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100-1045 Main Street  
Moncton  
New Brunswick  
E1C 1H1  
Bid Fax: (506) 851-6759

**SOLICITATION AMENDMENT**  
**MODIFICATION DE L'INVITATION**

The referenced document is hereby revised; unless otherwise indicated, all other terms and conditions of the Solicitation remain the same.

Ce document est par la présente révisé; sauf indication contraire, les modalités de l'invitation demeurent les mêmes.

**Comments - Commentaires**

**Vendor/Firm Name and Address**  
**Raison sociale et adresse du**  
**fournisseur/de l'entrepreneur**

**Issuing Office - Bureau de distribution**  
Acquisitions NB/PEI (Moncton Office) – Bureau  
d'acquisitions N.-B./Î.-P.-É. (Moncton)  
1045 Main Street / 1045, rue Main  
Moncton  
New Bruns  
E1C 1H1

<b>Title - Sujet</b> Pool Bathhouse Repairs - Fundy NB	
<b>Solicitation No. - N° de l'invitation</b> EC373-202055/A	<b>Amendment No. - N° modif.</b> 005
<b>Client Reference No. - N° de référence du client</b> EC373-202055	<b>Date</b> 2020-01-09
<b>GETS Reference No. - N° de référence de SEAG</b> PW-\$PWJ-003-5659	
<b>File No. - N° de dossier</b> PWJ-9-42098 (003)	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin</b> <b>at - à 02:00 PM</b> <b>on - le 2020-01-14</b>	<b>Time Zone</b> <b>Fuseau horaire</b> Atlantic Standard Time AST
<b>F.O.B. - F.A.B.</b> <b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input checked="" type="checkbox"/> <b>Other-Autre:</b> <input type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Young (PWJ), Leesa	<b>Buyer Id - Id de l'acheteur</b> pwj003
<b>Telephone No. - N° de téléphone</b> (506) 871-1716 ( )	<b>FAX No. - N° de FAX</b> (506) 851-6759
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b>	

**Instructions: See Herein**

**Instructions: Voir aux présentes**

<b>Delivery Required - Livraison exigée</b>	<b>Delivery Offered - Livraison proposée</b>
<b>Vendor/Firm Name and Address</b> <b>Raison sociale et adresse du fournisseur/de l'entrepreneur</b>	
<b>Telephone No. - N° de téléphone</b> <b>Facsimile No. - N° de télécopieur</b>	
<b>Name and title of person authorized to sign on behalf of Vendor/Firm</b> <b>(type or print)</b> <b>Nom et titre de la personne autorisée à signer au nom du fournisseur/</b> <b>de l'entrepreneur (taper ou écrire en caractères d'imprimerie)</b>	
<b>Signature</b>	<b>Date</b>

N° de l'invitation - Solicitation No.  
EC373-202055/A  
N° de réf. du client - Client Ref. No.  
R.087633.001

N° de la modif - Amd. No.  
005  
File No. - N° du dossier

Id de l'acheteur - Buyer ID  
PWJ003  
N° CCC / CCC No./ N° VME - FMS

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This Solicitation Amendment No. five (5) is raised to include the following addendum no. 5.

The following addendum to the tender documents is effective immediately. This addendum shall form part of the contract documents. All other terms and conditions remain the same.

Addendum No. 005.

**Title: Fundy Pool Bathhouse Rehabilitation – Fundy Park, NB**

This solicitation is hereby issued to provide the attached addendums

- (1) Addendum # 2 – Section 00 01 10, dated January 7, 2020
- (2) Section 07 31 29 – Wood Shingles Roofing
- (3) Section 08 71 00 – Door Hardware
- (4) Section 09 30 13 – Ceramic Tiling
- (5) Section 09 67 00 – Epoxy Flooring
- (6) Section 22 42 02 – Plumbing Fixtures and Trim

Questions and Answers:

- Q: Please provide clarification on spec section 09 30 13, part 2, item 2.1.1.1 size as selected by PWGSC from manufacturers complete size range. A complete size range will cover a range of tile pricing, can PWGSC pick a size now so we can properly price this project? Please clarify.  
A: Please refer to Addendum 02
- Q: The plumbing drawings don't mention nor show any venting for the plumbing fixtures and doesn't mention where the roof penetrations are for venting through the roof? Please clarify.  
A: Please refer to Addendum 02
- Q: Where is Appendix F. as referred to in the Wood Shingle Specifications under Preservative Treatment?  
A: Please refer to Addendum 02
- Q: The fixtures and trim section of the specifications is missing. Please provide.  
A: Please refer to Addendum 01

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- Q: On A-4 for the wall tile there is an item that says ceramic/porcelain and one that says porcelain tile ct-1. What is the reason for this?  
A: Please refer to Addendum 02
- Q: There is tile in the showers but I don't see it on the elevations, is there more details on this?  
A: Please refer to Addendum 02
- Q: It seems like there is more wall tile than what is on the elevations is there a wall finish plan that shows which walls have tile or is it only what is seen in the elevations?  
A: Please refer to Addendum 02

All enquiries concerning this amendment are to be forwarded to:

Name: Leesa Young  
1045 Main Street,  
Moncton, NB  
E1C 1H1  
Telephone No: (506) 871-1716  
Facsimile No: (506-851-6759  
Email: [leesa.young@pwgsc-tpsgc.gc.ca](mailto:leesa.young@pwgsc-tpsgc.gc.ca)

## 1.1 ADDENDUM

- .1 The following changes and clarifications to the drawings and specifications are to be incorporated in the tender documents:

.1 Specifications:

- .1 Section 07 31 29 – Wood Shingle Roofing  
.1 2.1.10 Remove Sentence 10 – “Pressure preservative Treatment: to CSA 0118.1, Appendix F.”
- .2 Section 08 71 00 – Door Hardware  
.1 2.3.5.11 Revise to read – “Doors D001A & D001B shall be fitted with door operators.”
- .3 Section 09 30 13 – Ceramic Tiling  
.1 2.1.1.2 Revise to read – “Size: 152 mm x 152 mm tile from the manufacturer’s complete colour range.”
- .4 Section 09 67 70 – Epoxy Flooring  
.1 2.1.6.3 Revised to read – “Standard of acceptance: StonSet TG5 by Stonhard.”  
.2 2.1.7.3 Revised to read – “Joint Sealant: Stonproof CT5 Crack Treatment.”

.2 Drawings:

- .1 Detail #5 Finish Schedule on A-4 Building Sections & Finish Schedule  
Delete column “Ceramic/Porcelain” and its contents.
- .2 Drawing M-2 Sanitary  
Refer to Drawing M-2 Sanitary, Sanitary General Notes, Note #4: Remove sentence that reads “RE-USE EXISTING VENT PENETRATIONS THROUGH ROOF WHERE PRACTICAL”. Note #7 and the remainder of note #4 to remain. Existing roofing is being replaced, therefore, the (5) existing sanitary vents will be removed and retained for re-use (by demolition contractor). Plumbing contractor to provide new roof penetrations for all sanitary venting, using existing (5) roof pipes and collars. Roof openings for sanitary vents to be coordinated with roofing contractor. Plumbing contractor to provide the lowest quantity of vents through roof to meet code requirement, however, for pricing purposes allow for 7 new sanitary vent penetrations through roof.

.3 Clarifications:

- .1 Where ceramic tile is indicated on walls in the showers per finish schedule (Detail #5/A-4), tile is limited to exterior perimeter walls only. Refer to Detail #3/A-4 for additional information of typical condition.
- .2 CT-1 wall tile finish is limited to exterior perimeter walls throughout and new urinal wall build-out.



END OF SECTION

## **Part 1 - General**

### **1.1 RELATED REQUIREMENTS**

- .1 Section 01 33 00 - Submittal Procedures
- .2 Section 01 45 00 - Quality Control.
- .3 Section 01 73 00 - Execution
- .4 Section 01 78 00 - Closeout Submittals.
- .5 Section 02 41 19 - Selective Demolition, Cutting and Patching
- .6 Section 06 10 53 - Miscellaneous Rough Carpentry
- .7 Section 07 62 00 - Sheet Metal Flashing and Trim
- .8 Section 07 72 00 - Roof Accessories

### **1.2 REFERENCE STANDARDS**

- .1 Canadian Standards Association (CSA)
  - .1 Canadian Standards Association (CSA International).
  - .2 CSA A123.3-98, Asphalt Saturated Organic Roofing Felt.
  - .3 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.
  - .4 CSA 0118.1-97(R2002), Western Cedars Shakes and Shingles.
  - .5 CAN/CSA-G164-M92(R2003), Hot Dip
  - .6 Galvanizing of Irregularly Shaped Articles.
  - .7 CAN/CSA-O141-05, Softwood Lumber.
  - .8 CSA O151-04, Canadian Softwood Lumber.
  - .9 National Lumber Grades Authority (NLGA) Standard Grading Rules for Canadian Lumber. March 1, 2007 issue.
- .2 Cedar Shake and Shingle Bureau (CSSB).
  - .1 CSSB-97, Cedar Shake and Shingle Grading Rules.
  - .2 CSSB New Roof Construction Manual for Roof Application Details 2002.

### **1.3 QUALITY ASSURANCE**

- .1 Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- .2 Plywood in accordance with CSA and ANSI standards.

### **1.4 SUBMITTALS**

- .1 Samples:
  - .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Submit duplicate full-size shingles, of finish and profile specified.
  - .3 Submit samples of all types of underlayment and screens.
  - .4 Submit samples of all coatings (shingle stains and wood paint).

### **1.5 MOCK UPS**

- .1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
- .2 Construct portion of shingling showing underlayment, repetitive pattern, weather exposure, built-in flashings, fitting, dressing and nailing.
- .3 Construct portion of shingling including roof peak, showing shingling and nailing.

- .4 Construct mock-up for each flashing detail for chimney and valley/dormer connections for approval prior to implementing work.
- .5 Advise Departmental Representative minimum three (3) working days prior to constructing mock-ups.
- .6 Allow 48 hours after completing mock-up for inspection of mock-up before proceeding with work.
- .7 When accepted, mock-up will demonstrate minimum standard of quality require for this work. Approved mock-up may remain as part of finished work.

#### **1.6 STORAGE, DELIVERY AND HANDLING**

- .1 Packing, Shipping, Handling and Unloading:
  - .1 Deliver, handle, store and protect materials as to prevent damage.
  - .2 Remove only in quantities required for same day use.
- .2 Storage and Protection:
  - .1 Provide and maintain dry, off-ground weatherproof storage.
  - .2 Cover top of piles to keep out rain and prevent over-drying of bundles or loose shingles in top layer.
- .3 Pre-Installation Preparation:
  - .1 Shingles must reach hygroscopic equilibrium with ambient air prior to installation. Store shingles outside, out of direct sunlight and rain, for a minimum of seven (7) days for hygroscopic equilibrium to occur.

#### **1.7 WASTE MANAGEMENT & DISPOSAL**

- .1 Minimize waste and separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

#### **1.8 UN-UNUSED MATERIALS**

- .1 Unused shingles remain property of Owner.
- .2 Return unused shingles to Owner. Retain packaging or rewrap shingles to form complete bundles.
- .3 Label packages to identify product, quantity and manufacturer/supplier.
- .4 Deliver and store in location designated by Departmental Representative.

### **Part 2 - Products**

#### **2.1 MATERIALS**

- .1 Circular Sawn Shingles.
  - .1 Species: Western Red Cedar.
  - .2 Grade: #1 Blue Label.
  - .3 Profiles: 1.6 mm at point, minimum 9.5 mm at butt end.
  - .4 Widths: Random widths, 100 mm minimum, 350 mm maximum,
  - .5 Lengths: 457 mm.
  - .6 Grain: edge grain.
  - .7 Wood: 100% heartwood, clear from bottom 280 mm, free from excessive grain sweeps or cross grain.
- .2 Underlayment:
  - .1 Self-adhesive underlayment: self-adhered composite membrane consisting of a high softening point, SBS rubberized asphalt compound integrally laminated to a

- cross-laminated polyethylene film with Self-adhesive underlayment:(Cont'd) anti-slip coating. Blueskin PE 200 HT by Bakor, or approved equal.
- .2 Primer for metal and masonry surfaces: Aquatic Primer by Bakor or approved equal.
- .3 Sealing Compound, Polybitume 570-05 by Bakor or approved equal.
- .3 Flashing:
  - .1 Chimney: lead sheet, free of inclusions, laminations and other defects; weight: base flashings 19.6 kg/m<sup>2</sup> (4 lbs/ft<sup>2</sup>), cap flashings 24.4 kg/m<sup>2</sup> (5 lbs/ft<sup>2</sup>); maximum length on installation: 1000 mm.
  - .2 Patination Oil: available in 1 and 2.5 litre cans, coverage approximately 60 m<sup>2</sup>/litre.
  - .3 Bituminous Paint: compatible with lead, for coating lead to be in direct contact with mortar.
  - .4 Bond breaker tape: masking tape or approved equal to prevent mortar bond to lead flashing at one side of joint.
  - .5 Fasteners for lead: Clips to be lead coated copper, 24 ounce. Fastening screws for clips to be stainless steel.
  - .6 Valleys and Dormers: center-crimped, painted, galvanized steel or aluminum; weight: flashing to be 0.45 mm (28 gauge), non-staining, non-corrosive metal; maximum length of sections 2440 mm with minimum 152 mm overlap at joints.
- .4 Wire Nails:
  - .1 Shingle and Common, 14 gauge, hot-dipped zinc coated to CSA B111 1974 R2003. Length: sufficient to penetrate 19 mm into roof sheathing, but not penetrate through underside of sheathing. Staples are not acceptable fasteners for this Work.
  - .2 Exposed shingle nails: oval-headed siding nails, hot-dipped galvanized, length as in clause 4.1 above.
- .5 Sheathing Boards:
  - .1 Eastern White Pine, No.1 grade, dressed 4 sides, kiln dried, moisture content 19% or less, thickness to match existing.
- .6 Ventilated Underlayment:
  - .1 Per the requirements of Section 07 72 00 Roof Accessories.
- .7 Eave Fascia and Gable Trim:
  - .1 Dimensions, profile and wood species to match existing removed. Finish with exterior linseed oil paint per the requirements of Section 09 03 61 and Section 09 91 23. Colour to match existing or acceptable equivalent with approval of Departmental Representative.
- .8 Gable Trim:
  - .1 Moulding width to cover gap between top of gable fascia and underside of shingle overhang. Dimensions, profile and wood species to match existing removed. Finish with exterior linseed oil paint per the requirements of Section 09 03 61 and Section 09 91 23. Colour to match existing or acceptable equivalent with approval of Departmental Representative.
- .9 Wood Shingle Finish:
  - .1 undercoat "Sansin SDF" clear base and two-coat wood finish "Sansin ENS", pigmented in exterior saturated colour "Forest Green 68" or acceptable equivalent with approval of Departmental Representative.
- .10 Insect screen: PVC coated fibreglass yarn, black.

### Part 3 - Execution

#### 3.1 REMOVALS

- .1 Carefully remove existing vent stack collars and save for reinstatement.
- .2 Remove existing roofing, flashings and underlay, and expose sheathing of roof.
- .3 Withdraw existing shingle and flashing nails, set those which break off. Leave surfaces free from dirt and loose material.
- .4 Departmental Representative to inspect roof sheathing. Take up, cut out and remove portions of sheathing boards affected by fungal or insect attack. Remove existing fascia board at eaves.
- .5 Replace cut out portions of sheathing boards with boards of equal sectional dimensions, and specified grade. Seat each end of board on rafter, with 25 mm bearing, and secure to rafter with nails. Assume 10% deck replacement. Provide unit price prior to beginning work for amounts over or under 10%.

#### 3.2 INSTALLATION OF CHIMNEY COLLAR

- .1 Install galvanized steel collar at chimney to support vertical upturn of self-adhesive underlayment, as shown on Drawings.
- .2 Prime collar as per manufacturer's instructions, prior to installation of self-adhesive underlayment.

#### 3.3 UNDERLAYMENT

- .1 Install building paper over existing roof deck prior to installing vertical and horizontal battens as detailed in Drawings
- .2 Install insect screening at eave edge of roof prior to attaching vertical battens. Wrap screen over horizontal batten edge and attach to block eave vent openings as shown on Drawings.
- .3 Install self-adhesive underlayment over horizontal battens at eaves, hips, dormer, peak and chimney as shown on Drawings. Install with minimum overlap 150 mm at edges and laps. Prime metal and masonry surfaces prior to installation of self-adhesive underlayment.
  - .1 Install one full roll width (914 mm) of self-adhesive underlayment on top of horizontal strapping at eaves, as eave protection. Keep edge 25 mm back from edge of strapping board at eaves to conceal.
  - .2 Install one full roll width (914 mm) of self-adhesive underlayment at gable edges.
  - .3 Install one full roll width (914 mm) of self-adhesive underlayment in valleys with half of roll width each side of valley.
  - .4 Install one full roll width (914 mm) of self-adhesive underlayment on each side of roof peaks and dormer peak.

#### 3.4 INSTALLATION OF FLASHINGS

- .1 Valleys
  - .1 Install new valley flashing over self-adhesive underlayment at roof valleys.
    - .1 Flashing sections to be at least 610 mm in width and a maximum of 2440 mm in length and on installation shall overlap a minimum of 152 mm.
    - .2 Flashing shall extend a minimum of 200 mm of under the adjacent shingles with an open valley width of approximately 203 mm.
    - .3 Flashing sections shall be attached using a minimum of fasteners to hold each section in place.

- .2 Chimney
  - .1 Base
    - .1 Flashings shall be at least 100 mm high and shall project at least 100 mm on to roof, or greater where shown on Drawings.
    - .2 On sloped intersections sheets shall be lapped 75 mm minimum.
    - .3 When run horizontally sheets shall be lapped a minimum 100 mm.
  - .2 Cap Flashing or Counter Flashings:
    - .1 Extend flashings 50 mm under top course of shingles at sides of chimney.
    - .2 Apron flashing to extend over one full course of shingles below, and lower edge to be secured with metal clips, as shown on Drawings.
    - .3 Reglet: insert chimney cap flashing not less than 30 mm into existing, reused mortar joints with lead plugs 25 mm wide and maximum 300 mm apart, minimum two plugs per length of flashing.
  - .3 Bituminous Paint, for Lead Flashings:
    - .1 All lead flashings to be in contact with mortar to be coated with thick coat of bituminous paint prior to installation, in areas where required to prevent direct mortar contact.
  - .4 Patination Oil, (for Lead flashings):
    - .1 Shake can vigorously before use.
    - .2 Coat full underside of lead prior to installation.
    - .3 Coat exposed surfaces before turning clips around edges. Coat clips.
    - .4 Coat between laps and adjoining sheets.
    - .5 Rub in well with soft, lint-free cloth.
    - .6 Do not use linseed oil as an alternative to Patination Oil.

### 3.5 APPLICATION

- .1 Do wood shingle work in accordance with National Building Code except where indicated otherwise.
- .2 Install shingles over dry substrate.
- .3 Space shingles approximately 6 mm apart.
- .4 Stagger joints minimum of 40 mm in succeeding courses. Ensure that in any 3 courses no two joints are in alignment.
- .5 Nailing:
  - .1 For concealed nailing, use two nails per shingle. Space nails 20 mm from edge with additional nails 100 mm apart across face of shingle, and 40 mm above butt line of following course.
  - .2 Drive nails flush but do not crush shingles.
  - .3 For exposed nailing, use oval-headed siding nails, galvanized.

### 3.6 SHINGLE ROOFING

- .1 Starter Course:
  - .1 Double shingles at eaves with butts projecting 50 mm beyond first roof sheathing boards and minimum of 19 mm beyond eave moulding trim at gable ends.
- .2 Coursing Pattern:
  - .1 Coursing pattern to have double shingles every third course for all roof areas.
- .3 Typical course:
  - .1 Install shingles with approximately 127 mm weather exposure and having triple thickness of shingle at any given point. Contractor to verify and replicate weather exposure spacing of existing shingles. Adjust course to align with lower edge of chimney.
  - .2 Lay shingles with grain perpendicular to eaves.

- .3 Avoid lining up joints with centre line of hearts and do not break a joint below centre line of hearts.
- .4 Keep shingles 25 mm clear of any vertical flashing.
- .4 Finishing the Roof Peak:
  - .1 Stop building paper, plywood strapping and board strapping short of roof deck peak such that there is a horizontal gap of 50 mm as shown on Drawings, for ventilation.
  - .2 Install prefabricated cedar ridge vent as per manufacturer's instructions.
  - .3 Selection of ridge vent product with approval of Departmental Representative.
  - .4 Install prefabricated taper-sawn ridge cap over ridge vent or fabricate a ridge cap using existing shingle supply to install over ridge vent. See Drawings for installation configuration.
- .5 Finishing the Eaves/Fascia:
  - .1 Attach new fascia to exterior rafter tails and paint to finish. Existing soffit and trims to remain in place.
  - .2 Dimensions and profile of new fascia trims to match existing removed.

### **3.7 CLEANING**

- .1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.
- .2 Remove roofing nails that have fallen on ground using high powered, earth magnets or other collection devices. Nail pickup to Departmental Representative's approval.

**END OF SECTION**

## Part 1 - General

### 1.1 RELATED REQUIREMENTS

- .1 Section 08 11 00 - Metal Doors and Frames.
- .2 Section 08 14 16 - Flush Wood Doors.
- .3 Section 02 41 19 - Selective Demolition, Cutting and Patching

### 1.2 REFERENCE STANDARDS

- .1 American National Standards Institute (ANSI) / Builders Hardware Manufacturers Association (BHMA).
  - .1 ANSI/BHMA A156.1-2016, Butts & Hinges.
  - .2 ANSI/BHMA A156.2-2011, Bored and Preamsembled Locks and Latches.
  - .3 ANSI/BHMA A156.4-2013, Door Controls - Closers.
  - .4 ANSI/BHMA A156.5-2014, Cylinder and Input Devices for Locks.
  - .5 ANSI/BHMA A156.16-2013, Auxiliary Hardware.
  - .6 ANSI/BHMA A156.16-2002, Auxiliary Hardware.
- .2 Canadian Steel Door and Frame Manufacturers' Association (CSDMA).
  - .1 Recommended Dimensional Standards for Commercial Steel Doors and Frames, 2000.

### 1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for door hardware and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Samples:
  - .1 Submit for review and acceptance of each unit.
  - .2 Samples will be returned for inclusion into work.
  - .3 Identify each sample by label indicating applicable specification paragraph number, brand name and number, finish and hardware package number.
  - .4 After approval samples will be returned for incorporation in Work.
- .4 Hardware List:
  - .1 Submit contract hardware list.
  - .2 Indicate specified hardware, including make, model, material, function, size, finish and other pertinent information.
- .5 Manufacturer's Instructions: submit manufacturer's installation instructions.

### 1.4 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for incorporation into manual.

### 1.5 MAINTENANCE MATERIALS SUBMITTALS

- .1 Extra Stock Materials:
  - .1 Supply maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
  - .2 Tools:
    - .1 Supply 2 sets of wrenches for locksets, fire exit hardware and door closers.

## 1.6 QUALITY ASSURANCE

- .1 Regulatory Requirements:
  - .1 Hardware for doors in fire separations and exit doors certified by a Canadian Certification Organization accredited by Standards Council of Canada.
- .2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

## 1.7 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Package items of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.
- .4 Storage and Handling Requirements:
  - .1 Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect door hardware from nicks, scratches, and blemishes.
  - .3 Protect prefinished surfaces with wrapping.
  - .4 Replace defective or damaged materials with new.

## Part 2 - Products

### 2.1 HARDWARE ITEMS

- .1 Use one (1) manufacturer's products only for similar items.

### 2.2 DOOR HARDWARE

- .1 Levers, Pull and Locks:
  - .1 Lever sets: brass construction, full lip strike plate to suit; privacy and passage function as scheduled.
    - .1 Lever: modern design, 117 mm long x 54 mm projection, 41 mm clearance.
    - .2 Rosette: 63 mm diameter x 9.5 mm thick.
    - .3 Acceptable Materials: Emtek Aston Lever with disk rosette.
    - .4 Finish: as selected by Departmental Representative from manufacturer's complete finish range.
  - .2 Door Pulls:
    - .1 Interior Partition Doors: brass construction; thru-bolted with decorative washer and caps.
      - .1 Size: 27 mm wide x 219 mm long, 54 mm projection. 25 mm x 1.5 mm base.
      - .2 Acceptable Materials: Emtek Baden Pull.
      - .3 Finish: as selected by Departmental Representative from manufacturer's complete finish range.
    - .2 Exterior Double Doors: brass/ bronze construction, concealed surface mount installation. General size and appearance to match existing brass/ bronze door pull.
- .3 Pocket Door Lock:
  - .1 Lock: mortise lock body, keyed cylinder on exterior side; spring mounted recessed edge pull.
  - .2 Size:
    - .1 Lock body: 158 mm high x 88 mm deep.
    - .2 Overall face dimensions: 73 mm wide x 185 mm high.
  - .3 Acceptable Materials: Emtek Modern Rectangular Pocket Door Mortise.

- .4 Finish: as selected by Departmental Representative from manufacturer's complete finish range.
- .4 Deadbolt: to ANSI/BHMA A156.5, mortise type, Grade 1, stainless steel bolt with 25 mm throw.
  - .1 Function:
    - .1 Privacy: Cylinder outside, lock/unlock thumb turn inside, complete with occupancy indicator when locked.
    - .2 Classroom: cylinder outside, unlock only thumbturn inside.
  - .2 Finish: to match lever set.
- .5 Privacy Latch: Finish to be selected by Departmental Representative from manufacturer's complete finish range. Finish to coordinate with other door hardware components.
- .2 Hinges:
  - .1 Butt hinges: to ANSI/BHMA A156.1, quantity and size to suit door size and weight. Finish to be selected by Departmental Representative to match door locks, latches, pulls and levers.
- .3 Door Closers:
  - .1 Door closers: to ANSI/BHMA A156.4, parallel arm mounting; size to suit door size and weight; full plastic cover, painted finish. Provide colour matched rust inhibitive finish on arm.
    - .1 Finish colour to be selected by Departmental Representative from manufacturer's complete colour range.
- .4 Smoke seals: Silicone bulb with self-adhesive backing; length equal to jambs and head. Colour as selected by Departmental Representative.

### 2.3 MISCELLANEOUS HARDWARE

- .1 Sliding Barn Door Hardware:
  - .1 Flat bar track, 50 mm high x 6 mm thick x length to suit.
  - .2 Carrier: face mounted, to suit door size and weight.
  - .3 Accessories: provide track mounted stops, mounting bracket, guide roller and channel, anti-lift pin, and other accessories for complete installation.
  - .4 Finish to be selected from manufacturer's complete colour range.
- .2 Door stops: to ANSI/BHMA A156.16, Classification L02101, wall mounted, cast construction; convex face.
  - .1 Colour/ finish to be selected by Departmental Representative from Manufacturers complete colour range.
- .3 Coat Hooks:
  - .1 Flat bar, 128 mm long x 25 mm wide x 3 mm thick, bent to provide 47 mm overall projection, 10 kg. load capacity.
  - .2 Acceptable Materials: Richelieu Contemporary Metal Hook - 1223.
  - .3 Finish: as selected by Departmental Representative from manufacturer's complete finish range.
- .4 Door Threshold:
  - .1 KC Crowder MFG Inc. CT-23, CT-103, CT-100 or approved equivalent.
  - .2 To be temporarily installed at Door 001 C/D. Coordinate installation with Departmental Representative.
- .5 Barrier Free Door Operators:
  - .1 Power assisted door closer, complete with actuators and control boxes.
  - .2 Mount operators on either push or pull sides of doors as required to place them inside the building.
  - .3 Actuation of operators by manual push button.
  - .6 Actuator: Hardwired low voltage actuator with stainless steel

- 114 mm round plate, engraved blue filled with handicap symbol.
- .7 Supply switched line voltage to control box. Locate switch adjacent to box.
- .8 Supply low voltage wiring to each actuator.
- .9 Mount control box in location as directed by Departmental Representative.
- .10 Actuators to be flush mounted at interior, surface wall mounted at exterior. Locations to be confirmed by Departmental Representative.
- .11 Doors D001A & D001B shall be fitted with door operators.

## **2.4 FASTENINGS**

- .1 Use only fasteners provided by manufacturer. Failure to comply may void warranties and applicable licensed labels.
- .2 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.
- .3 Exposed fastening devices to match finish of hardware.
- .4 Where pull is scheduled on one side of door supply fastening devices, and install so pull can be secured through door from reverse side.
- .5 Use fasteners compatible with material through which they pass.

## **2.5 KEYING**

- .1 Doors to be keyed in coordination with Departmental Representative.
- .2 Supply keys in duplicate for every lock in this Contract.
- .3 Supply three (3) master keys for each master key or grand master key group.
- .4 Hand over permanent cores and keys to Departmental Representative.

## **Part 3 - Execution**

### **3.1 INSTALLATION**

- .1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.
- .2 Supply metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.
- .3 Supply manufacturers' instructions for proper installation of each hardware component.
- .4 Install hardware to standard hardware location dimensions in accordance with CSDFMA Canadian Metric Guide for Steel Doors and Frames (Modular Construction).
- .5 Where door stop contacts door pulls, mount stop to strike bottom of pull.
- .6 Install key control cabinet.
- .7 Use only manufacturer's supplied fasteners.
  - .1 Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.
- .8 Remove construction locks when instructed by Departmental Representative.
  - .1 Install permanent cores and ensure locks operate correctly.

### **3.2 ADJUSTING**

- .1 Adjust door hardware, operators, closures and controls for optimum, smooth operating condition, safety and for weather tight closure.
- .2 Lubricate hardware, operating equipment and other moving parts.

- .3 Adjust door hardware to ensure tight fit at contact points with frames.

### **3.3 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
  - .1 Leave Work area clean at end of each day.
  - .2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacturer's instructions.
  - .3 Remove protective material from hardware items where present.
  - .4 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
- .2 Waste Management: separate waste materials in accordance with Section 01 74 19 - Waste Management and Disposal.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

### 3.4 DEMONSTRATION

- .1 Maintenance Staff Briefing:
  - .1 Brief maintenance staff regarding:
    - .1 Proper care, cleaning, and general maintenance of projects complete hardware.
    - .2 Description, use, handling, and storage of keys.
    - .3 Use, application and storage of wrenches for door closers, locksets, hardware, etc.
  - .2 Demonstrate operation, operating components, adjustment features, and lubrication requirements.

### 3.5 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by door hardware installation.

### 3.6 SCHEDULE

- .1 Per Architectural Drawings.

### 3.7 HARDWARE GROUPS

- .1 Group 01 (Family Washrooms)
  - .1 Door Lever (Passage)
  - .2 Deadbolt (Privacy, with Occupancy Indicator)
  - .3 Coat Hook
  - .4 Door Stop
  - .5 Hinges to suit
  - .6 Door Closer
- .2 Group 02 (Changing Rooms and WC's)
  - .1 Door Pull
  - .2 Privacy Latch
  - .3 Coat Hook
  - .4 Door Stop
  - .5 Hinges to suit
- .3 Group 03 (Janitor)
  - .1 Door Lever (Passage)
  - .2 Deadbolt (Classroom)
  - .3 Door Closer
  - .4 Smoke seals
  - .5 Door Stop
  - .6 Hinges to suit
- .4 Group 04 (Staff Washroom)
  - .1 Door Lever (Privacy)
  - .2 Coat Hook
  - .3 Door Stop
  - .4 Hinges to suit
- .5 Group 06 (Sliding Pocket Door)
  - .1 Pocket Door Lock
  - .2 Pocket Sliding Door Track to suit
- .6 Group 07 (Sliding Barn Door)
  - .1 Sliding Barn Door Track

- .7 Group 08 (Double Exterior Doors)
  - .1 Bronze door pull to match general appearance of existing to be replaced
  - .2 Door sweep

**END OF SECTION**

## Part 1 - General

### 1.1 RELATED REQUIREMENTS

- .1 Section 09 21 16 Gypsum Board Assemblies.
- .2 Section 09 67 70 - Epoxy Flooring

### 1.2 REFERENCE STANDARDS

- .1 American National Standards Institute (ANSI)/Ceramic Tile Institute (CTI)
  - .1 ANSI A108/A118/A136 -17, Installation of Ceramic Tile.
  - .2 ANSI A137.1-2012, Specification for Ceramic Tile.
- .2 ASTM International (ASTM):
  - .1 ASTM C144-11, Specification for Aggregate for Masonry Mortar.
  - .2 ASTM C979/C979M-10, Standard Specification for Pigments for Integrally Colored Concrete.
  - .3 ASTM C920-18, Specification for Elastomeric Joint Sealants.
  - .4 ASTM C979/C979M-16, Standard Specification for Pigments for Integrally Colored Concrete.
- .3 Canadian Standards Association (CSA).
  - .1 CAN/CSA-A3000-13, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
- .4 International Organization for Standardization (ISO).
  - .1 ISO 13007 Series-2013/2014, Ceramic Tiles - Grouts and Adhesives.
- .5 Terrazzo Tile and Marble Association of Canada (TTMAC):
  - .1 Specification Guide 09 30 00 Tile Installation Manual, 2016-2017.

### 1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product data:
  - .1 Include manufacturer's information on:
    - .1 Tile: marked to show each type, size, shape required. Include slip-resistance test results.
    - .2 Mortar and grout.
    - .3 Sealant.
    - .4 Leveling compound.
    - .5 Uncoupling membrane.
- .3 Samples:
  - .1 Wall tile: submit 300 mm x 300 mm sample panels of each colour, texture, size, and pattern of tile.
  - .2 Adhere tile samples to 11 mm thick plywood and grout joints to represent project installation.

### 1.4 QUALITY ASSURANCE

- .1 Quality Assurance Submittals:
  - .1 Manufacturer's Instructions: manufacturer's installation instructions.

## 1.5 DELIVERY, STORAGE AND HANDLING

- .1 Packing, shipping, handling and unloading:
  - .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
  - .2 Deliver, store and handle products in manner to avoid damage.
  - .3 Deliver products to job site in manufacturer's unopened cartons with labels intact and legible.
  - .4 Keep cartons dry and protected from vandalism and away from heavy traffic areas.
  - .5 Store cartons in upright position.
- .2 Waste Management and Disposal:
  - .1 Separate waste materials for recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
- .3 Safety: comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of materials.

## 1.6 AMBIENT CONDITIONS

- .1 Maintain air temperature and structural base temperature above 12°C for 48 hours before, during, and 48 hours after, installation.

## 1.7 MAINTENANCE

- .1 Extra Materials:
  - .1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
  - .2 Provide minimum 2% of each type and colour of tile required for project for maintenance use. Store where directed.
  - .3 Maintenance material same production run as installed material.

## Part 2 - Products

### 2.1 TILE

- .1 CT-1: Glazed ceramic tile.
  - .1 Standard of Acceptance: Olympia Colour and Dimension Series, size and colour to be selected by Departmental Representative from manufacturer's complete colour range.
  - .2 Size: 152 mm x 152 mm tile from the manufacturer's complete colour range.
  - .3 Pattern to be coordinated with Departmental Representative.

### 2.2 MORTAR MATERIALS

- .1 Mortar (bond coat): Polymer modified, to ANSI A118.11 and ISO 13007 Series, Classification C2TE; S1 deformability.
- .2 Mortar bed materials:
  - .1 Portland cement: to CAN/CSA A3001, Type 10.
  - .2 Sand: to ASTM C144, passing 16 mesh.
  - .3 Latex additive: formulated for use in portland cement mortar and thin set bond coat.
  - .4 Water: potable and free of minerals and chemicals which are detrimental to mortar and grout mixes.

### 2.3 GROUT

- .1 Wall grout: unsanded, to ISO 13007 Series, Classification CG2 WA.
  - .1 Colour as selected by Departmental Representative selected from manufacturer's complete colour range.

- .2 Colouring Pigments:
  - .1 Pure mineral pigments, lime-proof and nonfading, complying with ASTM C979/C979M.
  - .2 Colouring pigments to be added to grout by manufacturer.
  - .3 Job coloured grout are not acceptable.
- .3 Grout widths to be coordinated with Departmental Representative.

#### **2.4 MIXES**

- .1 Mortar bed for walls: 1-part Portland cement, 4 parts sand, and latex additive where required by TTMAC Detail; when mixed with water mortar bed shall be of consistency and workability that will allow maximum compaction during tamping of mortar bed, and achieve minimum compressive strength of 15 MPa after 28 days. Stronger mix can be achieved by adding latex to water.

#### **2.5 METAL TRIM**

- .1 Wall Corner Profile: profile with 3.5 mm reveal for outside corners of tiled walls, and 135 Degree integrated trapezoid-perforated anchoring leg. Provide with matching outside corners.
  - .1 Material and Finish: as selected by Departmental Representative from manufacturer's complete colour and coated finish range.
- .2 Wall Base Profile: L-shaped profile with 3.2mm wide visible surface, integrated trapezoid-perforated anchoring leg, and integrated grout joint spacer.
  - .1 Anchoring Leg: Provide with straight anchoring leg.
  - .2 Material and Finish: aluminum

#### **2.6 ACCESSORIES**

- .1 Sealant: non-sag, two-part urethane, to ASTM C920, Type M, Grade NS, Class 25.
  - .1 Colour: as selected by Departmental Representative.
- .2 Sealers: below-surface penetrating sealer type, breathable, not affected by solvent based strippers or cleaners.
  - .1 Tile sealer: use of sealer as recommended by tile manufacturer.
  - .2 Grout sealer: use of sealer as recommended by grout manufacturer.
- .3 Cleaning Compounds.
  - .1 Specifically designed for cleaning masonry and concrete and which will not prevent bond of subsequent tile setting materials including patching and leveling compounds and elastomeric waterproofing membrane and coat.
  - .2 Materials containing acid or caustic material are not acceptable.

### **Part 3 - Execution**

#### **3.1 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

#### **3.2 EXAMINATION**

- .1 Examine materials ordered for the project before delivering to the site; open boxes and confirm that materials match accepted samples, are free from defects and breakage detrimental to final appearance and installation, and as follows:
  - .1 Departmental Representative will only accept Grade 1 materials. Materials marked as seconds or discounted or that are not consistent with materials submitted for review will be rejected.

- .2 Replace unacceptable materials at no increase in contract price; order replacement materials using most expedient delivery method to minimize effect on construction schedule.
- .2 Examine substrates, areas, and conditions where tile will be installed for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile and confirm the following:
  - .1 Verify that substrates for bonding tile are firm; dry; clean; free from oil, waxy films, and curing compounds.
  - .2 Verify that joints and cracks in tile substrates are coordinated with tile joint locations; adjust joints in consultation with Departmental Representative where joints are not coordinated.
  - .3 Verify that tile subject to colour variations has been blended in the factory and packaged so tile units taken from one package show the same range of colours as those taken from other packages. If not factory blended, blend tiles at site before installing.
  - .4 Verify that back of tile is free from contamination before installation.
- .3 Notify Departmental Representative in writing of any conditions that are not acceptable; do not proceed with installation until unsatisfactory conditions have been corrected.

### 3.3 PREPARATION

- .1 Protection: Protect surrounding work from damage and disfiguration arising from work of this Section.
- .2 Surfaces: Thoroughly clean substrate surfaces receiving tile finishes to remove grease, oil or dust film, and other contaminants affecting bond of materials within bonding systems and as follows:
  - .1 Clean back of each tile before installation to remove surface contaminants and cutting residue, firing release dust and other debris detrimental to bond and final surface appearance.
- .3 Surface Leveling: Apply patching and leveling material to make backing surfaces flat and true to tolerances in plane listed for performance requirements with additional requirements as follows:
  - .1 Install patching materials wherever a slight substrate irregularity exists.
  - .2 Use self leveling materials for thicknesses less than 8 mm where thin set tile methods are used.
- .4 Height of starting course of wall tile above finish floor to be set at a consistent height throughout entire building prior to installation of epoxy grout floor finish and associated cove base.
- .5 Coordinate epoxy grout cove base installation with wall tile finish.

### 3.4 TILE INSTALLATION

- .1 Perform work in accordance with requirements of:
  - .1 TTMAC Specification Guide 09 30 00 Tile Installation Manual.
  - .2 Parts of ANSI A108 Series of tile installation standards that apply to types of bonding and grouting materials,
  - .3 Manufacturer's instructions.
- .2 Extend tile work into recesses and under or behind equipment and fixtures to form a complete covering without interruptions:
  - .1 Terminate Work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
  - .2 Make cut edges smooth, even and free from chipping.
  - .3 Do not split tile.
- .3 Accurately form intersections and returns; perform cutting and drilling of tile without marring visible surfaces:

- .1 Cut, drill, and fit tile to accommodate work of other subcontractors penetrating or abutting work of this Section.
- .2 Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints.
- .3 Fit tile closely to piping, fixtures, and other penetrations so that plates, collars, or covers overlap tile and to provide a uniform joint appearance.
- .4 Lay tile in pattern indicated on drawings and as follows:
  - .1 Lay out tile Work and centre tile sites in both directions in each space or on each wall area.
  - .2 Cut tile accurately and without damage.
  - .3 Smooth exposed cut edges with abrasive stone, where exposed.
  - .4 Chipped or split edges are not acceptable.
  - .5 Adjust tile layout to minimize tile cutting.
  - .6 Provide uniform joint widths.
  - .7 Install wall tile in a consistent pattern throughout entire building
  - .8 Review tile pattern with Departmental Representative for approval prior to installation.
- .5 Bonding Bed: Set tile in place while bond coat is wet and tacky and as follows:
  - .1 Adjust amount of bonding materials placed on substrates based on temperature and humidity to prevent skinning over of bonding materials.
  - .2 Back Butter tiles as required to obtain 100% mortar coverage on backs of tiles, in accordance with applicable requirements for back buttering of tile in referenced TTMAC and ANSI A108 series of tile installation standards.
  - .3 Notch bond coat in horizontal straight lines and set on freshly placed bonding material while moving (sliding) tile back and forth at 90° to notches.
  - .4 Verify that corner and edges are fully supported by bonding material.
  - .5 Set tiles using tile spacer/leveller to provide smooth transition between adjacent tiles and prevent lippage greater than 1 mm over a 3 mm grout joint.
  - .6 Keep two-thirds of grout joint depth free of bonding materials.
  - .7 Clean excess bonding materials from tile surface prior to final set.
  - .8 Sound tiles after bonding materials have cured and replace hollow sounding tile before grouting.
- .6 Grouting: Install grout in accordance with manufacturer's written instructions, the requirements of TTMAC, and as follows:
  - .1 Allow proper setting time before application of grout.
  - .2 Pre-seal or wax tiles requiring protection from grout staining.
  - .3 Force grout into joints to a smooth, dense finish.
  - .4 Remove excess grout in accordance with manufacturer's written instructions and polish tile with clean cloths.

### **3.5 SETTING SYSTEM**

- .1 Install on substrate in accordance with TTMAC detail:
  - .1 Walls: Gypsum board: 304W.

### **3.6 SEALING**

- .1 Apply tile sealer and grout sealer in accordance with manufacturer's written instructions.

### **3.7 CLEANING**

- .1 Proceed in accordance with Section 01 74 00 - Cleaning.
- .2 Clean surfaces so they are free of foreign matter using manufacturer recommended cleaning products and methods after completion of placement and grouting and as follows.
- .3 Remove grout residue from tile as soon as possible.

**3.8 PROTECTION**

- .1 Protect new floors from time of final set of adhesive until final inspection.
- .2 Prohibit traffic on floor for 48 hours after installation.
- .3 Protection: Leave finished installation clean and free of cracked, chipped, broken, unbonded, or other tile deficiencies as follows:
  - .1 Protect finished areas from traffic until setting materials have sufficiently cured in accordance with TTMAC requirements.
  - .2 Protect floor areas from traffic after grouting is completed in accordance with manufacturer's written instructions.
  - .3 Prevent foot and wheel traffic from floors for a minimum of 48 hours after completion of grouting.
  - .4 Use stepping boards where access is required for light foot traffic only after 24 hours from completion of grouting.
  - .5 Provide protective covering until Substantial Performance of the Work.

**END OF SECTION**

## **1 General**

### **1.1 RELATED REQUIREMENTS**

- .1 09 65 16 - Resilient Sheet Flooring.

### **1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Manufacturer's Instructions, Recommendations and Technical Data:
  - .1 For each type of product indicated, include manufacturer's technical data, application instructions, and recommendations.
  - .2 Indicate special handling criteria, installation sequence, cleaning procedures.
- .3 Samples:
  - .1 Submit duplicate 300 mm x 300 mm samples, on rigid backing, of each **[type,]** colour, and texture of epoxy flooring.
  - .2 Approved colour and texture samples shall become the standard of quality for colour and finish for this project.
- .4 Provide maintenance data for epoxy flooring for incorporation into manual specified in Section 01 33 00 - Submittal Procedures.

### **1.3 QUALITY ASSURANCE**

- .1 Installation shall be done only by certified applicators. Submit written verification from manufacturer indicating certification of applicator.
- .2 Mock-ups
  - .1 Apply full-thickness coating of each finish to 100 m<sup>2</sup> area of surface to be treated.
  - .2 Include minimum 1 m length of integral cove base.
  - .3 Allow 48 hours for inspection of mock-up by Consultant before proceeding with coating work.
  - .4 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of finished work upon Consultant's approval.
- .3 Site Meetings: as part of Manufacturer's Services described in Article **[3.5]** - FIELD QUALITY CONTROL, schedule site visits, to review Work, at stages listed.
  - .1 After delivery and storage of products, and when preparatory Work is complete, but before installation begins.
  - .2 Twice during progress of Work at 25% and 60% complete.
  - .3 Upon completion of Work, after cleaning is carried out.

### **1.4 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver and store material in original, undamaged, unopened containers, with manufacturer's labels and seals intact.
- .2 Store materials to comply with manufacturer's directions to prevent deterioration due to moisture, heat, cold, direct sunlight or any other causes.
- .3 Keep containers sealed when not in use.

### **1.5 SITE CONDITIONS**

- .1 Safety:
  - .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of materials.
  - .2 Ensure no open flame heating devices are used.

- .3 Discourage occupancy of treated space until volatile materials are no longer being emitted and there is no odour.
- .4 Provide adequate respiratory protection to exposed individuals.
- .2 Ventilation:
  - .1 Provide ventilation continuously during and after coating application. Run system 24 hours per day during application; provide continuous ventilation for 7 days after completion of application.
- .3 Environmental Limitations:
  - .1 Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring application.
  - .2 Maintain material and substrate temperature between 18°C and 30°C during resinous flooring application and for not less than 24 hours after application.
- .4 Lighting:
  - .1 Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring application.
- .5 Close spaces to traffic during resinous flooring application and for not less than 24 hours after application, unless manufacturer recommends a longer period.
- .6 Concrete substrate shall be properly cured for a minimum of 30 days.

## 2 Products

### 2.1 MATERIALS

- .1 Epoxy Flooring System:
  - .1 Stonclad GS with Stonkote GS4 top coat by Stonhard.
  - .2 Interior epoxy flooring coating materials:
    - .1 System Characteristics:
      - .1 Wearing Surface: Standard smooth.
      - .2 Integral Cove Base where indicated on drawings.
      - .3 Overall System Thickness: nominal 6 mm.
    - .2 System Components:
      - .1 Primer:
        - .1 Resin: Epoxy.
        - .2 Formulation Description: two (2) components.
        - .3 Application Method: Squeegee and roller.
        - .4 Number of Coats: (1) one.
        - .5 Standard of acceptance: type as per manufacturer's recommendations for applicable substrate.
      - .2 Mortar Base:
        - .1 Resin: Epoxy.
        - .2 Formulation Description: three (3) components.
        - .3 Application Method: Metal Trowel.
        - .4 Thickness of Coats: nominal 6 mm.
        - .5 Number of Coats: one (1).
        - .6 Aggregates: Pigmented Blended aggregate.
        - .7 Standard of acceptance: Stonclad GS by Stonhard, or approved alternate.
    - .3 Top Coat:
      - .1 Resin: Epoxy.
      - .2 Formulation Description: two (2) component, 100%solids.
      - .3 Type: pigmented.
      - .4 Finish: manufacturer's standard.
      - .5 Number of Coats: one (1).

- .6 Standard of acceptance: Stonkote GS4 by Stonhard, or approved alternate.
- .4 Finish:
  - .1 Solid colour: Stonhard Silver Gray.
  - .2 Glaze coat: high gloss finish.
- .3 System Physical Properties:
  - .1 Provide resinous flooring system with the following minimum physical property requirements when tested according to test methods indicated:
    - .1 Compressive Strength (ASTM C579): 10,000 psi after 7 days.
    - .2 Tensile Strength (ASTM C3070): 1,750 psi.
    - .3 Flexural Strength (ASTM C580): 4,000 psi.
    - .4 Water Absorption (ASTM C413): < 1%.
    - .5 Impact Resistance (ASTM D2794): > 160 in. lbs.
    - .6 Flammability (ASTM E648): Class 1.
    - .7 Hardness (ASTM D2240): 85 to 90, Shore D.
- .2 Decorative Epoxy Flooring System (EPX-2):
  - .1 Stonshield HRI by Stonhard.
  - .2 Interior epoxy flooring materials:
    - .1 System Characteristics:
      - .1 Wearing Surface: Medium texture.
      - .2 Integral Cove Base where indicated on drawings.
      - .3 Overall System Thickness: nominal 6 mm.
    - .2 System Components:
      - .1 Primer:
        - .1 Resin: Epoxy.
        - .2 Formulation Description: two (2) components.
        - .3 Application Method: Squeegee and roller.
        - .4 Number of Coats: (1) one.
        - .5 Acceptable Materials: type as per manufacturer's recommendations for applicable substrate.
      - .2 Base:
        - .1 Resin: Epoxy.
        - .2 Formulation Description: three (3) components,.
        - .3 Application Method: Metal Trowel.
        - .4 Thickness of Coats: nominal 6 mm.
        - .5 Number of Coats: one (1).
        - .6 Aggregates: finely graded silica.
        - .7 Basis-of-design Material: StonShield HRI by Stonhard.
      - .3 Undercoat:
        - .1 Resin: epoxy.
        - .2 Formulation description: three component, free flowing.
        - .3 Number of Coats: one (1).
      - .4 Aggregate:
        - .1 Coloured quartz for broadcast application.
      - .5 Sealer:
        - .1 Resin: Epoxy.
        - .2 Formulation Description: two (2) component.
        - .3 Type: clear.
        - .4 Number of Coats: one (1).
      - .6 Finish:
        - .1 Colour: Stonhard Ash.
  - .3 System Physical Properties:
    - .1 Provide epoxy flooring system with the following minimum physical property requirements when tested according to test methods indicated:
      - .1 Compressive Strength (ASTM C579): 10,000 psi after 7 days.
      - .2 Tensile Strength (ASTM C3070): 2000 psi.

- .3 Flexural Strength (ASTM C580): 4,300 psi.
  - .4 Water Absorption (ASTM C413): 0.1%.
  - .5 Impact Resistance (ASTM D2794): > 160 in. lbs.
  - .6 Flammability (ASTM E648): Class 1.
  - .7 Hardness (ASTM D2240): 85 to 90, Shore D.
  - .8 Slip resistance (ASTM F1679): 0.93 (wet).
- .3 Trowelable epoxy grout:
- .1 Three-component, heavy-duty, fast-setting, high temperature resistant grout; compatible with remainder of epoxy flooring system.
  - .2 Properties:
    - .1 Compressive strength (ASTM C579): 7400 psi after 7 days.
    - .2 Tensile strength (ASTM C307): 1800 psi.
    - .3 Flexural strength (ASTM C580): 2800 psi.
    - .4 Flexural modulus of elasticity (ASTM C580):  $8.5 \times 10^5$  psi.
    - .5 Hardness: ASTM D2240): 86 - 88, Shore D.
    - .6 VOC content (ASTM D2369): 50 g/L
  - .3 Standard of acceptance: StonSet HG5 by Stonhard.
- .4 Moisture reduction barrier:
- .1 Three-component, polymer modified, cementitious, osmotic pressure resistant grout; specifically designed to eliminate osmotic blistering of the floor caused by excess moisture occurring in slabs on or below grade; compatible with remainder of epoxy flooring system.
  - .2 Primer: as recommended by manufacturer.
  - .3 Standard of acceptance: Stonfil OP2 by Stonhard.
- .5 Waterproofing membrane:
- .1 Two-component, 100% solids, liquid applied, urethane waterproofing membrane; designed for use on horizontal applications as a positive-side moisture barrier; compatible with remainder of epoxy flooring system.
  - .2 Properties:
    - .1 Water vapour transmission (ASTM E96): < 1 g.
    - .2 Tensile strength (ASTM D412): 1200 psi.
    - .3 Elongation (ASTM D412): 200%.
    - .4 Hardness: ASTM D2240): 70, Shore A.
    - .5 VOC content (ASTM D2369): 8 g/L
  - .3 Standard of acceptance: Stonproof ME7 by Stonhard.
- .6 Trowelable epoxy grout:
- .1 Three-component, heavy-duty, fast-setting, high temperature resistant grout; compatible with remainder of epoxy flooring system.
  - .2 Properties:
    - .1 Compressive strength (ASTM C579): 7400 psi after 7 days.
    - .2 Tensile strength (ASTM C307): 1800 psi.
    - .3 Flexural strength (ASTM C580): 2800 psi.
    - .4 Flexural modulus of elasticity (ASTM C580):  $8.5 \times 10^5$  psi.
    - .5 Hardness: ASTM D2240): 86 - 88, Shore D.
    - .6 VOC content (ASTM D2369): 50 g/L
  - .3 Standard of acceptance: StonSet TG5 by Stonhard.
- .7 Accessory Materials:
- .1 Patching and Fill Material: Resinous product as per resinous flooring manufacturer written recommendation to suit application.
  - .2 Primers: type as recommended by manufacturer for applicable substrate.
  - .3 Joint Sealant: Stonproof CT5 Crack Treatment.
  - .4 Adaptors, Filler strips, Edge Guards, Transition Strips, Reducers and Cove Caps: thickness and width to suit floor thickness and condition.
    - .1 Standard of acceptance: products by Johnsonite, or approved alternate.

## **2.2 MIXES**

- .1 Mix coatings in accordance with manufacturer's instructions.

## **3 Execution**

### **3.1 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

### **3.2 EXAMINATION**

- .1 Examine conditions, substrates and work to receive work of this Section.
- .2 Examine substrate surfaces to receive epoxy coatings.
  - .1 Visually inspect substrate before starting Work of this Section.
  - .2 Examine site conditions and areas for defects of work prepared by other trades in which the work of this section is to be applied.
  - .3 Report to the Consultant in writing, defects of work which may adversely affect the quality of workmanship of this section.
  - .4 Commencement of work shall imply acceptance of surfaces.
- .3 Verification of conditions:
  - .1 Verify that:
    - .1 Surfaces are clean, dimensionally stable, cured and free of contaminants such as oil, sealers and curing compounds.
    - .2 Ensure concrete is cured for minimum 28 days with moisture content no greater than 14%.

### **3.3 PREPARATION**

- .1 Prepare surfaces in accordance with manufacturer's written instructions.
- .2 Substrate shall be sound, non-dusting, and free of grease, oil, dirt and other matter detrimental to adhesion and appearance of coating. Provide clean, dry, and neutral Ph. substrate for epoxy flooring application.
- .3 Where epoxy flooring is applied over existing floor surfaces, remove existing coatings / finishes and prepare substrates in accordance with manufacturer's written recommendations.
- .4 Mechanically prepare concrete substrates as follows:
  - .1 Repair damaged and deteriorated concrete according to epoxy flooring manufacturer's written recommendations.
  - .2 Clean concrete slab free from foreign matter. Remove laitance by shot blasting or other method approved by flooring manufacturer and acceptable to Consultant.
- .5 Epoxy Materials: Mix components and prepare materials according to epoxy flooring manufacturer's written instructions.
- .6 Use patching and fill material to fill holes and depressions in substrates according to manufacturer's written instructions.
- .7 Treat control joints and other non-moving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer's written instructions.
- .8 Mask/cover adjacent surfaces, fixtures, equipment by suitable means to protect them from damage from the operations of this trade. Make good damage by this trade at own expense and to Consultant's satisfaction.

### 3.4 APPLICATION

- .1 General: Apply epoxy flooring system in accordance with manufacturer's written instructions, and where possible under direction of manufacturer's representative, to produce a uniform, monolithic wearing surface.
  - .1 Coordinate application of components to provide optimum adhesion of resinous flooring system to substrate, and optimum inter-coat adhesion.
  - .2 Cure resinous flooring components according to manufacturer's written instructions. Prevent contamination during application and curing processes.
  - .3 **[Texture: smooth and textured.]**
  - .4 Texture:
    - .1 Smooth: under fixed equipment.
    - .2 Heavy anti-slip: in front of items listed below. Area extending **[600 mm]** deep plus toe space x width plus **[300 mm]** (**[150 mm]** each side).
      - .1 Dishwashers/clean and soiled dish table unit.
      - .2 Pot sinks.
      - .3 Hand sinks.
    - .3 Standard anti-slip: used elsewhere. Extend under fixed equipment **[100 mm]**.
  - .5 Coordinate work with supply and installation of **[coolers]** **[freezers]**.
- .2 Epoxy cove base:
  - .1 [Wall-Attached] [Integral] Cove Base: affix metal cove strip cap at elevation noted. Apply cove base mix mortar to wall surfaces before applying flooring. Apply according to manufacturer's written instructions and details including those for taping, mixing, priming, troweling, sanding, of cove base. Round internal and external corners.
    - .1 Size: **[100 mm high]** **[150 mm high]** **[height as indicated on drawings]** with 25 mm radius.
  - .2 Freestanding Cove Base: apply cove base mix mortar before applying flooring. Keep base 6 mm from face of wall/column. Apply according to manufacturer's written instructions and details including those for taping, mixing, priming, troweling, sanding, of cove base. Caulk joint with sealant.
    - .1 Size: 38 mm x 38 mm, with 45° angle.
- .3 Terminations:
  - .1 Chase edges to 'lock' the flooring system into the concrete substrate along lines of termination.
  - .2 Penetration Treatment: Lap and seal resinous system onto the perimeter of the penetrating item by bridging over compatible elastomer at the interface to compensate for possible movement.
  - .3 Trenches: Continue flooring system into trenches to maintain monolithic protection. Treat cold joints to assure bridging of potential cracks.
  - .4 Treat floor drains by chasing the flooring system to lock in place at point of termination.
- .4 Joints and Cracks:
  - .1 Treat control joints to bridge potential cracks and to maintain monolithic protection.
  - .2 Treat cold joints and construction joints to bridge potential cracks and to maintain monolithic protection on horizontal and vertical surfaces as well as horizontal and vertical interfaces.
  - .3 Discontinue floor coating system at vertical and horizontal contraction and expansion joints by installing backer rod and compatible sealant after coating installation is completed. Provide sealant type recommended by manufacturer for traffic conditions and chemical exposures to be encountered.
- .5 Curing:

- .1 Cure epoxy flooring materials in compliance with manufacturer's directions, taking care to prevent contamination during stages of application and prior to completion of curing process. Close area of application for a minimum of 18 hours.
- .6 Moisture reduction barrier:
  - .1 Patch and prime substrate using manufacturer recommended products.
  - .2 Mix components, taking care to avoid entrapping air. Apply immediately after mixing using V-notched rake to obtain 3 mm applied thickness; back roll with spiked roller.
- .7 Waterproofing membrane:
  - .1 Patch and prime substrate using manufacturer recommended products.
  - .2 Mix components, taking care to avoid entrapping air. Apply immediately after mixing using 30 mil notched squeegee; back roll with spiked roller.

### **3.5 FIELD QUALITY CONTROL**

- .1 Manufacturer's Field Services:
  - .1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in Article **[1.2]** - SUBMITTALS.
  - .2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
  - .3 Schedule site visits, to review Work, as directed in Article **[1.3]** - QUALITY ASSURANCE.

### **3.6 CLEANING AND PROTECTION**

- .1 Clean uncured flooring materials from surfaces with solvent. Removal of cured materials requires scraping, chipping or grinding.
- .2 Protect flooring materials from wear and damage during construction operations. Where temporary covering is required for this purpose, comply with manufacturer's recommendations for protective materials and method of application
- .3 Remove temporary covering and clean flooring just prior to final acceptance using materials and procedures recommended by flooring manufacturer.

### **3.7 SCHEDULE**

- .1 Refer to Finish Schedule for extent of epoxy flooring.
- .2 Use moisture reduction barrier with epoxy flooring systems on First Floor (slab-on-grade construction).
- .3 Use waterproofing membrane with epoxy flooring systems on Second Floor.

**END OF SECTION**

## **Part 1 - General**

### **1.1 REFERENCES**

- .1 Canadian Standards Association (CSA).
  - .1 CAN/CSA-B45 Series-02, CSA Standards on Plumbing Fixtures.
  - .2 CAN/CSA-B125.2-05, Plumbing Fittings.

### **1.2 PRODUCT DATA**

- .1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Indicate: dimensions, construction details and roughing-in dimensions for all fixtures and trim.

### **1.3 MAINTENANCE DATA**

- .1 Provide maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.
- .2 Data to include:
  - .1 Description of plumbing fixtures and trim giving manufacturer's name, type, model, year and capacity
  - .2 Details of operation, servicing and maintenance.
  - .3 Recommended spare parts list.

### **1.4 FIXTURES AND TRIM**

- .1 Architectural drawings to govern in determination of number and location of fixtures.
- .2 Exposed plumbing brass to be chrome plated.
- .3 Caulk around bases of water closets to floors and wall hung lavatories to walls with mildew resistant silicone sealant, white in color, and tooled to smooth bead.
- .4 Product description takes precedence over model numbers.
- .5 Fixtures: Manufactured in accordance with CAN/CSA-B45.
- .6 Trim and Fittings: Manufactured in accordance with CAN/CSA-B125.
- .7 All fixtures used shall be CSA approved.

## **Part 2 - Products**

### **2.1 WATER CLOSETS**

- .1 WC-1: Barrier Free Water closet, 4.8 Lpf .
  - .1 Bowl: White vitreous china with anti-microbial ceramic glaze, 54mm (2 1/8") fully glazed trapway, high efficiency syphon jet, wall-mounted, elongated, 381 mm floor to top of bowl, 38 mm top spud, MaP score of 1000 Grams @ 4.8 Lpf.

- .1 Standard of Acceptance: Zurn Z5615-BWL, American Standard, Kohler.
- .2 Flush valve: Manually operated top spud.
  - .1 Chrome plated, polished exterior.
  - .2 Chloramine resistant dual seal diaphragm with clog resistant triple filtered bypass.
  - .3 Manually operated flush handle, with non-hold open and no leak feature, vacuum breaker.
  - .4 Standard of Acceptance: Zurn Z6000AV, Sloan, American Standard.
- .3 Seat: Elongated, open front moulded solid plastic, less cover, SS check hinge, posts, washers and nuts.
  - .1 Standard of Acceptance: Bemis C1955SS, Olsonite, Centoco.
- .4 Fixture carrier: Narrow wall, adjustable, vertical siphon jet water closet support system, Dura-coated cast iron carrier, with hydro-mechanically optimized sweep, 9" maximum wall cavity requirement, 50mm vent, faceplate, gasket, etc.
  - .1 Standard of Acceptance: Zurn Z-1202-N4, Mifab, Jay R. Smith.

## 2.2 LAVATORIES

- .1 L-1: Barrier free, White vitreous china, wall hung half pedestal, three holes, 100 mm centers, front overflow and bottom outlet, concealed arm carrier ready.
  - .1 Standard of Acceptance: Zurn Z5340-PED, American Standard, Crane.
  - .2 Trim: Supply fitting to be manually operated, single lever, chrome, ceramic disc cartridge, vandal resistant 1.9 L outlet. Waste to be offset cast plug with open grid strainer. Trap to be cast brass adjustable P-trap with cleanout, covering system conforming to Barrier-Free requirements.
    - .1 Standard of Acceptance:
      - Faucet: Zurn AquaSpec Z7440-XL.
      - Supply fitting: Teck, Powers, Crane, Sloan.
      - Waste fittings: Teck 33T290, Powers, Zurn.
      - Trap: Teck 33T311, Powers, Zurn.
  - .3 Pipe Covers: Truebro Lav Shield
- .2 L-2: Hand wash, White vitreous china, 500mm wide x 260mm deep, left side faucet hole, wall hung, rear overflow and bottom outlet, trap cover ready.
  - .1 Standard of Acceptance: Duravit Starck 3, American Standard, Crane.
  - .2 Trim: Supply fitting to be solid brass, single handle operated, brushed nickel, single sink opening, 0.14 L/S outlet. Waste to be offset cast plug with open grid strainer. Trap to be cast brass adjustable P-trap with cleanout.
    - .1 Standard of Acceptance:
      - Faucet: Aquabrass 61044.
      - Supply fitting: Teck, Powers, Crane, Sloan.

Waste fittings:	Teck 33T290, Powers, Zurn.
Trap:	Teck 33T311, Powers, Zurn.
Pipe Cover:	Duravit 086518.

### 2.3 URINALS

- .1 U-1 & U-2: Wall mounted low flow urinal, 1.9 Lpf.
  - .1 Urinal: Low consumption vitreous china c/w 19 mm top spud, outlet flange and rubber gasket with integral trap, high efficiency washdown, 350mm extended rim, vandal resistant outlet strainer. Colour: white.
    - .1 Acceptable products: Zurn Z5755-U, American Standard, Crane.
- .2 Flush Valve: Manually operated, quiet diaphragm, chrome plated flushometer, clog resistant, triple filtered by-pass, non-hold open, no leak handle, vacuum breaker.
  - .1 Acceptable Products: Zurn Z6003AV, American Standard, Sloan.
- .3 Urinal Carrier with welded steel integral foot support, Dura-coated heavy tubular uprights and heavy gauge supporting plates.
  - .1 Acceptable Products: Zurn Z-1221, J.R. Smith, Ancon.
- .4 Wall access element with round stainless steel cover.
  - .1 Acceptable Products: Zurn, J.R. Smith.
- .5 Plastic drainage piping required at drains per National Building Code.
- .6 Mounting Heights:
  - .1 U-1: Height to be 610 mm.
  - .2 U-2: Height to be 432 mm.

### 2.4 JANITORS SINKS

- .1 JS-1: Precast 610 mm x 610 mm x 254 mm high composite base, integral 1,200 mm high stainless steel wall guards, chrome plated brass drain body and stainless steel caps on all sides.
  - .1 Standard of Acceptance: Zurn Z1996-24, Williams, Fiat.
- .2 Trim: Faucet with wall brace, cross indexed handles, pail hook, hose outlet, integral stops, vacuum breaker and escutcheons, polished chrome plated finish.
  - .1 Standard of Acceptance: Zurn Z843M1, Teck, Chicago.
- .3 Accessories: Minimum 760 mm long rubber hose with brass coupling and stainless steel hose bracket. Stainless steel mop hanger with 3 rubber spring loaded grips.
- .4 Standard of Acceptance:
  - .1 Hose and bracket: Fiat #832-AA, Williams T-35, Teck 28T911, Zurn.
  - .2 Mop hanger: Zurn JP1996-MH, Fiat #889-CC, Williams T-40, Teck 28T910.

## 2.5 SHOWER HEADS AND VALVES

- .1 SH-1 & SH-2:
  - .1 SH-1 Shower head: Vandal resistant, solid brass, chrome plated finish. Head to have 8.3 L/min maximum flow with brass ball,
  - .2 SH-2 Shower head: Removable wand with 1500mm flexible metal hose, 600mm wall mounted slide bar for shower head
  - .3 Shower valve to have ceramic pressure balancing cartridge, adjustable hot water limit stop, metal exposed trim and lever blade handle, and adjustable stop screw. Set limit to 40°C maximum water temperature. Integral service stops required. Diverter valve and tub spout not required.
    - .1 Standard of Acceptance: Zurn Temp-Gard III – Z7302 (SH-2) & Z7000i7 (SH-1).

## 2.6 KITCHEN SINKS

- .1 KS-1: 18-gauge stainless steel single bowl drop-in sink, single hole, 520mm x 530mm x 210mm deep.
  - .1 Standard of Acceptance: Novanni JE2020, Kindred.
  - .2 Trim: single control kitchen faucet, retractable dual function pull down spray, polished chrome, 430mm high, 250 mm total spout projection, 1.75 gpm, ceramic cartridge.
    - .1 Standard of Acceptance: ALT Bettola #40875.

## 2.7 FIXTURE TRAPS

- .1 PVC or Brass P traps complete with cleanouts on all fixtures which do not have built-in traps. Chrome plated brass in all exposed places.

## 2.8 ROUGHING-IN OF FIXTURES

- .1 Rough in for equipment by others complete with valved supplies, wastes and vents, capped.

## Part 3 - Execution

### 3.1 FIXTURE INSTALLATION

- .1 Connect fixtures complete with supplies and drains, trapped, supported level and square. Hot water faucet connections shall be on left. Wall hung fixtures to be securely and firmly mounted.
- .2 Mounting heights for wall hung fixtures and showers measured from finished floor:
  - .1 Standard: to comply with manufacturers roughing-in details unless otherwise indicated or specified.

### **3.2 COMMISSIONING**

- .1 Flush valves: Adjust settings to suit site conditions.
- .2 Aerator screens and strainers: Remove, clean out and reinstall.
- .3 Maximum temperature settings to be verified using a digital thermometer.

**END OF SECTION**