials and empty paint cans each Day from site and safely dispose of same in accordance with requirements of authorities having jurisdiction.

3.5.2. Clean equipment and dispose of wash water/solvents as well as other cleaning and protective materials (e.g. rags, drop cloths, masking papers, etc.), paints, thinners, paint removers/strippers in accordance with safety requirements of authorities having jurisdiction.

3.5.3. Clean containers used for storage, mixing and application of materials free of foreign materials and residue.

3.5.4. Keep work area free from an unnecessary accumulation of tools, equipment, surplus materials and debris.

3.5.5. Clean adjacent surfaces which have been painted, soiled or otherwise marred. Remove spilled, splashed, splattered or sprayed paint as work progresses using means and materials that are not detrimental to affected surfaces.

3.5.6. Remove masking and other protection provided under this Section.

3.5.7. Remove temporary protective wrappings provided by others for protection of work after completion of painting operations unless instructed otherwise.

3.5.8. Painting work will not be considered complete until spatters, drippings, smears and overspray have been cleaned and removed to satisfaction of Consultant.

3.5.9. Make Good any damage to structure building surfaces or furnishings resulting from painting operations at no cost to Owner.

3.5.10. Waste Management:

3.5.10.1. Dispose paint waste in accordance with local regulations.

3.5.10.2. Set aside and protect surplus and uncontaminated finish materials not required by Owner and deliver or arrange collection for verifiable re-use or re-manufacturing.

END OF SECTION

PART 1 - GENERAL

1.1. GENERAL INSTRUCTIONS

1.1.1. Read and conform to:

1.1.1.1. Division 01 requirements and documents referred to therein.

1.2. SUMMARY

1.2.1. Section Includes:

1.2.1.1. Headrail-braced metal toilet partitions

1.2.1.2. Urinal Privacy Screens (PS).

1.2.1.3. Barrier free type hardware.

1.2.1.4. Combined hook and bumper

1.2.1.5. Anchors, brackets and fastenings.

1.3. SUBMITTALS

1.3.1. Product Data:

1.3.1.1. Submit manufacturer's instructions, printed product literature and data sheets for metal toilet compartments and urinal screens and include product characteristics, performance criteria, physical size, finish and limitations

1.3.2. Shop Drawings: Submit Shop Drawings for work of this Section.

1.3.2.1. Indicate fabrication details, plans, elevations, hardware, and installation details

1.3.3. Samples: Submit following samples in sizes indicated:

1.3.3.1. One coat hook, top and bottom hinge, slide latch, stainless steel shoe, panel fitting, stirrup bracket and other hardware items and fasteners.

1.3.3.2. Corner section, 200 mm x 200 mm (8" x 8") showing corner, edge and core construction.

1.4. CLOSEOUT SUBMITTALS

1.4.1.1. Operation and Maintenance Data: Submit maintenance manual in accordance with Division 01.

1.4.1.1.1. The Manual shall consist of a hard cover three ring binder with the project name in the front. Include in the manual the following information: maintenance instructions, catalogue pages for each product, name/address and phone number of the manufacturer and their sales agent, copy of the final shop drawings.

1.5. QUALITY ASSURANCE

1.5.1. Qualifications:

1.5.1.1. Installers: Provide work of this Section executed by competent installers with minimum 5 years experience in the application of Products, systems and assemblies specified and with approval and training of the Product manufacturers.

1.6. DELIVERY, STORAGE AND HANDLING

1.6.1. Delivery and Acceptance Requirements: Deliver materials in sequence to meet installation schedule. Provide protection from marring or other damage.

1.6.2. Storage and Handling Requirements: Carefully unload materials; handle and store in a manner to prevent damage. Remove unsatisfactory materials and replace to Consultant's satisfaction at no cost to Owner.

1.7. WARRANTY

1.7.1. Manufacturer Warranty: Warrant work of this Section for period of 3 years against defects and/or deficiencies in accordance with General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of Consultant. Defects include but are not limited to; buckling, opening of seams, bond failure and extensive colour fading.

PART 2 - PRODUCTS

2.1. MANUFACTURERS

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

2.1.1.1. ASI Global Partitions; www.asigroup-canada.com

2.1.1.2. Bradley Corporation; www.bradleycorp.com

2.1.1.3. Centar Industries ; www.centarind.com

2.1.1.4. Global Steel Products Corp.; www.globalpartitions.com

2.1.1.5. Hadrian Manufacturing Inc.; www.hadrian-inc.com

2.1.2. Substitution Limitations: This Specification is based on Hadrian. Comparable Products from other manufacturers listed herein will be considered provided they meet requirements of this Specification after full review by Consultant.

2.2. MATERIALS

2.2.1. Sheet Steel: Commercial quality to ASTM A653/A653M with ZF001 designation zinc coating.

2.2.2. Minimum base steel thickness:

2.2.2.1. Panels, Pilasters and Doors: 0.8 mm (22 gauge)

2.2.2.2. Reinforcement: 3.0 mm

2.2.3. Headrails: 25 mm x 41 mm x 1.5 mm thick, clear anodized, extruded aluminum with double-ridge anti grip design.

2.2.4. Pilaster shoe: welded one-piece design 0.8 mm (22 gauge) stainless steel with #4 brushed satin finish, 102 mm high.

2.2.5. Brackets: Chrome plated zinc die castings

2.2.6. Fasteners: tamperproof type screws and bolts.

2.3. COMPONENTS

2.3.1. Hinges:

2.3.1.1. Heavy duty, self-lubricating nylon sleeve.

2.3.1.2. Material/Finish: Chrome plated non-ferrous casting.

2.3.1.3. Swing:

2.3.1.3.1. Outward for barrier free installation.

2.3.1.3.2. Inward for all other doors

2.3.1.4. Return Movement: Gravity action. Adjustable to hold door open at any angle up to 90 degrees.

2.3.1.5. Emergency access feature.

2.3.2. Latch: concealed, chrome plated zinc die casting with face mortised flush with edge strip of door

2.3.3. Combination door-stop, keeper and bumper, chrome plated non-ferrous, with emergency access feature.

2.3.4. Wall and connecting brackets: chrome plated non-ferrous casting.

2.3.5. Coat Hook: Combination hook and rubber door bumper, chrome plated non-ferrous.

2.3.6. Door Pull: Barrier-free type suited for out swinging doors, chrome plated non-ferrous.

2.3.7. Headrail: 25mm (1") x 41mm (1.625") extruded anodized aluminum with double-ridge anti-grip design. Wall thickness to be 1.5mm (0.060")

2.3.8. Fasteners: zinc plated 12 x 1-3/4” and 12 x 5/8” TR-27 6-lobe security screws

2.4. FABRICATION

2.4.1. Visit site and take necessary measurements required before fabrication.

2.4.2. Accurately follow methods of fabrication reinforcement and anchorage shown on reviewed Shop Drawings.

2.4.3. Cut, shear, straighten and work steel in a manner to prevent disfigurement of finished work.

2.4.4. Ensure finished work is free of warp, open seams, buckles and other surface defects detrimental to appearance.

2.4.5. Doors, panels and screens: 25 mm thick, two steel sheets faces pressure bonded to honeycomb core, to sizes indicated.

2.4.6. Pilasters: 32 mm thick, constructed same as door, to sizes indicated.

2.4.7. Ensure door hinges are fully concealed within thickness of door and adjustable to permit door to come to rest at any position when not latched.

2.4.8. Include formed and closed edges for doors, panels and pilasters.

2.4.8.1. Miter and weld corners and grind smooth.

2.4.9. Include internal reinforcement at areas of attached hardware and fittings.

2.4.9.1. Temporarily mark location of reinforcement for tissue holders and grab bars.

2.4.10. Provide each door with a combined coat hook and bumper and concealed latch with face mortised flush with edge strip of door. Ensure combined stop and keeper have 19 mm (3/4") diameter bumper locked in place.

2.4.11. Headrail to be securely attached to wall and pilasters with manufacturer's fittings in such a way as to make a strong and rigid installation. All joints in headrails shall be made at pilaster.

2.4.12. Provide barrier free type of hardware for disabled stall unit without limitations as follows:

2.4.12.1. Provide door capable of being locked from inside with locking mechanism operated by 1 hand. Include thumb turn lever to activate latch without fingertip grip application.

2.4.12.2. Both standard and barrier-free latches shall have a turn slot designed to allow emergency access from exterior.

2.4.12.3. Provide door with door pull on outside, near latch side of door.

2.4.12.4. Equip stall with coat hook mounted not more than 1220 mm (48") above floor on side wall and projecting not more than 25 mm (1") from wall.

2.4.13. Provide wall channels, factory formed and punched, 75 mm (3") deep, wide enough to fit pilasters and at least 1220 mm (48") long.

2.4.14. Provide both standard and barrier free latches with turn slot designed to allow emergency access from exterior.

2.4.15. Urinal Privacy Screens (PS): 610 mm x 1219 mm (24" x 48"), same construction as partitions, but wall hung with a minimum of 3 wrap-around brackets.

2.4.16. **FINISHES**

2.4.17. Clean, degrease, and neutralize steel components with phosphate or chromate treatment.

2.4.18. High performance powder coating, electrostatically applied and oven cured to provide a uniform, smooth finish.

2.4.19. Colour: no. 504 Linen.

PART 3 - EXECUTION

3.1. EXAMINATION

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

3.1.2. Verify that back-up supports and blocking are in place to secure work of this Section.

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

3.2. INSTALLATION

3.2.1. Do work in accordance with CSA B651

3.2.2. Install partitions and screens plumb and square to building lines and according to manufacturer's printed directions. Ensure gap between panel to panel, panel to door and panel to adjacent construction is not greater than 9 mm (3/8”).

3.2.3. Partition erection.

3.2.3.1. Install partitions secure, plumb and square.

3.2.3.2. Anchor mounting brackets to masonry/concrete surfaces using screws and shields:

3.2.3.3. Attach panel and pilaster to brackets with through type sleeve bolt and nut.

3.2.3.4. Attach panel to wall using continuous 3” channel

3.2.3.5. Allow for adjustment of floor-braced pilasters variations with screw jack through steel saddles made integral with pilaster.

3.2.3.5.1. Conceal floor fixings with stainless steel shoes.

3.2.3.6. Equip doors with hinges, latch set, and each stall with coat hook mounted on door, mounting heights as shown on drawings.

3.2.3.6.1. Adjust and align hardware for easy, proper function. Set door open position at 30 degrees to front.

3.2.3.6.2. Install door bumpers.

3.2.3.7. Equip outswinging doors with door pulls on inside and outside of door in accordance with CSA B651.

3.2.4. Floor supported and overhead braced partition erection:

3.2.4.1. Attach pilasters to floor with pilaster supports. Adjust and level, plumb, and tighten installation with levelling device.

3.2.4.1.1. Secure pilaster shoes in position.

3.2.4.1.2. Secure headrail to pilaster face with not less than two fasteners per face.

3.2.4.1.3. Set tops of doors parallel with overhead brace when doors are in closed position.

3.2.4.2. Floor supported partition erection.

3.2.4.2.1. Secure pilasters to floor with pilaster supports anchored with minimum 50 mm penetration in structural floor.

3.2.4.2.2. Level, plumb and tighten installation with levelling device.

3.2.4.2.3. Secure pilaster shoes in position.

3.2.4.2.4. Set tops of doors level with tops of pilasters when doors are in closed position.

3.2.4.3. Urinal screens erection:

3.2.4.3.1. Anchor wall-hung screen panels to walls with ‘double ear’ brackets.

3.2.4.3.2. Floor mounted post “Stirrup Bracket Installation” with post to be fastened to the panel with “U” brackets that are chrome plated zinc die cast.

3.3. ADJUSTING

3.3.1.1. Adjust doors and locks for optimum, smooth operating condition.

3.3.1.2. Lubricate hardware and other moving parts.

3.4. CLEANING

3.4.1.1. Perform cleaning after installation to remove construction and accumulated environmental dirt.

3.4.1.2. Final Cleaning: Upon completion remove surplus materials, rubbish, tools and equipment.

3.4.1.3. Clean surfaces after installation using manufacturer's recommended cleaning procedures.

3.4.1.4. Clean aluminum with damp rag and approved non-abrasive cleaner.

3.4.1.5. Clean and polish hardware and stainless components.

3.5. PROTECTION

3.5.1.1. Protect installed products and components from damage during construction.

END OF SECTION

PART 1 - GENERAL

1.1. GENERAL INSTRUCTIONS

1.1.1. Read and conform to:

1.1.1.1. Division 01 requirements and documents referred to therein.

1.2. SUMMARY

1.2.1. Section Includes: supply and install washroom and Janitor accessories

1.2.2. Install washroom accessories supplied by HWDSB

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

1.2.3.1. Reinforcing requirements for wall mounted accessories in gypsum board: Section 09 21 16, Non Structural Metal Framing.

1.2.3.2. Plumbing connections: refer to mechanical drawings and specifications.

1.2.3.3. Electrical connections: refer to electrical drawings and specifications.

1.3. ADMINISTRATIVE REQUIREMENTS

1.3.1. Coordination:

1.3.1.1. Coordinate location of washroom accessories with other work to prevent interference with clearances required for access, proper installation, adjustment, operation, cleaning and servicing of washroom accessories.

1.3.1.2. Provide templates and locations for backing and support framing for accessories.

1.3.1.3. Coordinate service locations and connection requirements.

1.4. SUBMITTALS

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

1.4.2. Shop Drawings:

1.4.2.1. Submit Shop Drawings for work of this Section. Ensure Shop Drawings are in the form of catalogue cuts and fully illustrate specified materials with description of components, surface finishes, hardware and securement devices.

1.4.3. Samples:

1.4.3.1. If requested, submit complete sample of accessory to Consultant for review of construction quality, materials and finish prior to delivery of required quantities of items. Submit sample of each colour where applicable. Remove trademark and/or labels on exposed finishes prior to acceptance.

1.4.3.2. Samples will be returned for installation.

1.5. CLOSEOUT SUBMITTALS

1.5.1. Operational and Maintenance Data: Submit maintenance instructions in accordance with Closeout Submittals specified in Division 01. Submit an accessories schedule, keys and parts manual as part of Project closeout documents. Submit 2 sets of following items of manufacturer's literature:

1.5.1.1. Technical Data Sheets of each item used for the Project.

1.5.1.2. Service and Parts Manuals.

1.5.1.3. Name of local representative to be contacted in the event of need of field service of consultation.

1.6. DELIVERY, STORAGE AND HANDLING

1.6.1. Delivery and Acceptance Requirements: Deliver materials in sealed cartons and containers with manufacturer's name and Product description clearly marked thereon.

1.7. WARRANTY

1.7.1. Manufacturer Warranty: Warrant mirrors for a period of 10 years against defects and/or deficiencies in accordance with General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of Consultant and at no expense to Owner. Defects include but are not limited to; deterioration of mirror's silvering.

1.7.2. Float glass mirror shall be guaranteed for 15 years against silver spoilage.

1.7.3. Hand dryers: 5 years

PART 2 - PRODUCTS

2.1. MANUFACTURERS

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

2.1.1.1. ASI Group Canada; www.asigroup-canada.com

2.1.1.2. Bobrick Washroom Equipment of Canada Ltd.; www.bobrick.com

2.1.1.3. Gamco; www.gamcousa.com

2.1.1.4. Elkay; www.elkay.com

2.1.1.5. Frost Products Limited; www.frostproductsltd.com

2.1.1.6. Murdock; www.murdockmfg.com

2.2. MATERIALS

2.2.1. Ensure washroom accessories are stainless steel Type 304 or Type 302, of 1 type throughout, NAAMM No. 4 mechanical brushed finish, of contemporary design, with minimum material thicknesses of components as specified herein. Arrange stainless steel sheet so grain of brushed finish runs vertically in finished installation.

2.2.1.1. Minimum thickness, any location or component: 0.607 mm (24 ga)

2.2.1.2. Hygienic accessory - exposed double pan doors and panels: 0.607 mm (24 ga)

2.2.1.3. Hygienic accessory - exposed single pan doors: 1.214 mm (18 ga)

2.2.1.4. Reinforcement: 1.214 mm (18 ga)

2.2.2. Provide washroom accessories as specified with options indicated. Model numbers may not reflect all options required.

2.2.3. Provide stainless steel collars to accommodate semi-recessed mounting of units whose depth exceeds wall cavity depth.

2.2.4. Units that have keyed tumbler locks shall be keyed alike.

2.3. MANUFACTURED UNITS

2.3.1. Accessories supplied by the Owner for installation by this Section:

2.3.1.1. Paper Towel Dispenser (PTD)

2.3.1.2. Toilet Paper Dispenser (TPD)

2.3.1.3. Soap Dispenser (SD)

2.3.2. Mirror (MR):

2.3.2.1. Mirror shall have a one-piece, 18-8 heavy-gauge stainless steel angle frame, 3/4" x 3/4" (19 x 19mm) with continuous integral stiffener on all sides and beveled front to hold frame tightly against mirror; corners shall be heliarc welded, ground, and polished smooth.

2.3.2.2. All exposed surfaces shall have NAAMM No. 4 mechanical brushed satin finish.

2.3.2.3. All edges shall be protected by plastic filler strips and the back shall be protected by full-size, shock-absorbing, water-resistant, nonabrasive, 3/16" (5mm) thick polyethylene padding.

2.3.2.4. Galvanized steel back shall have integral horizontal hanging brackets located at top and bottom for mounting on concealed wall hanger and to prevent the mirror from pulling away from the wall.

2.3.2.4.1. Snap Locking Design: Hang mirror on wall hanger with all four backplate louvers engaged behind horizontal wall hanger members.

2.3.2.4.2. Mirror must be centered in front of the wall hanger horizontally, pressed flat against the wall approximately 1" (25mm) above final position and then lowered into final position.

2.3.2.5. Mirror — No. 1 quality, 1/4" (6mm) select float glass (standard glass): selected for silvering, electrolytically copper-plated by the galvanic process

2.3.2.6. Size: 610 mm x 910 mm (24” x 36”)

2.3.2.7. Basis of design: Model No, B-290 by Bobrick.

2.3.3. Sanitary Napkin Disposal (ND):

2.3.3.1. Surface-mounted sanitary napkin disposal type-304 stainless steel with all-welded construction;

2.3.3.2. Exposed surfaces shall have NAAMM No. 4 mechanical brushed satin finish.

2.3.3.3. Door shall be secured to cabinet with a full-length stainless steel piano-hinge and equipped with keyed tumbler lock.

2.3.3.4. Unit shall have a self-closing panel covering each disposal opening. Panel shall have bottom edge hemmed for safety, be secured to door with spring-loaded, full-length stainless steel piano-hinge, and equipped with international graphic symbols identifying sanitary napkin disposal.

2.3.3.5. Unit shall be furnished with a removable, leak-proof molded polyethylene receptacle. Receptacle shall have a capacity of 1.0-gal. (3/8-L)

2.3.3.6. Basis of design: Model No. B-270 by Bobrick.

2.3.4. Surface – Mounted Waste Receptacle (WR):

2.3.4.1. Type-304, 22-gauge (0.8mm) stainless steel.

2.3.4.2. Exposed surfaces shall have NAAMM No. 4 mechanical brushed satin finish.

2.3.4.3. Waste receptacle shall be equipped with four interior hooks, have reinforced mounting screw holes, and shall be furnished with a removable heavy-gauge vinyl liner.

2.3.4.4. Unit shall have a capacity of 12.75-gal. (48.3-L).

2.3.4.5. Basis of design: Model No. B-277 by Bobrick.

2.3.5. Shelf (SH):

2.3.5.1. Satin-finish stainless steel, 32 mm (1-1/4") high, 100 mm (4") projection, 457 mm (18") wide, 18-8, type 304, 18-gauge (1.2 mm) stainless steel with satin finish, 19 mm (3/4") return edge on front.

2.3.5.2. Front corners of shelf ground and polished smooth.

2.3.5.3. Basis of design: Model No. MS-18 by Gamco.

2.3.5.4. Location: one in each single use washroom and universal washroom

2.3.6. Clothes Hook (CH):

2.3.6.1. Type 304 stainless steel with NAAMM No. 4 mechanical brushed satin finish

2.3.6.2. Faceplate shall have sloped edges and be constructed of 14-gauge (2mm). Hook shall release at a load of 40lbs or greater.

2.3.6.1. Unit shall be furnished with tamper-resistant mounting screws.

2.3.6.2. Basis of Design: Model B-983 by Bobrick

2.3.6.3. Location: one in each stall, universal washroom and all single use washrooms

2.3.7. Grab Bars (GB):

2.3.7.1. Type 304 stainless steel with NAAMM Brushed No.4 finish with peened gripping surface.

2.3.7.2. Grab bar shall have 18-gauge (1.2mm) wall thickness and 1-1/2" (38mm) outside diameter.

2.3.7.3. Clearance between the grab bar and wall shall be 1-1/2" (38mm).

2.3.7.4. Concealed mounting flanges shall be 11-gauge (3.2mm) thick stainless steel plate, 2" x 3-1/8" (50 x 80mm), and equipped with at least two screw holes for attachment to wall. Flange covers shall be 22 gauge (0.8mm), 3-1/4" (85mm) diameter x 1/2" (13mm) deep, and shall snap over mounting flange to conceal mounting screws and/or WingIt fasteners.

2.3.7.5. Ends of grab bar shall pass through concealed mounting flanges and be heliarc welded to form one structural unit.

2.3.7.6. Grab bar shall comply with accessible design for structural strength.

2.3.7.7. Basis of Design: Bobrick:

2.3.7.7.1. GB-1, GB-2: Straight Grab Bar: Model B-6806.99 x 24, horizontal, 610 mm (34”) long

2.3.7.7.2. GB-3: ‘L’ – Shaped Grab Bar: Model B-6898.99, 90 degree, 760 mm (30”) long bars.

2.3.7.7.3. SHGB: Straight Grab Bar: Model B-5806x42, 1065 mm (42”).

2.3.7.7.4. SHGB2: L Grab Bar: Model B-58546.99 - Right, (40”x30”).

2.3.8. Shower Seat (SHS)

2.3.8.1. Seat is constructed of durable, water-resistant, ivory colored, 5/16″ (8mm) thick solid phenolic.

2.3.8.2. Frame and mounting bracket are type 304 stainless steel

2.3.8.3. Seat shall have self-locking mechanism and seat shell support up to 500 lbs (227 kg)

2.3.8.4. Seat is 18″ (455mm) wide, projects 15 13/16″ (400mm) from wall

2.3.8.5. Basis of Design: Bobrick, B-5191, Shower/Dressing Area Seat, Ivory Phenolic and Satin Finish, 18" Wide

2.3.9. Soap Dish (RSD)

2.3.9.1. Type 304 stainless steel, matte polished finish.

2.3.9.2. Shall have mounting clamp for stud walls where applicable

2.3.9.3. Unit is 7 3/16″ W, 5″ H (185 x 125mm).

2.3.9.4. Rough Wall Opening: 6″ W, 4″ H, 4″ min. depth (150 x 100 x 100mm).

2.3.9.5. Basis of Design: Bobrick, B-4390, Recessed Heavy-Duty Soap Dish and Bar

2.3.10. Hand Dryers (HD): Select one of the following:

2.3.10.1. Surface-mounted, ADA compliant hand dryer, automatic activation “SLIMdri” model L-972 by World Dryer; www.globalindustrial.ca

2.3.10.1.1. Size: Height: 270.9 mm, Width: 290.3 mm, Depth: 98.8 mm

2.3.10.1.2. Polished stainless steel cover

2.3.10.1.3. Wall mounting plate shall be constructed of die-cast aluminum

2.3.10.1.4. Nozzle shall be constructed of die-cast aluminum finished with epoxy paint finish.

2.3.10.1.5. The cover shall be attached to the wall mounting plate with tamper-proof screws.

2.3.10.1.6. Motor shall be a thermally-protected universal brush type motor, 13,000 RPM, delivering 70 CFM air flow at a velocity of 140 MPH (12,320 LFM).

2.3.10.1.7. 115 / 208 / 230VAC input.

2.3.10.1.8. Sound rating: 83 db

2.3.10.1.9. Heating element: chrome wire heating element protected by an automatic resetting thermal cutoff.

2.3.10.1.10. Activation: automatic infrared sensor with a 3 second run-on time and 60 second vandal shut-off.

2.3.10.1.11. Control board shall contain a heater control switch which can be controlled in either ON or OFF position. Dryer shall provide a 48°F temperature rise.

2.3.10.2. Surface mounted, “XCE” by Ouellet; www.oulet.com

2.3.10.2.1. Finish: epoxy/polyester powder paint, white

2.3.10.2.2. 110 – 120 V

2.3.10.2.3. Motor: 20,000 RPM delivering 19,00 lfm

2.3.10.2.4. Heating element: Helical coil nickel-chromium alloy wire protected by mica insulator.

2.3.10.2.5. Adjustable heat control: High, Medium, Low and Off

2.3.10.2.6. Adjustable motor speed

2.3.10.2.7. Sound rating: 71 db

2.3.10.2.8. Activation: infrared optical sensor

2.3.11. Heavy Duty Shower Curtain System

2.3.11.1. Basis of design: Bobrick B-207 (Rod), Bobrick 204-1 (Curtain Hook), Bobrick 204-3 (Vinyl Curtain).

2.4. FABRICATION

2.4.1.1. Fabricate accessories true, square, rigid, free from distortion and from defects detrimental to appearance and performance. Assemble sheet metal accessories by welding in accordance with CSA W59. Conceal welds, or grind smooth such as to be undetectable in finished work. Unless approved by Owner, ensure assembly fastenings, hardware fixings and mounting or installation devices are concealed in finished work.

2.4.1.2. Use non-corrosive metal fasteners of expansion type, toggle type or other approved type of positive, mechanical anchor as required to suit construction to which accessory is to be mounted. Ensure exposed fasteners, where permitted, are finished to match adjacent accessory surface and countersunk. Where accessories are mounted to sheet metal, provide a 3 mm (1/8") thick minimum full-size metal back-up plate drilled and tapped to receive machine screws and finished to match adjacent sheet metal surface.

2.4.1.3. Ensure frameless accessories have 1 piece fronts with 90 degree formed returns at their edges and openings. Ensure returns are continuously welded and ground smooth at corners. Where accessory fronts are framed, ensure frame edges, both inside and outside, have 90 degree formed returns continuously welded and ground smooth at corners. Ensure doors also have 90 degree formed returns.

2.4.1.4. Use concealed stainless steel piano hinges which extend full-length of hinged element. Ensure hinged elements have concealed, mechanically-retained, rubber bumpers for silent closing, and close flush with faces of fronts or frames. Locate hinges to afford easy and unobstructed access to interiors taking into consideration location of accessory relative to surrounding and adjacent items and finishes.

2.4.1.5. Ensure portions of sheet metal accessory interiors visible in completed work are stainless steel. Ensure changes in plane are formed or continuously welded and ground smooth. Ensure sheet metal accessory parts concealed in finished installation are galvanized or stainless sheet steel. Ensure edges of sheet metal accessible by users or maintenance personnel are hemmed for safety with no sharp edges.

2.4.1.6. Ensure lettering or pressure sensitive international symbols on accessories is silk screened with durable paint to withstand wear or is engraved or embossed. Size, location and type face of lettering is subject to approval. Ensure edges of letters are straight and sharp.

PART 3 - EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions:

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

3.1.1.2. Verify gypsum board walls have been reinforced in accordance with Section 09 21 16 - Non-Structural Metal Framing for wall mounted accessories.

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

3.2. INSTALLATION

3.2.1. Provide necessary wall reinforcement for grab bars and towel bars as detailed for 227 kg (500 lbs) downward pull.

3.2.2. Install washroom accessories in accordance with manufacturer's printed installation instructions.

3.2.3. Provide fastenings and mounting kits for washroom accessories.

3.2.4. Verify wall opening for correct dimensions, plumbness of blocking or frames and other preparation that would affect installation of washroom accessories.

3.2.5. Verify spacing of plumbing fixtures and toilet partitions that affect installation of washroom accessories.

3.2.6. Securely fasten accessories, level and plumb using appropriate fastenings as recommended by manufacturer.

3.2.7. Provide corrosion resistant fastenings. Where fasteners are exposed, use tamper-proof fasteners finished to match items secured.

3.2.8. Locate washroom accessories where indicated on Drawings and where directed by Consultant. Obtain Consultant's acceptance of exact locations.

3.2.9. Provide manufacturer's recommended anchoring systems.

3.2.10. Fit flanges of accessories snug to wall surfaces.

3.3. SITE QUALITY CONTROL

3.3.1. Non-Conforming Work: Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of Consultant at no cost to Owner.

3.4. ADJUSTING

3.4.1. Test mechanisms, hinges, locks and latches.

3.4.2. Adjust and lubricate to ensure washroom accessories are in perfect working order.

3.5. CLEANING

3.5.1. Clean and polish mirrors, aluminum and stainless steel surfaces.

3.5.2. Remove protective coatings and paper including adhesives.

END OF SECTION

APPENDIX A – Door Hardware Schedule

2025-141-P02083 W.H. Ballard Elementary School Washroom Renovations

801 Dunsmure Road, Hamilton, ON

FINISHING HARDWARE SPECIFICATION

FOR

W.H. BALLARD ELEMENTARY ELEMENTARY SCHOOL

HWDSB

801 DUNSMERE ROAD

HAMILTON, ON.

ARCHITECT:

AMRA J. ARCHITECT INC.
63 STOWBRIDGE CRESCENT
ANCASTER, ONT. L9G 5E1
PH# 905.920.5121

CONTRACTOR:

SUPPLIER:

GROUP 87
ARCHITECTURAL HARDWARE INC.
UNIT #1 – 3245 HARVESTER RD,
BURLINGTON, ON. L7N 3T7
PH# 905.639.4676
FAX# 905.639.7561
E-MAIL: craig@group87.ca
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CONSULTANT: **CRAIG S. WILSON AHC**

COORDINATOR: DERRILL A. WILSON

DATE: March 14, 2025
REVISION: April 2, 2025
REVISION: April 9, 2025

DEVELOPED FROM ARCHITECTURAL DRAWING DATED:

E	RE ISSUED FOR COORDINATION	03/28/2025

Abbreviations (Categorized)

FRAMES: HOLLOW METAL

Frame Hands

Abbreviation	Definition
RH	Right Hand
RHR	Right Hand Reverse

HARDWARE

Door Type

Abbreviation	Definition
HMD	HOLLOW METAL DOOR

Fire Ratings

Abbreviation	Definition
45MIN	45 MIN FIRE RATING, NEGATIVE PRESSURE
NON-RTD	NON RATED

Frame Type

Abbreviation	Definition
HMF	HOLLOW METAL FRAME
XHMF	EXISTING HOLLOW METAL FRAME

Handing

Abbreviation	Definition
D/A	Double Acting
LH	Left Hand
LHA	Left Hand Active
LHI	Left Hand InActive
LHR	Left Hand Reverse
LHRA	Left Hand Reverse Active
LHRI	Left Hand Reverse InActive
RH	Right Hand
RHA	Right Hand Active
RHI	Right Hand InActive
RHR	Right Hand Reverse
RHRA	Right Hand Reverse Active
RHRI	Right Hand Reverse InActive

Hardware Finishes

Abbreviation	Definition
26D	SATIN CHROMIUM PLATED
32D	SATIN STAINLESS STEEL, 300 SERIES
626	SATIN CHROMIUM PLATED OVER NICKEL
652	SATIN CHROMIUM PLATED OVER NICKEL
689	ALUMINUM PAINTED
CL	CLEAR ANODIZED

Hardware Mfrs

Abbreviation	Definition
CAM	CAMDEN DOOR CONTROLS
G87	GROUP 87 ARCHITECTURAL HARDWARE INC.

Abbreviations (Categorized)

HARDWARE

Hardware Mfrs

Abbreviation	Definition
HOR	HORTON, INC.
IVE	H.B. IVES
LCN	LCN COMMERCIAL DIVISION
SCH	SCHLAGE LOCK COMPANY
SMH	STANDARD METAL HARDWARE MANUFACTURING
VON	VON DUPRIN

Hardware Miscellaneous

Abbreviation	Definition
BE	BLANK ESCUTCHEON
FS	FAIL SAFE
FSE	FAIL SECURE
GA	GAUGE (SUCH AS 16 GA.)
HW	HEAVY WEIGHT
JD	JAMB DEPTH
MTG	MOUNTING.
REG	REGULAR
STK	STRIKE; THAT PART OF A LOCK OR OTHER FASTENING DEVICE WHICH RECEIVES THE BOLT WHEN PROJECTED
UL	UNDERWRITERS' LABORATORY

Hardware Remark

Abbreviation	Definition
AL	ALUMINUM

Heading Remark

Abbreviation	Definition
DE	DOUBLE EGRESS; ALSO DESIGNATED AS "DBLE EG"D
DET	DETECTOR
RU	ROLL-UP DOOR

Modes of Operation

Abbreviation	Definition
PR	PAIR OF DOORS
SGL	SINGLE DOOR

SPECIFICATION NOTES

1) To be bid **as per specification**.
Substitution, and/or omission, of products **requires Architects/Consultants approval.**

Request for Substitutions **must be made a minimum of 10 days Prior to Tender Questions Close.**

2) **The Hardware Supplier** must be regularly involved in supplying and expediting contract hardware for projects of this nature. The Supplier must employ a Certified ***"Architectural Hardware Consultant"*** [AHC] to co-ordinate and oversee scheduling, ordering and the supplying of finishing hardware.

3) All keyed cylinders to be provided '1' bitted in the appropriate keyway.

4) Auto Door Operator Installation [if required]:

Automatic operators are supplied and installed by the finishing hardware supplier. Rough-in, 110V to head of frame, conduit, backboxes and low voltage wire runs by electrical division. Backing and reinforcement for operator by General Contractor Work must be completed prior to the arrival of the Operator Installation Technician. Installation company must employ an AAADM certified technician.

5) ***Installation of frames** to be site confirmed by G.C. to be Plumb & True prior to commencement of door & hardware installation.

6) Standard mounting heights [unless otherwise noted]

A.	Locks/Latches	40-5/16" [1023mm] to center line of strike from finished floor.
B.	Deadlocks	47 1/4" [1200mm] to center line of strike from finished floor.
	*Unless otherwise noted.	
C.	Exit Devices	40-5/16" [1023mm] to center line of strike from finished floor.
D.	Door Pulls	42" [1067mm] to center line of pull from finished floor.
	*Where a deadlock is located at the 40-5/16" [1023mm] location	
	install the door pull immediately above the lock body/case.	
E.	Push Plate	45" [1143mm] to center line of Push Plate from finished floor.
F.	Coat Hook	47" [1200mm] to center line of Hook from finished floor.
G.	Door Viewer	43" [1100mm] to center line of Viewer from finished floor.

The above noted mounting heights are a recommended standard and may vary under special applications and conditions.

Index

Mark#	Outside Location	Inside Location	Hand	Hdg
112B-A	CORRIDOR	CARETAKER AREA & STORAGE 112B	RH	01
112C-A	EX. VEST 112C	EX. GIRLS CHANGEROOM 112A	RH	06
116-A	CORRIDOR	NEW UNI. W/C & SHOWER 116	RH	02
116B-A	EX. VEST. 116B	EX. BOYS CHANGEROOM	RH	07
206B-D	CORRIDOR	NEW JANITORS CLOSET 206B	RH	03
314A-F	CORRIDOR	NEW JANITORS CLOSET 314A	RH	04
315-E	EX. BOYS WASHROOM 314	STAFF WASHROOM 315	RH	05
COR-A	CORRIDOR	CORRIDOR	RHR	08
STR-A	STAIR	CORRIDOR	RHR	09

Heading 01 (HwSet)

	Hand	Degree Act	Degree InAct
1 SGL DOOR(S) 112B-A CORRIDOR TO CARETAKER AREA & STORAGE 112B 950 x 2150 x 44 x HMD x HMF x 45MIN	RH	90	

Totals Each Assembly to have:

(3)	3	EA	HINGE	5BB1 127 X 102	652	IVE
(1)	1	EA	STOREROOM LOCK	ND80JD RHO	626	SCH
(1)	1	EA	PERMANENT CORE	23-030 C123 '1' BITTED	626	SCH
(1)	1	EA	SURFACE CLOSER	4040XP REG ARM	689	LCN
(1)	1	EA	KICKPLATE	K10A 200 X 912 TAPE MTD	32D	SMH
(1)	1	EA	CV HD WALL STOP	S120	26D	SMH

Heading 02 (HwSet)

	Hand	Degree Act	Degree InAct
1 SGL DOOR(S) 116-A CORRIDOR TO NEW UNI. W/C & SHOWER 116 950 x 2150 x 44 x HMD x HMF x 45MIN	RH	90	

Totals Each Assembly to have:

(3)	3	EA	HINGE	5BB1 127 X 102	652	IVE
(1)	1	EA	STOREROOM LOCK	ND96JD RHO	626	SCH
(1)	1	EA	PERMANENT CORE	23-030 C123 '1' BITTED	626	SCH
(1)	1	EA	ELECTRIC STRIKE	CX-ED1410 ULC	32D	CAM
(1)	1	EA	AUTO OPERATOR	7900	CL	HOR
(1)	1	EA	KICKPLATE	K10A 250 X 912 TAPE MTD	32D	SMH
(1)	1	EA	CV HD WALL STOP	S120	26D	SMH
(1)	1	EA	AURA WR KIT	CX-WC13XSM	32D	CAM
(1)	1	EA	EMERGENCY CALL SYS	CX-WEC10K2 DBL GANG		CAM
(1)	1	SET	WIRING DIAGRAMS	AS REQUIRED		G87
(1)	1	EA	INSTALLATION	AUTO OPERATOR		G87

AUTOMATIC OPERATOR IS SUPPLIED & INSTALLED BY THE FINISHING HARDWARE SUPPLIER.
ROUGH-IN, 115V TO HEAD OF FRAME, CONDUIT, BACKBOXES, LOW VOLTAGE WIRE RUNS AND DEDICATED 15AMP CIRCUIT BY G.C./ELECTRICAL DIVISION.
BACKING AND REINFORCEMENT FOR OPERATOR BY GENERAL CONTRACTOR.
BARRIER FREE WASHROOM SYSTEM INSTALLED BY THE FINISHING HARDWARE SUPPLIER.
EMERGENCY CALL SYSTEM IS SUPPLIED & INSTALLED BY THE FINISHING HARDWARE SUPPLIER.

Heading 03 (HwSet)

	Hand	Degree Act	Degree InAct
1 SGL DOOR(S) 206B-D CORRIDOR TO NEW JANITORS CLOSET 206B	RH	90	

Heading 03 (HwSet) Continued.....

	Hand	Degree Act	Degree InAct

950 x 2150 x 44 x HMD x HMF x 45MIN

Totals Each Assembly to have:

(3)	3	EA	HINGE	5BB1 127 X 102	652	IVE	
(1)	1	EA	STOREROOM LOCK	ND80JD RHO	626	SCH	
(1)	1	EA	PERMANENT CORE	23-030 C123 '1' BITTED	626	SCH	
(1)	1	EA	SURFACE CLOSER	4040XP REG ARM	689	LCN	
(1)	1	EA	KICKPLATE	K10A 200 X 912 TAPE MTD	32D	SMH	
(1)	1	EA	CV HD WALL STOP	S120	26D	SMH	

Heading 04 (HwSet)

	Hand	Degree Act	Degree InAct
1 SGL DOOR(S) 314A-F CORRIDOR TO NEW JANITORS CLOSET 314A	RH	90	

950 x 2150 x 44 x HMD x HMF x 45MIN

Totals Each Assembly to have:

(3)	3	EA	HINGE	5BB1 127 X 102	652	IVE	
(1)	1	EA	STOREROOM LOCK	ND80JD RHO	626	SCH	
(1)	1	EA	PERMANENT CORE	23-030 C123 '1' BITTED	626	SCH	
(1)	1	EA	SURFACE CLOSER	4040XP REG ARM	689	LCN	
(1)	1	EA	KICKPLATE	K10A 200 X 912 TAPE MTD	32D	SMH	
(1)	1	EA	CV HD WALL STOP	S120	26D	SMH	

Heading 05 (HwSet)

	Hand	Degree Act	Degree InAct
1 SGL DOOR(S) 315-E EX. BOYS WASHROOM 314 TO STAFF WASHROOM 315	RH	90	

950 x 2150 x 44 x HMD x HMF x 45MIN

Totals Each Assembly to have:

(3)	3	EA	HINGE	5BB1 127 X 102	652	IVE	
(1)	1	EA	OFFICE LOCK	L9056J 06A C/W IS-OCC/OS-OCC INDICATORS	626	SCH	
(1)	1	EA	PERMANENT CORE	23-030 C123 '1' BITTED	626	SCH	
(1)	1	EA	SURFACE CLOSER	4040XP REG ARM	689	LCN	
(1)	1	EA	KICKPLATE	K10A 200 X 912 TAPE MTD	32D	SMH	
(1)	1	EA	CV HD WALL STOP	S120	26D	SMH	

Heading 06 (HwSet)

	Hand	Degree Act	Degree InAct
1 SGL DOOR(S) 112C-A EX. VEST 112C TO EX. GIRLS CHANGEROOM 112A	RH	95	

Heading 06 (HwSet) Continued.....

	Hand	Degree Act	Degree InAct

950 x 2150 x 44 x HMD x XHMF x NON-RTD
Opening Remark: EXISTING HOLLOW METAL FRAME
SIZE TO BE CONFIRMED.

Totals							
Each Assembly to have:							
(3)	3	EA	HINGE	5BB1 114 X 102	652	IVE	
(1)	1	EA	CLASSROOM LOCK	ND70JD RHO	626	SCH	
(1)	1	EA	PERMANENT CORE	23-030 C123 '1' BITTED	626	SCH	
(1)	1	EA	CLOSER-STOP	4040XP.S CUSH *SPRING STOP	689	LCN	
(1)	1	EA	KICKPLATE	K10A 200 X 912 TAPE MTD	32D	SMH	

ALL DIMENSIONS, DETAILS AND HINGE SIZE TO BE SITE CONFIRMED.

Heading 07 (HwSet)

	Hand	Degree Act	Degree InAct
1 SGL DOOR(S) 116B-A EX. VEST. 116B TO EX. BOYS CHANGEROOM	RH	100	

950 x 2150 x 44 x HMD x XHMF x NON-RTD
Opening Remark: EXISTING HOLLOW METAL FRAME
SIZE TO BE CONFIRMED.

Totals							
Each Assembly to have:							
(3)	3	EA	HINGE	5BB1 114 X 102	652	IVE	
(1)	1	EA	CLASSROOM LOCK	ND70JD RHO	626	SCH	
(1)	1	EA	PERMANENT CORE	23-030 C123 '1' BITTED	626	SCH	
(1)	1	EA	CLOSER-STOP	4040XP.S CUSH *SPRING STOP	689	LCN	
(1)	1	EA	KICKPLATE	K10A 200 X 912 TAPE MTD	32D	SMH	
(1)	1	EA	CC HD WALL STOP	S122	26D	SMH	

ALL DIMENSIONS, DETAILS AND HINGE SIZE TO BE SITE CONFIRMED.

Heading 08 (HwSet)

	Hand	Degree Act	Degree InAct
1 PR DOOR(S) COR-A CORRIDOR FROM CORRIDOR	RHR/LHR	95	95

2-950 x 2150 x 44 x HMD x HMF x 45MIN

Totals							Act	InAct
Each Assembly to have:								
(6)	6	EA	HW HINGE	5BB1HW 127 X 114	652	IVE	3	3
(2)	2	EA	FIRE EXIT HARDWARE	9827EO-F-LBR 1220MM	626	VON	1	1
(2)	2	EA	EXIT DEVICE TRIM	996L R/V BE 06 *PASSAGE	626	VON	1	1
(2)	2	EA	SURFACE CLOSER	4040XP.EDA	689	LCN	1	1
(2)	2	EA	KICKPLATE	K10A 250 X 912 TAPE MTD	32D	SMH	1	1
(2)	2	EA	COMBO FLOOR STOP	S102L	26D	SMH	1	1

Heading 08 (HwSet) Continued.....

							Hand	Degree Act	Degree InAct

Heading 09 (HwSet)

							Hand	Degree Act	Degree InAct
1 PR	DOOR(S) STR-A STAIR FROM CORRIDOR 2-950 x 2150 x 44 x HMD x HMF x 45MIN						RHR/LHR	90	90

Totals	Each Assembly to have:						Act	InAct
(6)	6	EA	HW HINGE	5BB1HW 127 X 114	652	IVE	3	3
(1)	1	EA	MULLION	KR9954 2260MM	689	VON		
(2)	2	EA	FIRE EXIT HARDWARE	98EO-F 1220MM C/W 499F STRIKE	626	VON	1	1
(1)	1	EA	MORT. CYL. HOUSING	26-064 *MULLION	626	SCH		
(1)	1	EA	PERMANENT CORE	23-030 C123 '1' BITTED	626	SCH		
(2)	2	EA	EXIT DEVICE TRIM	996L R/V BE 06 *PASSAGE	626	VON	1	1
(2)	2	EA	SURFACE CLOSER	4040XP.EDA	689	LCN	1	1
(2)	2	EA	KICKPLATE	K10A 200 X 912 TAPE MTD	32D	SMH	1	1
(2)	2	EA	CV HD WALL STOP	S120	26D	SMH	1	1

Miscellaneous

Qty	UM	Description	Catalog Number	Hand	Fin	Mfgr
2	EA	CONTROL KEY	49-003			SCH

End of Schedule