

## Part 1- GENERAL

### 1.1 REFERENCES

- .1 American National Standards Institute / National Particleboard Association (ANSI/NPA)
  - .1 ANSI/NPA A208.1-[2009], Particleboard.
  
- .2 ASTM International
  - .1 ASTM A 123/A 123M-[09], Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  - .2 ASTM A 653/A 653M-[09a], Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvaneal) by the Hot-Dip Process.
  - .3 ASTM C 578-10, Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
  - .4 ASTM C 1289-10, Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
  - .5 ASTM C 1396/C 1396M-[09a], Standard Specification for Gypsum Board.
  - .6 ASTM D 1761-06, Standard Test Methods for Mechanical Fasteners in Wood.
  - .7 ASTM D 5055-10, Standard Specification for Establishing and Monitoring Structural Capacities of Prefabricated Wood I-Joists.
  - .8 ASTM D 5456-10, Standard Specification for Evaluation of Structural Composite Lumber Products.
  
- .3 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-11.3-M87, Hardboard.
  - .2 CAN/CGSB-51.32-M77, Sheathing, Membrane, Breather Type.
  - .3 CAN/CGSB-51.34-M86, Vapour Barrier, Polyethylene Sheet for Use in Building Construction and amendment.
  
- .4 CSA International
  - .1 CAN/CSA-A123.2-03(R2008), Asphalt Coated Roofing Sheets.
  - .2 CAN/CSA-A247-M86(R1996), Insulating Fiberboard.
  - .3 CSA B111-[1974(R2003)], Wire Nails, Spikes and Staples.
  - .4 CSA O112 Series-M1977(R2006), CSA Standards for Wood Adhesives.
  - .5 CSA O121-08, Douglas Fir Plywood.
  - .6 CSA O141-05(R2009), Softwood Lumber.
  - .7 CSA O151-09, Canadian Softwood Plywood.
  - .8 CSA O153-M1980(R2008), Poplar Plywood.
  - .9 CSA O325-07] Construction Sheathing.
  - .10 CSA O437 Series-93(R2006), Standards on OSB and Waferboard.

- .5 Forest Stewardship Council (FSC)
  - .1 FSC-STD-01-001-2004, FSC Principle and Criteria for Forest Stewardship.
  - .2 FSC-STD-20-002-2004, Structure and Content of Forest Stewardship Standards V2-1
  - .3 FSC Accredited Certified Bodies.
- .6 National Lumber Grades Authority (NLGA)
  - .1 Standard Grading Rules for Canadian Lumber 2007.
- .7 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
  - .1 SCAQMD Rule 1113-A2007, Architectural Coatings.
  - .2 SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.
- .8 Underwriters' Laboratories of Canada (ULC)
  - .1 CAN/ULC-S706-09, Standard for Wood Fiber Insulating Boards for Buildings.

## **1.2 SUBMITTALS**

- .1 Provide submittals as required.

## **1.3 QUALITY ASSURANCE**

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

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

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 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 materials from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.

## **2 PRODUCTS**

### **2.1 MATERIALS**

- .1 Lumber: softwood, S4S, moisture content 19% (S-dry) or less in accordance with following standards:
  - .1 CSA O141.
  - .2 NLGA Standard Grading Rules for Canadian Lumber.
- .2 Framing and board lumber: in accordance with NBC.
- .3 Furring, blocking, nailing strips, grounds, rough bucks, [cants,] curbs, fascia backing and sleepers:
  - .1 S2S is acceptable for all Work.
  - .2 Board sizes: "Standard" or better grade.
  - .3 Dimension sizes: "Standard" light framing or better grade.
  - .4 Post and timbers sizes: "Standard" or better grade.
- .4 Plywood, OSB and wood based compo Site panels: to CSA O325.

- .5 Douglas fir plywood (DFP): to CSA O121, standard construction.
- .6 Canadian softwood plywood (CSP): to CSA O151, standard construction.
- .7 Poplar plywood (PP): to CSA O153, standard construction.
- .8 Gypsum sheathing: to ASTM C36/C36M.
- .9 All wall mounted fixtures backing boards:
  - .1  $\frac{3}{4}$ " Plywood G1S, DFP or CSP grade, square edge.
- .10 Electrical equipment mounting boards:
  - .1  $\frac{3}{4}$ " Plywood G1S, DFP or CSP grade, square edge.
- .11 Site carpentry:
  - .1 Pressure treated timbers: to CSA 080, pressure treated pine or fir to National Lumber Grades Authority, select grade 2 and better, all dried to a maximum moisture content of 20% prior to treating. Non-incised, CCA treatment to minimum retention of 4.0 kg/m<sup>3</sup> for above ground use and 6.4 kg/m<sup>3</sup> for ground contact. Colour: Cedar Tone Green.
  - .2 Preservative: Green, End Cut Wood Preservative type to CSAO80.

## **2.2 ACCESSORIES**

- .1 General purpose adhesive: to CSA O112 Series.
- .2 Sill Gasket Air seal: closed cell polyurethane or polyethylene.
- .3 Nails, spikes and staples: to CSA B111.

- .4 Bolts: 12.5 mm diameter unless indicated otherwise, complete with nuts and washers.
- .5 Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws and lead or inorganic fiber plugs, explosive actuated fastening devices, recommended for purpose by manufacturer.

### **3 EXECUTION**

#### **3.1 INSTALLATION**

- .1 Install members true to line, levels and elevations, square and plumb.
- .2 All wood to be free of defects. Any warped, checked or bent materials shall be rejected and not be used.
- .3 Construct continuous members from pieces of longest practical length.
- .4 Select exposed framing for appearance. Install panel materials so that grade-marks and other defacing marks are concealed or are removed by sanding where materials are left exposed.
- .5 Install furring and blocking as required to space-out and support case Work, cabinets, wall and ceiling finishes, facings, fascia, soffit, siding, electrical equipment mounting boards, and other Work as required.
- .6 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other Work.
- .7 Install sleepers as indicated/ required.
- .8 Use dust collectors and high quality respirator masks when cutting or sanding wood panels.
- .9 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
- .10 Countersink bolts where necessary to provide clearance for other Work.
- .11 Site carpentry treated timber:
  - .1 Handle and use treated material in a manner which will avoid damage or field fabrication causing alteration in original treatment.
  - .2 Treat in field, cuts and damages to surface of treated material with an appropriate, topical, end-cut preservative as described in CSA 080.1974. Ensure that damaged areas such as abrasions; nail and spike holes, are thoroughly saturated with field treatment solutions as per CSA 080.1974.

**3.2 CLEANING**

- .1 Progress Cleaning:
  - .1 Leave Work area clean at end of each day.

**3.3 PROTECTION**

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

**END OF SECTION 06 10 00**

Approved: 2010-06-30

**Part 1            General**

**1.1                RELATED REQUIREMENTS**

- .1            123661 Solid Surface Countertops.

**1.2                REFERENCES**

- .1            American National Standards Institute (ANSI)
  - .1            ANSI A208.1-[09], Particleboard.
  - .2            ANSI A208.2-[09], Medium Density Fiberboard (MDF) for Interior Applications.
  - .3            ANSI/HPVA HP-1-[10], Standard for Hardwood and Decorative Plywood.
- .2            ASTM International
  - .1            ASTM E1333-[10], Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates From Wood Products Using a Large Chamber.
- .3            Architectural Woodwork Manufacturers Association of Canada (AWMAC) and Architectural Woodwork Institute (AWI)
  - .1            Architectural Woodwork Quality Standards Illustrated, 8th edition, Version 1.0 (2009).
- .4            Canadian General Standards Board (CGSB)
  - .1            CAN/CGSB-71.20-[M88], Adhesive, Contact, Brushable.
- .5            Canadian Standards Association (CSA)
  - .1            CSA B111-[74(R2003)], Wire Nails, Spikes and Staples.
  - .2            CSA O112.10-[08], Evaluation of Adhesives for Structural Wood Products (Limited Moisture Exposure).
  - .3            CSA O121-[08], Douglas Fir Plywood.
  - .4            CSA O141-[05(R2009)], Softwood Lumber.
  - .5            CSA O151-[09], Canadian Softwood Plywood.
  - .6            CSA O153-[M1980(R2008)], Poplar Plywood.
  - .7            CAN/CSA-Z809-[08], Sustainable Forest Management.
- .6            Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1            Material Safety Data Sheets (MSDS).
- .7            National Hardwood Lumber Association (NHLA)
  - .1            Rules for the Measurement and Inspection of Hardwood and Cypress [2011].
- .8            National Lumber Grades Authority (NLGA) Standard Grading Rules for Canadian Lumber [2010].

**1.3                SUBMITTALS**

- .1            Shop Drawings to be submitted showing the following:
  - .1            Indicate details of construction, profiles, jointing, fastening and other related details.

- .2 Indicate materials, thicknesses, finishes and hardware.
- .3 Indicate locations of service outlets in casework, [typical and special installation conditions], and connections, attachments, anchorage and location of exposed fastenings.
- .2 Samples:
  - .1 Submit for review and acceptance of each unit.
  - .2 Samples will be returned for inclusion into work.
  - .3 Submit duplicate samples of Compact laminate colors as specified.
  - .4 Submit duplicate samples of Solid Surface Countertop as specified.
- .3 Certifications: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

#### **1.4 QUALITY ASSURANCE**

- .1 Provide Certificate of Quality Compliance upon completion of Fabrication, in accordance with Architectural Wood Work Manufacturer's Association of Canada (AWMAC) quality standards.
- .2 Provide Certificate of Quality Compliance upon satisfactory completion of installation.
- .3 Work shall be in accordance with the Grade or Grades specified of the Architectural Wood Work Standards.
- .4 Qualification:
  - .1 Firm (wood Work manufacturer) with no less than 5-7 years of production experience similar to a specific project, whose qualifications indicate the ability to comply with the requirements of this Section and can demonstrate familiarity with the specified products.
- .5 Mock-ups:
  - .1 Construct mock-ups as follows.
    - .1 Shop prepare one wall cabinet, complete with hardware and install where directed by Contract Administrator. Allow 48 hours for inspection of mock-up by City of Winnipeg and WFPS before proceeding with Work.
    - .2 When accepted, mock-up will demonstrate minimum standard for Work.
    - .3 Do not proceed with work prior to receipt of written acceptance of mock-up by Contract Administrator
    - .4 Mock-up may remain as part of finished work if acceptable.

#### **1.5 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions].
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address. Protect millwork against dampness and damage during and after delivery.
  - .1 Store millwork in ventilated areas, protected from extreme changes of temperature or humidity.
- .3 Storage and Handling Requirements:

- .1 Store materials indoors [in dry location] and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
- .2 Store and protect architectural woodwork from nicks, scratches, and blemishes. Solid Surface countertops are to be covered after installation.
- .3 Replace defective or damaged materials with new.

## 1.6 SCHEDULING

- .1 Coordinate fabrication, delivery, and installation with the General Contractor and other applicable trades.

## Part 2 Products

### 2.1 MATERIALS

- .1 Softwood lumber: unless specified otherwise, S4S, moisture content 19 % or less in accordance with following standards:
  - .1 CAN/CSA O141.
  - .2 NLGA Standard Grading Rules for Canadian Lumber.
  - .3 AWMAC premium grade, moisture content as specified.

### 2.2 MANUFACTURED UNITS

- .1 Watch Desk/ General Office Casework:
  - .1 Fabricate caseworks to AWMAC premium quality grade.
  - .2 Furring, blocking, nailing strips, grounds and rough bucks and sleepers.
- .2 Watch Desk Case Work Body: Fabricate body to AWMAC [premium] [custom] grade supplemented as follows:
  - .1 PLAM-1: Formica Compact Laminate:8844-58 Aged Ash; ½" thick Grade S6. Refer to drawings for locations. Horizontal Grain direction.
  - .2 PLAM-2: Formica Compact Laminate:3505-58 Storm Solidz; ½" thick Grade S6. Refer to drawings for locations.
- .3 General Office File Drawer Units: Fabricate drawers to AWMAC [premium] [custom] grade supplemented as follows:
  - .1 Sides and Backs:
    - .1 PLAM-2: Formica Compact Laminate:3505-58 Storm Solidz; ½" thick Grade S6
  - .2 Bottoms:
    - .1 PLAM-2: Formica Compact Laminate:3505-58 Storm Solidz ; ½" thick Grade S6. Refer to drawings for locations.
  - .3 Fronts:
    - .1 PLAM-2: Formica Compact Laminate:3505-58 Storm Solidz ; ½" thick Grade S6
- .4 Casework Doors: (General Office Casework)
  - .1 Fabricate doors to AWMAC premium grade supplemented as follows:
    - .1 PLAM-1: Formica Compact Laminate:8844-58 Aged Ash; ½" thick Grade S6; Horizontal Grain direction.



- .5 Shelving:
  - .1 As specified on drawings: PLAM-1 Formica Compact Laminate; #8844-58 Aged Ash Grade S6 or PLAM-2: Formica Compact Laminate:3505-58 Storm Solidz ; ½" thick Grade S6
- .6 Base:
  - .1 ¾" fir plywood marine base, finished with either Rubber Covered base (RCB-1) or Stainless Steel (SS-2). Refer to Drawings.
- .7 Solid Surface Countertop SSC-1: (Watch Desk/General Office)
  - .1 Refer to Section 123661 Solid Surfacing Countertops

## **2.3 FABRICATION**

- .1 Set nails and countersink screws apply [stained] [plain] wood filler to indentations, sand smooth and leave ready to receive finish.
- .2 Shop install cabinet hardware for doors, shelves and drawers. Recess shelf standards unless noted otherwise.
- .3 Shelving to cabinetwork to be adjustable unless otherwise noted.
- .4 Provide cutouts for plumbing fixtures, inserts, appliances, outlet boxes and other fixtures.
- .5 Shop assemble work for delivery to site in size easily handled and to ensure passage through building openings.
- .6 Obtain governing dimensions before fabricating items which are to accommodate or abut appliances, equipment and other materials.

## **2.4 ACCESSORIES**

- .1 Adhesive: As recommended by manufacturer.
- .2 Grommets: Provide 2" dia. Plastic Grommets- white or grey in color. Location and quantity as indicated on drawings from General Office and Watch Desk casework.
- .3 Tackboard TB-1:As Specified on Drawing A4.0 on General Office Cabinet

## **Part 3 Execution**

### **3.1 EXAMINATION**

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for architectural woodwork installation in accordance with manufacturer's instructions.
  - .1 Verify the adequacy and proper location of any required backing or support framing.
  - .2 Verify that Mechanical, Electrical, Plumbing, and other building components affecting Work in this Section are in place.

### **3.2 INSTALLATION**

- .1 Do architectural woodwork to Quality Standards of AWMAC.
- .2 Install prefinished millwork at locations shown on drawings.
  - .1 Position accurately, level, plumb straight.
- .3 Fasten and anchor millwork securely.
  - .1 Supply and install heavy duty fixture attachments for wall mounted cabinets.
- .4 Scribe and cut as required to fit abutting walls and to fit properly into recesses and to accommodate piping, columns, fixtures, outlets or other projecting, intersecting or penetrating objects.
- .5 At junction of Solid Surface counter back splash and adjacent wall finish, apply small bead of sealant in accordance with Section 123661
- .6 Fit hardware accurately and securely in accordance with manufacturer's written instructions.

### **3.3 CLEANING**

- .1 Progress Cleaning:
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.
  - .1 Clean millwork and cabinet work inside cupboards and drawers, and outside surfaces
  - .2 Remove excess glue from surfaces.

### **3.4 PROTECTION**

- .1 Protect millwork and cabinet work from damage until final inspection.
- .2 Protect installed products and countertops from damage during construction.
- .3 Repair damage to adjacent materials caused by architectural woodwork installation.

### **3.5 SCHEDULES**

- .1 Refer to Millwork Hardware Schedule on drawings.

**END OF SECTION 064000**

## **1. GENERAL**

### **1.1. RELATED REQUIREMENTS**

- .1 Joint Sealants
- .2 Painting

### **1.2. REFERENCES**

- .1 American Society for Testing and Materials International (ASTM)
  - .1 ASTM A 653/A 653M-[06a], Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - .2 ASTM B 209M, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric]
- .2 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-1.181-[99], Ready-Mixed Organic Zinc-Rich Coating.
  - .2 CAN/CGSB-93.1-M85, Sheet Aluminum Alloy, Prefinished, Residential.
  - .3 CGSB 41-GP-19Ma-[84], Rigid Vinyl Extrusions for Windows and Doors.
- .4 Canadian Standards Association (CSA International)
  - .1 CSA-G40.20-[04]/G40.21-[04], General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
  - .2 CSA W59-[03], Welded Steel Construction (Metal Arc Welding).
  - .3 CSA W59.2 -M1991, Welded Aluminum Construction.
- .5 Canadian Steel Door Manufacturers' Association (CSDMA)
  - .1 CSDMA, Recommended Specifications for Commercial Steel Doors and Frames, 2000.
  - .2 CSDMA, Selection and Usage Guide for Commercial Steel Doors, [1990].
- .6 National Fire Protection Association (NFPA)
  - .1 NFPA 80-[99], Standard for Fire Doors and Fire Windows.
  - .2 NFPA 252-[03], Standard Methods of Fire Tests of Door Assemblies.
- .7 Underwriters' Laboratories of Canada (ULC)
  - .1 CAN/ULC-S701-[01], Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.
  - .2 CAN4-S104-[M80], Standard Method for Fire Tests of Door Assemblies.
  - .3 CAN4-S105-[M85], Standard Specification for Fire Door Frames Meeting the Performance Required by CAN4-S104.

### **1.3. SYSTEM DESCRIPTION**

- .1 Design Requirements:
  - .1 Design exterior frame assembly to accommodate to expansion and contraction when subjected to minimum and maximum surface temperature of -35 degrees C to 35 degrees C.
  - .2 Provide fire labelled frames for openings requiring fire protection ratings. Test products in conformance with CAN4-S104 and NFPA 252 listed by nationally recognized agency having factory inspection services.

### **1.4. ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide product data relevant to the product.
- .2 Provide shop drawings showing the following:
  - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Manitoba, Canada.
  - .2 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazed, arrangement of hardware and fire rating and finishes.
  - .3 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings and fire rating and finishes.
  - .4 Indicate jamb and head details necessary to preserve the fire resistance rating of the assembly in which the door occurs.
  - .5 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.

#### **1.5. DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials to site when site is ready.
- .2 Store in vertical position, spaced to provide ventilation between components.
- .3 Clean and touch up abrasions or disfigurement caused by shipping or handling with zinc-rich primer.

### **2. PRODUCTS**

#### **2.1. MATERIALS**

- .1 Sheet Steel: Galvanized steel ASTM A653/A653M, commercial grade (CS), Type B,
  - .1 Coating designation G90 for exterior doors and frames
  - .2 Coating designation A01 for interior doors and frames
- .2 Reinforcement Channel: To CSA G40.20/G40.21, Type44W, coating designation to ASTM A653M, ZF75.
- .3 Extruded aluminum: to ASTM B 221

#### **2.2. DOOR CORE MATERIALS**

- .1 Polyurethane: to CAN/ULC-S704 rigid, modified polyisocyanurate, closed cellboard. Density 32 kg/m<sup>3</sup>. Thermal value R-11.0 minimum.
- .2 Temperature rise rated (TRR): core composition to limit temperature rise on unexposed side of door to 450 degrees F for duration determined by Manitoba Building Code requirements. Core to be tested as part of a complete door assembly, in accordance with CAN4-S104, covering Standard Method of Tests of Door Assemblies and listed by nationally recognized testing agency having factory inspection service.

#### **2.3. ADHESIVES**

- .1 Cores and Steel Components: heat resistant, structural reinforced epoxy, resin-based adhesive.
- .2 Lock-seam doors: Reinforced epoxy resin, high viscosity, thicksotropic sealant.

#### **2.4. PRIMER**

- .1 Rust inhibitive touch-up prime CAN/CGSB-1.181.

#### **2.5. FRAMES FABRICATION GENERAL**

- .1 Fabricate frames in accordance with CSDMA specifications.
- .2 Fabricate frames to profiles and maximum face sizes as indicated.
- .3 Exterior frames: 16 gauge metal welded, thermally broken type construction.
- .4 Interior frames: 16 gauge metal welded type construction.
- .5 Blank, reinforce, drill and tap frames for mortised, templated hardware, and electronic hardware using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware.
- .6 Protect mortised cutouts with steel guard boxes.
- .7 Prepare frame for door silencers, 3 for single door, and 2 at head for double door.

- .8 Manufacturer's nameplates on frames and screens are not permitted.
- .9 Conceal fastenings except where exposed fastenings are indicated.
- .10 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.
- .11 Insulate exterior frame components with polyurethane insulation.

**2.6. FRAME ANCHORAGE**

- .1 Provide appropriate anchorage to floor and wall construction.
- .2 Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb.
- .3 Provide 2 anchors for rebate opening heights up to 60" and 1 additional anchor for each additional 30" of height or fraction thereof.

**2.7. FRAMES: WELDED TYPE**

- .1 Welding in accordance with CSA W59.
- .2 Accurately mitre or mechanically joint frame product and securely weld on inside of profile.
- .3 Cope accurately and securely weld butt joints of mullions, transom bars, centre rails and sills.
- .4 Grind welded joints and corners to a flat plane, fill with metallic paste and sand to uniform smooth finish.
- .5 Securely attach floor anchors to inside of each jamb profile.
- .6 Weld in 2 temporary jamb spreaders per frame to maintain proper alignment during shipment.
- .7 Prior to shipment, components shall be designated with an identifier corresponding to the numbering on the approved submittal drawings.

**2.8. DOOR FABRICATION GENERAL**

- .1 Doors: swing type, flush, with provision for glass openings as indicated.
- .2 Exterior doors: laminated core construction, 20-gauge face sheet.
- .3 Interior doors: laminated core construction, 20-gauge face sheet.
- .4 Fabricate doors with longitudinal edges mechanically inter-locked with no visible edge seams.
- .5 Doors shall be mortised, blanked, reinforced, drilled and tapped at the factory for template hardware only, in accordance with the approved hardware schedule and templates provided by the hardware supplier.
- .6 Holes 12.7 mm (0.5") diameter and larger shall be factory prepared, except mounting and through-bolt holes, which are by others, on Site, at time of hardware installation. Holes less than 12.7 mm (0.5") diameter shall be factory prepared only when required for the function of the device (for knob, lever, cylinder, thumb or turn pieces) or when these holes

- over-lap function holes.
- .7 Doors shall be reinforced only, where required, for surface mounted hardware, anchor hinges, thrust pivots, pivot reinforced hinges, or non-templated hardware. Drilling and tapping is by others, on Site, at time of installation.
  - .8 Reinforce doors where required, for surface mounted hardware. Provide flush PVC top caps to exterior doors. Provide inverted, recessed, spot welded channels to top and bottom of interior doors.
  - .9 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.
  - .10 Provide fire labelled doors for those openings requiring fire protection ratings, as scheduled. Such products shall be listed for conformance with CAN4-S104. All fire-rated doors shall bear the label of, and be listed by a nationally recognized testing agency having a factory inspection service. Labelling shall be in accordance with NFPA 80.
  - .11 Manufacturer's nameplates on doors are not permitted.

### **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. INSTALLATION GENERAL**

- .1 Install labelled steel fire rated doors and frames to NFPA 80 except where specified otherwise.
- .2 Install doors and frames to CSDMA Installation Guide.

#### **3.3. FRAME INSTALLATION**

- .1 Set frames plumb, square, level and at correct elevation.
- .2 Secure anchorages and connections to adjacent construction.
- .3 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 48" wide. Remove temporary spreaders after frames are built-in.
- .4 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.
- .5 Caulk perimeter of exterior door frames between frame and adjacent material.
- .6 Maintain continuity of air barrier and vapour retarder.

**3.4. DOOR INSTALLATION**

- .1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08 71 00 - Door Hardware.
- .2 Provide even margins between doors and jambs and doors and finished floor and thresholds as follows:
  - .1 Hinge side: 1.0 mm, Latchside & Head: 1.5 mm, Finished Floor: 13 mm
- .3 Adjust operable parts for correct function.

**3.5. FINISH REPAIRS**

- .1 Touch up with primer finishes damaged during installation.
- .2 Fill exposed frame anchors and surfaces with imperfections with metallic paste filler and sand to a uniform smooth finish.

**3.6. FIELD PAINTING**

- .1 Paint in accordance with Specifications. 2 Finish coats required.
  - .1 Touch up damaged surfaces and surfaces without shop coat with primer to NACE No.3/SSPC-SP-6 except as specified otherwise. Apply in accordance: MPI Architectural Painting Specification Manual.

**3.7. GLAZING**

- .1 Install glazing for doors and frames in accordance with Section 08 80 50 - Glazing.

**3.8. CLEANING**

- .1 Clean and wipe down doors and frames after install.

**END OF SECTION 08 11 00**

**Part 1 GENERAL**

**1.1 SECTION INCLUDES**

- .1 Porcelain Tile
- .2 Tile Accessories
- .3 Mortar and Grout.

**1.2 REFERENCES**

- .1 American National Standards Institute (ANSI)/Ceramic Tile Institute (CTI)
  - .1 ANSI A108/A118/A136.1-2009, Specification for the Installation of Ceramic Tile
- .2 Canadian General Standards Board (CGSB)
  - .1 CGSB 71-GP-30M-[79], Adhesive, Epoxy and Modified Mortar Systems, for Installation of Quarry Tiles.
  - .2 CAN/CGSB-75.1-[M88], Tile, Ceramic.
- .3 Canadian Standards Association (CSA)
  - .1 CAN/CSA-A3000, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
- .4 American Society for Testing and Materials (ASTM)
  - .1 ASTM C144, Standard Specification for Aggregate for Masonry Mortar.
- .5 Terrazzo, Tile and Marble Association of Canada (TTMAC)
  - .1 Tile Specification Guide 09 30 00 Tile Installation Manual, 2012-2014
  - .2 Tile Maintenance Guide, latest edition.

**1.3 ACTION/ INFORMATIONALSUBMITTALS**

- .1 Product data: include manufacturer's information on:
  - .1 Porcelain tile, marked to show each type, size, and shape required.
  - .2 Mortar and grout.
  - .3 Divider strip and metal trim.
  - .4 Leveling compound.
- .2 Samples: provide samples of the following materials provided for project.
  - .1 Porcelain tile: one full size tile of each type and colour.
  - .2 Metal edge strips: one piece of each type, sized, and colour.
- .3 Manufacturer's Instructions: manufacturer's installation instructions.



#### **1.4 CLOSEOUT SUBMITTALS**

- .1 Operation and Maintenance Data: Submit TTMAC Maintenance Guide and additional information as follows.
  - .1 Manufacturer's maintenance data sheets for grout, floor sealers and other non-tile maintenance materials and accessories.
  - .2 Warning of maintenance practices or materials that may damage or disfigure finished Work.
  - .3 Provide recommended maintenance materials and procedures including stain removal.

#### **1.5 MAINTENANCE MATERIAL SUBMITTALS**

- .1 For maintenance use: Provide 2% of each size, color, and surface finish of tile specified.
  - .1 Porcelain tile – All floor tile: 5% (not less than 1 box) to match colour, texture and accessories.
  - .2 Metal edge strips: 10% of each type and colour installed on project.
  - .3 Provide one (1) bag of each colour and type of grout.
- .2 Extra materials to be of same production run and dye lot as installed materials.
- .3 Wrap each separately and protect with plastic or heavy-duty craft paper. Identify contents. Leave unopened packages in original condition.
- .4 Deliver to site and store where directed. Provide written receipt, signed by Contractor, verifying delivery.
- .5 Unused tiles from open cartons remain the property of the City of Winnipeg.

#### **1.6 QUALITY ASSURANCE**

- .1 Installer Qualifications: Company specializing in performing the Work of this section with minimum 5-7 years documents experience and having completed tile installations similar in material, design and extent to this Project. Must be familiar and have experience with Epoxy grout installations.
- .2 Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from one manufacturer and each aggregate from one source or producer.
- .3 Conform to TTMAC Manual.
- .4 Applicable Standards: Except as otherwise specified herein, materials shall be in accordance with CAN/CGSB 75.1.
- .5 Reference Standards and Workmanship: all work shall be done by a Tiling Contractor employing skilled tradesmen, the TTMAC and reference details, manufacturer's recommendations and details and customs of best trade practices; true to lines, planes and dimensions of building.

- .6 The setting material manufacturer's representative shall review the details with the Contractor prior to the start of work. Instruct the Contractor on the proper installation procedures to ensure compliance with the guarantee requirements.
- .7 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five (5) years documented experience.

### **1.7 MOCK-UP**

- .1 Construct mock-up of porcelain tile work using same materials as specified for finished work.
- .2 Construct mock-up on site over building substrate of approximately 100 ft<sup>2</sup> in size in an area designated by the Contract Administrator. Include typical tile patterns, control joint, edge strips.
- .3 Allow one (1) week for Contract Administrator's review and approval.
- .4 Mock-up, if accepted, may remain a part of the finished work, and shall establish the minimum standard of quality for remainder of project.

### **1.8 DELIVERY, STORAGE AND PROTECTION**

- .1 Packing, shipping, handling and unloading:
  - .1 Deliver, store packaged materials in original cartons with labels intact and seals unbroken.
  - .2 Deliver, store and handle products in manner to avoid damage or contamination.
  - .3 Have materials delivered to job site just prior to installation.
  - .4 Keep cartons dry and protected from vandalism and away from heavy traffic areas. Store Cementitious materials in a dry area and raised off floor.
  - .5 Store cartons in upright position.
  - .6 Handle furan resin mortar and grout with care and abide by safety labels found on each unit and product MSDS's.
- .2 Safety: comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of materials.

### **1.9 SITE CONDITIONS**

- .1 Ventilation:
  - .1 Provided continuously during and after installation. Run system 24 hours per day during installation; provide continuous ventilation for 7 days after completion of installation.
- .2 Temperature:
  - .1 Maintain air temperature and structural base temperature at porcelain tile installation area above 10°C for 48 hours before, during, and 48 hours after, installation.
  - .2 Do not install tiles at temperatures less than 12 degrees C or above 38 degrees C.
  - .3 Do not apply epoxy mortar and grouts at temperatures below 15 degrees C or above 25 degrees C.

**Part 2 Products**

**2.1 TILES**

- .1 Quarry tile: QT-1- C&S Tile Ceramstone Collection- Icon Collection; Color: # 5224 Jet Black; Size: 12"x24" Rectified. Installation pattern as per Floor Finish drawings.

**2.2 MORTAR AND ADHESIVE MATERIALS**

- .1 Cement: to CAN/CSA-A3000, Type GU.
- .2 Sand:
- .1 Crushed or pit run consisting of hard durable particles free from clay lumps, cementation, organic material, frozen material and other deleterious materials.
- .2 Gradations to be within limits specified when tested to ASTM C136. Sieve sizes to CAN/CGSB-8.1.
- .3 Table:
- | Sieve Designation | % Passing |
|-------------------|-----------|
| 4.75 mm           | 100       |
| 2.36 mm           | 95-100    |
| 1.18 mm           | 60-100    |
| 0.600 mm          | 35-80     |
| 0.300 mm          | 15-50     |
| 0.150 mm          | 2-15      |
| 0.075 mm          | 0-5       |
- .4 Hydrated lime: to ASTM C207.
- .5 Latex additive: formulated for use in cement mortar.
- .6 Water: potable and free of minerals which are detrimental to mortar and grout mixes.
- .7 Dry set mortar:
- .1 To ANSI A108.1
- .2 Latex additive: formulated for use in Portland cement leveling coat.  
Acceptable material: Mapei Keralastic, Custom Building Product Customcrete
- .8 Elastomeric adhesive: to CGSB 71-GP-29M.
- .9 Epoxy adhesive: to CGSB 71-GP-30M, Type 1.
- .10 Modified Mortar adhesive: to CGSB 71-GP-30M, Type 2.
- .11 Adhesives:.
- .1 Maximum VOC limit [65] g/L [to SCAQMD Rule 1168].
- .12 Latex-Portland cement mortar to ANSI A108.1, premixed polymer modified mortar requiring only the addition of water. Acceptable materials:
- .1 Mapei GraniRapid, Custom Building Products Complete LFT Rapid Setting Mortar.
- .13 Colour pigment: non fading mineral oxides, unaffected by lime or cement and which will not stain tile.

**2.3 GROUT**

- .1 Epoxy grout: GR-1 to ANSI A118.3, 100% solids, two-component, stain resistant, water-soluble, two-component epoxy grout. Having colour and characteristics to match epoxy bond coat. Suggested Grout line width of ¼" thick.
- Acceptable materials:  
Product: Laticrete SpectraLock Pro Epoxy Grout

Color: #45 Raven  
Product: Custom Building Products-Epoxy CEG Lite 100% Solids Commercial  
Epoxy Grout.  
Color as selected from Manufacturer's running line.

## 2.4 ACCESSORIES

- .1 **TR-1** Coved tile profile trim at Porcelain floor tile to wall tile transitions: anodized aluminum
  - .1 Acceptable material: Schluter Dilex-AHK
- .2 **TR-2** Transition profile from Floor tile to Epoxy Flooring/ Sheet Vinyl Flooring transitions.
  - .1 Acceptable material: Schluter Reno V; anodized aluminum finish
- .3 **TR-3** Metal profile trim at vertical Porcelain floor tile edges: anodized aluminum finish.
  - .1 Acceptable material: Schluter Schiene
- .4 Mesh tape: glass fibre mesh tape, 50 mm wide, purpose made, for taping joints and corners in tile backer board.
- .5 Floor sealer and protective coating: to tile and grout manufacturer's recommendations.
- .6 Grout sealer: silicone based, clear, low viscosity penetrating sealer of type recommended by grout manufacturer as required.
- .7 Soft control joint: hybrid adhesive and sealant caulk
  - .1 Acceptable material: FlexTile Ultra-Performance Caulk, Mapei Mapesil T, CBP Commercial 100% Silicone Caulk or equal.
- .8 All tile installation materials to be part of the same manufacturer's system.
- .9 **TR-4** Metal control joint for floor tile (as required): Schluter Dilex AKWS anodized aluminum finish. Contractor to confirm if control joints required.

## 2.5 MORTAR AND LEVELLING COAT MIXES

- .1 Levelling coat: 1 part cement, 4 parts sand, minimum 1/10 part latex additive, 1 part water, including latex additive. Premixed mortar may be used per manufacturer's instructions.
- .2 Mortar ingredients: measured by volume.
- .3 Dry set mortar: mixed to manufacturer's instructions.

## 2.6 PERFORMANCE CRITERIA

- .1 Do tile work in accordance with TTMAC Tile Installation Manual, except use more stringent requirements of manufacturer or these specifications.

### **Part 3 Execution**

#### **3.1 EXAMINATION**

- .1 Verify existing conditions are ready to receive work.
- .2 Examine surfaces and verify that surfaces are ready to receive tile installation.
  - .1 Concrete substrates have cured minimum of ninety (90) days to TTMAC requirements.
  - .2 Substrates are dry; clean; free from oil, waxy films, and curing compounds; and within starting flatness tolerances, and are ready for application of leveling materials.
  - .3 Grounds, anchors, recessed frames, electrical and mechanical units of Work in or behind tile have been installed.
  - .4 Joints and cracks in tile substrates are coordinated with tile joint locations.
- .3 Verify tile subject to colour variations has been factory blended and packaged. If not factory blended, blend tiles at site before installing.

#### **3.2 WORKMANSHIP**

- .1 Do tile work in accordance with TTMAC Tile Installation Manual 2006/2007.
- .2 Apply mortar bed [or bond coat] to clean and sound surfaces.
- .3 Fit tile units around corners, fitments, fixtures, drains and other built-in objects. Maintain uniform joint appearance. Make cut edges smooth and even.
- .4 Maximum surface tolerance: 1:800.
- .5 Make joints between [tiles] [pavers] uniform and approximately [6] mm wide, plumb, straight, true, even and with adjacent units flush. Align patterns.
- .6 Lay out units so perimeter tiles are minimum 1/2 size.
- .7 Sound tiles after setting and replace hollow sounding units to obtain full bond.
- .8 Make internal angles square.
- .9 Construct base as indicated on drawings with square top edge.
- .10 Install divider strips at junction of [tile] [paver] flooring and dissimilar material.
- .11 Clean installed tile surfaces after installation cured. Keep building expansion joints free of mortar or grout.

#### **3.3 TILE APPLICATION**

- .1 Install tile and bases on substrate in accordance with TTMAC installation method.
- .2 Spread setting materials using properly sized trowels matched to tile sizes and setting materials, as recommended in TTMAC Tile Installation Manual. Spread setting materials in a manner to avoid air pockets, and ensure full coverage of edges and corners.

- .3 Back butter large format tiles, natural stone tiles, exterior tiles, and tiles in wet areas with setting material to ensure proper coverage.
- .4 For ungauged tile back butter with push box or box screed immediately prior to setting to achieve a uniform thickness of tile and mortar combined.
- .5 Ensure bond material coverage of at least 95% and that material is evenly disbursed over back of tile. Ensure corners and edges are fully supported by bonding material.
- .6 Twist and slide tile firmly into position to ensure proper bond.
- .7 Sound tiles after setting. Replace hollow-sounding units to obtain full bond.
- .8 Keep 2/3 of depth of grout joints free of setting material.
- .9 Allow minimum 24 h after installation of tiles, before grouting.
- .10 Force grout into joints to ensure dense finish.
- .11 Protect all tiles from grout staining. Test in advance and pre-seal if required. Preseal or pre-wax rough textured or irregular surface tile prior to grouting.
- .12 Clean installed tile surfaces after installation and grout has cured. Follow manufacturer's recommendations for grout and residue removal.
- .13 Apply grout sealer to grouted joints of bright glazed porcelain tile after grout is cured and dry.
- .14 Protect installed areas from traffic until setting materials have cured for periods specified in TTMAC Tile Installation Manual.
- .15 Barricade grouted areas to prevent foot traffic for 24 hours after grouting.
- .16 Protect wall tiles and bases from impact, vibration, heavy hammering on adjacent and opposite walls for at least 14 days after installation.
- .17 Spread setting materials using properly sized trowels matched to tile sizes and setting materials, as recommended in TTMAC Tile Installation Manual. Spread setting materials in a manner to avoid air pockets, and ensure full coverage of edges and corners.

### **3.4 MOVEMENT JOINTS**

- .1 Provide expansion joints and control joints in porcelain tile where indicated and at locations specified in TTMAC Tile Installation Manual, whether or not they are indicated on the drawings.
- .2 Make expansion and control joints in accordance with TTMAC Detail 301MJ.
- .3 Keep joints free of mortar and grout. Fill movement joints with sealant.
- .4 Locate control joints in porcelain tile in accordance with TTMAC Tile Installation Manual.
- .5 Provide control joints around perimeter of large areas, around columns, in locations where area changes direction and where tile abuts other hard material. Place movement joints directly over subfloor expansion/control joints.

**3.5 FLOOR SEALER AND PROTECTIVE COATING**

- .1 Apply 2 coats in accordance with manufacturer's printed instructions.

**END OF SECTION 093015**

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

### 1.2 SUMMARY

- A. This Section includes one resinous flooring system, one with epoxy body.
  - 1. Application Method: Metal, power or hand troweled.

### 1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include manufacturer's technical data, application instructions, and recommendations for each resinous flooring component required.
- B. Samples for Verification: For each resinous flooring system required, 5 inches (150 mm) square, applied to a rigid backing for color verification and texture. Separate from site Mock up sample required.
- C. Product Schedule: Use resinous flooring designations indicated in Part 2 and room designations indicated on Drawings in product schedule.
- D. Installer Certificates: Signed by manufacturer certifying that installers are certified and comply with specified requirements. To be presented to Contract Administrator at Pre-Award Meeting.
- E. Maintenance Data: For resinous flooring to include in maintenance manuals.

### 1.4 QUALITY ASSURANCE

- A. No request for substitution shall be considered that would change the generic type of floor system specified (i.e. epoxy mortar based system with decorative quartz topping). Equivalent materials of other manufacturers may be substituted only on approval of City of Winnipeg Contract Administrator in writing. Request will be subject to specification requirements described in this section.
- B. Installer Qualifications: General Contractor must engage an experienced installer (applicator) who is experienced in applying resinous flooring systems similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance, and who is acceptable to the resinous flooring manufacturer listed.
  - 1. Engage a resinous flooring installer who is currently certified in writing by resinous flooring manufacturer as qualified to apply the resinous flooring systems indicated.



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2. Resinous Flooring installer must have a minimum 5-7 years of experience installing specified products, and shall have completed at least 10 projects of similar size and complexity.
- C. Source Limitations: Obtain primary resinous flooring materials, including primers, resins, hardening agents, grouting coats, and topcoats, through one source from a single manufacturer, with not less than ten years of successful experience in manufacturing and installing principal materials described in this section. Provide secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from source recommended by manufacturer of primary materials.
- D. Manufacturer Field Technical Service Representatives: Resinous flooring manufacture shall retain the services of Field Technical Service Representatives who are trained specifically on installing the system to be used on the project.
1. Field Technical Services Representatives shall be employed by the system manufacture to assist in the quality assurance and quality control process of the installation and shall be available to perform field problem solving issues with the installer.
- E. Mockups: Apply site mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials, installation methods and execution.
1. Apply full-thickness mockups on 60-inch- (1524-mm-) square floor area selected by Contract Administrator.
    - a. Include 48-inch (1200-mm) length of integral cove base.
  2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- F. Pre-installation Conference:
1. General contractor shall arrange a meeting not less than thirty days prior to starting work.
  2. Attendance:
    - a. General Contractor
    - b. City of Winnipeg Contract Administrator and Senior Accommodations Planner.
    - c. Manufacturer/Installer's Representative.
- 1.5 DELIVERY, STORAGE, AND HANDLING
- A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage and mixing with other components.
  - B. Store materials to prevent deterioration from moisture, heat, cold, direct sunlight, or other detrimental effects. Store material per product data sheet.

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- C. All materials used shall be factory pre-weighed and pre-packaged in single, easy to manage batches to eliminate on site mixing errors. No on site weighing or volumetric measurements allowed.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring application.
  - 1. Maintain material and substrate temperature between 65 and 85 deg F (18 and 30 deg C) during resinous flooring application and for not less than 24 hours after application.
- B. Lighting: Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring application.
- C. Close spaces to traffic during resinous flooring application and for not less than 24 hours after application, unless manufacturer recommends a longer period.
- D. Concrete substrate shall be properly cure. A vapor barrier must be present for concrete subfloors on or below grade. Otherwise, an osmotic pressure resistant grout must be installed prior to the resinous flooring

1.7 WARRANTY

- A. Manufacturer shall furnish a single, written warranty covering both material and workmanship for a period of (1) full years from date of installation, or provide a joint and several warranty signed on a single document by material manufacturer and applicator jointly and severally warranting the materials and workmanship for a period of (1) full year from date of installation. A sample warranty letter must be included with bid package or bid may be considered non-compliant.

PART 2 - PRODUCTS

2.1 RESINOUS FLOORING

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include,
  - 1. Must comply with troweled mortar base with broadcast topping. Liquid rich, slurry type systems will not be accepted, and will result in a disqualification from bid.
- B. Acceptable Manufactures,
  - 1. Stonhard Basis of design.
- C. Products: Subject to compliance with requirements:
  - 1. Stonhard, Inc.; Stonshield HRI®.
- D. System Characteristics:

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1. Color and Pattern: Glacier
  2. Wearing Surface: Medium Texture.
  3. Integral Cove Base: 6" high.
  4. Overall System Thickness: nominal 3/16"
- E. System Components: Manufacturer's standard components that are compatible with each other and as follows:
1. Primer:
    - a. Material Basis: Stonhard Standard Primer
    - b. Resin: Epoxy
    - c. Formulation Description: (2) two component, 100 percent solids.
    - d. Application Method: Squeegee and roller.
    - e. Number of Coats: (1) one.
  2. Mortar Base:
    - a. Material design basis: Stonshield HRI Base
    - b. Resin: Epoxy.
    - c. Formulation Description: (3) three component, 100 percent solids.
    - d. Application Method: Metal Trowel.
      - 1) Thickness of Coats: nominal 1/8" (inch).
      - 2) Number of Coats: (1) One.
    - e. Aggregates: Pigmented Blended aggregate.
    - f. Maintain 1% slope to existing drain.
    - g. Install berm at shower entrance between Washroom 203 and Shower 204; height to be 2" high tapered down to zero.
  3. Undercoat:
    - a. Material Basis: Stonshield undercoat.
    - b. Resin: Epoxy
    - c. Formulation Description: (2) two-component, 100% solids, UV Stable.
    - d. Type: Clear.
    - e. Finish: Gloss.
    - f. Number of Coats: (1) one.
  4. Broadcast Media:
    - a. Material Basis: Stonshield quartz aggregate
    - b. Type: pigmented.
    - c. Finish: standard.
    - d. Number of Coats: (1) one.
  5. Sealer:
    - a. Material Basis: Stonkote CE4.
    - b. Resin: Epoxy
    - c. Formulation Description: (2) two-component, 100% solids, UV Stable.
    - d. Type: Clear.
    - e. Finish: Gloss.
    - f. Number of Coats: (2) Two.
    - g. Texture level: Medium.

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Note: Components listed above are the basis of design intent; all bids will be compared to this standard including resin chemistry, color, wearing surface, thickness, and installation procedures, including number of coats. General Contractor shall be required to comply with all the requirements of the Specifications and all of the components required by the Specifications, whether or not such products are specifically listed above.

- F. System Physical Properties: Provide resinous flooring system with the following minimum physical property requirements when tested according to test methods indicated:
1. Compressive Strength: 10,000 psi after 7 days per ASTM C579
  2. Tensile Strength: 2,000 psi per ASTM C307
  3. Flexural Strength: 4,300 psi per ASTM C580
  4. Flexural Modulus of Elasticity:  $2.0 \times 10^6$  psi per ASTM C580
  5. Hardness: 85 to 90 per ASTM D2240, Shore D
  6. Impact Resistance: > 160 in./lbs. per ASTM D2794
  7. Abrasion Resistance: 0.06 gm max. weight loss per ASTM D 4060, CS-17
  8. Flammability: Class 1 per ASTM E-648.
  9. Thermal Coefficient of Linear Expansion:  $1.3 \times 10^{-5}$  in./in. °F
  10. Water Absorption: 0.1% per ASTM C 413
  11. VOC Content per ASTM D2369:
    - a. Stonshield HRI Base – 40 g/l
    - b. Stonshield Undercoat – 34 g/l
    - c. Stonkote CE4 – 34 g/l
  12. Cure Rate @ 77°F/25°C: 12 hours foot traffic, 24 hours normal operations

## 2.2 ACCESSORY MATERIALS

- A. Patching, Leveling and Fill Material: Resinous product of or approved by resinous flooring manufacturer and recommended by manufacturer for application indicated.
- B. Joint Sealant: Type recommended or produced by resinous flooring manufacturer for type of service and joint condition indicated. Allowances should be included for Stonflex MP7 joint fill material.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. General: Prepare and clean substrates according to resinous flooring manufacturer's written instructions for substrate indicated. Provide clean and dry substrate for resinous flooring application.
- B. Concrete Substrates: Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with resinous flooring.
1. Mechanically prepare substrates as follows:
    - a. Shot-blast surfaces with an apparatus that abrades the concrete surface, contains the dispensed shot within the apparatus, and recirculates the shot by vacuum pickup, or Diamond Grind with dust free system.

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2. Repair damaged and deteriorated concrete according to resinous flooring manufacturer's written recommendations.
3. Verify that concrete substrates meet the following requirements.
  - a. Perform in situ probe test, ASTM F 2170. Proceed with application only after substrates do not exceed a maximum potential equilibrium relative humidity of 85 percent.
  - b. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with application only after substrates have maximum moisture-vapor-emission rate of 6 lb of water/1000 sq. ft. of slab in 24 hours.
  - c. Perform additional moisture tests recommended by manufacturer. Proceed with application only after substrates pass testing.
- C. Use patching and fill material to fill holes and depressions in substrates according to manufacturer's written instructions.
- D. Treat control joints and other non-moving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer's written recommendations. Allowances should be included for Stonflex MP7 joint fill material, and CT5 concrete crack treatment.

### 3.2 APPLICATION

- A. General: Apply components of resinous flooring system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness indicated.
  1. Coordinate application of components to provide optimum adhesion of resinous flooring system to substrate, and optimum intercoat adhesion.
  2. Cure resinous flooring components according to manufacturer's written instructions. Prevent contamination during application and curing processes.
  3. At substrate expansion and isolation joints, provide joint in resinous flooring to comply with resinous flooring manufacturer's written recommendations.
    - a. Apply joint sealant to comply with manufacturer's written recommendations.
- B. Integral Cove Base: Stonshield cove mortar, apply cove base mix 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. Coves to be smooth to the touch, no nibs/aggregate protruding through seal coat.
  1. Integral Cove Base: 6" inches high; Color to match floor.
- C. Apply primer where required by resinous system, over prepared substrate at manufacturer's recommended spreading rate.
- D. Apply metal trowel single mortar coat in thickness indicated for flooring system into wet primer. Hand or power trowel and grout to fill voids. When cured, sand to remove trowel marks and roughness.
- E. Undercoat: Remove any surface irregularities by lightly abrading and vacuuming the floor surface. Mix and apply undercoat with strict adherence to manufacturer's installation procedures and coverage rates.

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- F. Broadcast: Immediately broadcast quartz silica aggregate into the undercoat using manufacturer's specially designed spray caster. Strict adherence to manufacturer's installation procedures and coverage rates is imperative.
- G. Apply topcoat(s) in number of coats indicated for flooring system and at spreading rates recommended in writing by manufacturer.

### 3.3 TERMINATIONS

- A. Chase edges to "lock" the flooring system into the concrete substrate along lines of termination.
- B. 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.
- C. Trenches: Continue flooring system into trenches to maintain monolithic protection. Treat cold joints to assure bridging of potential cracks.
- D. Treat floor drains by chasing the flooring system to lock in place at point of termination.

### 3.4 JOINTS AND CRACKS

- A. Treat control joints to bridge potential cracks and to maintain monolithic protection.
- B. Treat cold joints and construction joints and to maintain monolithic protection on horizontal and vertical surfaces as well as horizontal and vertical interfaces.
- C. Vertical and horizontal contraction and expansion joints are treated 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.

### 3.5 FIELD QUALITY CONTROL

- A. Final Resinous flooring application must match approved site mock up samples.

### 3.6 CLEANING, PROTECTING, AND CURING

- A. Cure resinous 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 24 hours.
- B. Protect resinous flooring materials from damage and wear during construction operation. Where temporary covering is required for this purpose, comply with manufacturer's recommendations for protective materials and method of application. General Contractor is responsible for protection and cleaning of surfaces after final coats.
- C. Cleaning: Remove temporary covering and clean resinous flooring just prior to final inspection. Use cleaning materials and procedures recommended by resinous flooring manufacturer. General contractor is responsible for cleaning prior to inspection.

The City of Winnipeg  
Tender No. 349-2020  
WFPS Station 23- Renovations to Washrooms and Second Floor

Section 09 67 23  
RESINOUS FLOORING

**END OF SECTION 096723**

## PART 1 GENERAL

### 1.1 SECTION INCLUDES

- .1 High build, high solids, epoxy wall system with glaze like, orange peel finish.

### 1.2 SUMMARY

- A. Definitions: Resinous wall system includes a penetrating, two-component, epoxy polyamide primer and a two-component, high performance, high solids, pigmented epoxy glaze coating.
- B. Application Method:

### 1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include manufacturer's technical data, application instructions, and recommendations for each resinous flooring component required.
- B. Samples for Verification: For each resinous wall system required, 5 inches (150 mm) square, applied to a rigid backing for color verification and texture. Separate from site Mock up sample required.
- C. Product Schedule: Use resinous wall designations indicated in Part 2 and room designations indicated on Drawings in product schedule.
- D. Installer Certificates: Signed by manufacturer certifying that installers are certified and comply with specified requirements. To be presented to Contract Administrator at Pre- Award Meeting.
- E. Maintenance Data: For resinous wall system to include in maintenance manuals.

### 1.4 QUALITY ASSURANCE

- A. No request for substitution shall be considered that would change the generic type of wall coating system specified (i.e. primary resinous wall coating system). Equivalent materials of other manufacturers may be substituted only on approval of City of Winnipeg Contract Administrator in writing. Request will be subject to specification requirements described in this section.
- B. Installer Qualifications: General Contractor must engage an experienced installer (applicator) who is experienced in applying resinous wall systems similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance, and who is acceptable to the resinous wall coating manufacturer listed.
  1. Engage a resinous wall coating installer who is currently certified in writing by resinous wall coating manufacturer as qualified to apply the resinous wall coating systems indicated.
  2. Resinous wall coating installer must have a minimum 5-7 years of experience installing specified products, and shall have completed at least 5 projects of similar size and complexity.
- C. Source Limitations: Obtain primary resinous wall materials, including primers, resins, hardening agents, aggregates, finish, or sealing coats, through one source from a single manufacturer, with not less than ten years of successful experience in manufacturing and installing principal



materials described in this section. Provide secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from source recommended by manufacturer of primary materials.

- D. Manufacturer Field Technical Service Representatives: Resinous wall system manufacture shall retain the services of Field Technical Service Representatives who are trained specifically on installing the system to be used on the project.
1. Field Technical Services Representatives shall be employed by the system manufacture to assist in the quality assurance and quality control process of the installation and shall be available to perform field problem solving issues with the installer.
- E. Mockups: Apply site mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials, installation methods and execution.
1. Apply full-thickness mockups on 48-inch- (1200-mm-) square wall area selected by Contract Administrator.
  2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- F. Pre-installation Conference:
1. General contractor shall arrange a meeting not less than thirty days prior to starting work.
  2. Attendance:
    - a. General Contractor
    - b. City of Winnipeg Contract Administrator.
    - c. Manufacturer/Installer's Representative.
  3. ISO 9001: All materials, including primers, resins, curing agents, finish coats, aggregates and sealants are manufactured and tested under an ISO 9001 registered quality system.

#### 1.5 DELIVERY, STORAGE AND HANDLING

- A. Material shall be delivered to job site and checked by wall coating contractor for completeness and shipping damage prior to job start.
- B. All materials used shall be factory pre-weighed and pre-packaged in single, easy to manage batches to eliminate on site mixing errors. No on site weighing or volumetric measurements allowed.
- C. Material shall be stored in a dry, enclosed area protected from exposure to moisture. Temperature of storage area shall be maintained between 60 and 85°F/16 and 30°C.

#### 1.6 PROJECT CONDITIONS

- A. Concrete or masonry substrates shall be properly cured for a minimum of 30 days and shall be tested to ensure relative humidity or water vapour emission rates are in accordance with Manufacturer's recommendations. A vapor barrier or exterior applied waterproofing membrane must be present for concrete walls below grade.
- B. Cement board substrates shall be finished to a Level 3 finish (Paint Ready). All joint

compound shall be setting type compound and shall be dried for the minimum period as per Manufacturer's recommendations prior to over coating.

- C. Utilities, including electric, water, heat (air temperature between 60 and 85°F/16 and 30°C) and finished lighting to be supplied by General Contractor.
- D. Job area to be free of other trades during, and for a period of 24 hours, after wall coating installation.
- E. Protection of finished wall coating from damage by subsequent trades shall be the responsibility of the General Contractor.

#### 1.7 WARRANTY

- A. Manufacturer shall furnish a single, written warranty covering both material and workmanship for a period of one (1) full year from date of installation.

PART 2- PRODUCTS

2.1 COLORS

- A. Color: Custom Color to match Benjamin Moore #OC-17 White Dove.

2.2 RESINOUS WALL SYSTEM

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include:

- 1. Must be a roll-on wall application using a 9mm nap roller.

- B. Acceptable Manufacturers:

- 1. Stonhard Basis of design.

- C. Products: Subject to compliance with requirements:

- 1. Stonhard, Inc.; Stonglaze VSR®. Stonglaze VSR as distributed by Stonhard division, RPM Canada, is a nominal 10-12 mil (250 to 300 micron) thick system comprised of a two-component, general service, polyamide epoxy primer and a two-component, high performance, high solids, epoxy glaze coating. High Gloss Finish.

- D. System Characteristics:

- 1. Primer: 4-6 mils
- 2. VSR Colored base coat: 5-7 mils
- 3. VSR Colored top coat: 5-7 mils

(Based on using a 9mm nap roller)

Note: Components listed above and below are the basis of design intent; all bids will be compared to this standard including hardness, wearing surface, bond strength, and installation procedures. General Contractor shall be required to comply with all the requirements of the Specifications and all of the components required by the Specifications, whether or not such products are specifically listed above.

- E. Physical Properties: Provide wall coating system in which physical properties of wall primer and topcoat, when tested in accordance with standards or procedures referenced below, are as follows:

Hardness.....	80-85
(ASTM D-2240/ Shore D Durometer)	
Bond Strength .....	>300 psi
(ASTM D-7234)	(100% concrete failure)
Impact Resistance.....	Exceeds 80 in. lbs.
(ASTM D-2794)	(No cracking, crazing or loss of adhesion)
Abrasion Resistance .....	0.08 gm max weight loss
(ASTM D-4060, Taber Abrader CS-17 wheel)	
Fire Resistance of Dry Film.....	Class A
(ASTM E-84 / CAN/ ULC S102)	Flame Spread 10
	Smoke Developed 20

Heat Resistance Limitation .....	140°F/60°C (for continuous exposure)
.....	200°F/93°C (for intermittent exposure)
Cure Rate allow.....	24 hours for normal operations (at 70°F/21°C)
VOC .....	70 g/ L (ASTM D-2369)

### 2.3 JOINT SEALANT MATERIALS

- A. Type produced by manufacturer of resinous wall coating system for type of service and joint condition indicated.

## PART 3- EXECUTION

### 3.1 PREPARATION

- A. Concrete Substrate: Concrete preparation shall be by mechanical means and may include use of grinder and / or sander for removal of bond inhibiting materials such as curing compounds, dust, form release agents or laitance. Other contaminants not otherwise removed by means of mechanical surface preparation shall be removed by scrubbing with a heavy duty industrial degreaser (Stonkleen TD9) and rinsing with clean water. General contractor shall approve concrete preparation to ICRI Concrete Surface Profile 1 minimum prior to coating application.
- B. Drywall / Gypsum/ Cement Board Substrate: Drywall or Cement Board shall be level, true, plumb and finished to a Level 3 standard prior to application of wall coatings. The surface shall be inspected with critical lighting to ensure the substrate is ready for wall coating application. The surface shall be prepared by mechanical means and may include sanding, wiping and / or vacuuming for removal of bond inhibiting materials such as dust or other bond inhibiting material(s). Level 4 or Level 5 drywall finishes shall not be coated with Stonglaze VSI and shall be removed by mechanical means to a Level 3 finish. General contractor shall approve wall finish to Level 3 and suitability for high gloss finish prior to coating application.

### 3.2 APPLICATION

- A. General: Apply each component of resinous wall coating system in compliance with manufacturer's directions to produce a uniform monolithic surface of thickness indicated, uninterrupted except at expansion joints or other types of joints (if any), indicated or required.
- B. Primer: Mix and apply primer over properly prepared substrate with strict adherence to manufacturer's installation procedures and coverage rates. Coordinate timing of primer application with application of wall coating system to ensure optimum inter-coat adhesion. Product to be Stonhard Standard Primer, 4-6 mils.
- C. Topcoat: Mix material according to manufacturer's recommended procedures. Topcoat material should be applied in two coats at 5-7 mils per coat immediately after mixing using high quality medium nap rollers, or airless sprayer. Strict adherence to manufacturer's coverage rates is imperative.

### 3.3 FIELD QUALITY CONTROL

- A. Final Resinous Wall applications must match approved site mock up samples.

#### 3.4 CURING, PROTECTION AND CLEANING

- A. Cure resinous wall coating 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 24 hours.
- B. Protect resinous wall coating materials from damage and wear during construction operation. Where temporary covering is required for this purpose, comply with manufacturer's recommendations for protective materials and method of application. General Contractor is responsible for protection and cleaning of surfaces after final coats.
- C. Cleaning: Remove temporary covering and clean resinous wall coating just prior to final inspection. Use cleaning materials and procedures recommended by resinous wall coating manufacturer.

**END OF SECTION 099659**

## **PART 1 - GENERAL**

### 1.1 SUMMARY

#### A. Section Includes:

1. Plastic toilet compartment partitions for following applications:
  - a. Toilet enclosures.
  - b. Urinal screens.

### 1.2 REFERENCES

#### A. ASTM International (ASTM):

1. ASTM A 240 - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
2. ASTM A 666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
3. ASTM A 743/A 743M - Standard Specification for Castings, Iron-Chromium, Iron-Chromium-Nickel, Corrosion Resistant, for General Application.
4. ASTM B 86 - Standard Specification for Zinc and Zinc-Aluminum (ZA) Alloy Foundry and Die Castings.
5. ASTM B 221 - Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
6. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

#### B. GREENGUARD Environmental Institute (GREENGUARD):

GREENGUARD certified low emitting products.

### 1.3 ACTION SUBMITTALS

#### A. Product Data: Manufacturer's data sheets for each type of product indicated. Include fabrication details, description of materials and finishes.

1. Product Test Reports: When requested by Contract Administrator, submit documentation by qualified independent testing agency indicating compliance of products with requirements.

#### B. Shop Drawings: Include overall product dimensions, floor plan, elevations, sections, details, and attachments to other work. Include choice of options with details.

#### C. Samples for Selection: Furnish samples of manufacturer's full range of colors for initial selection.

#### D. Samples for Verification: Furnish physical sample of material in selected color.

### 1.4 INFORMATIONAL SUBMITTALS

#### A. Warranty: Sample of special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance and cleaning instructions.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Approved manufacturer listed in this section, with minimum 5-7 years' experience in the manufacture of toilet compartments.
- B. Manufacturer Qualifications: Approved manufacturer listed in this section, with minimum 5-7 years' experience in the manufacture of toilet compartments. Manufacturers seeking approval must submit the following in accordance with Instructions to Bidders and Division 01 requirements:
1. Product data, including test data from qualified independent testing agency indicating compliance with requirements.
  2. Samples of each component of product specified.
  3. List of successful installations of similar products available for evaluation by Contract Administrator upon request.
- C. Installers Qualifications: Experienced Installer regularly engaged in installation of toilet compartments for minimum 3-5 years.
- D. Source Limitations: Obtain toilet compartment components and accessories from single manufacturer.
- E. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84 by qualified testing agency. Identify products with appropriate markings of applicable testing agency.
1. Flame-Spread Index: Not greater than 200.
  2. Smoke-Developed Index: 450.
- F. Indoor Environmental Quality Certification: Provide certificate indicated that products have been certified under the following programs, or a comparable certification acceptable to Contract Administrator:

GREENGUARD Indoor Air Quality Certified.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver toilet compartments to site until building is enclosed and HVAC systems are in operation.
1. Deliver toilet compartments in manufacturer's original packaging.
  2. Store in an upright condition.

1.8 WARRANTY

- A. Manufacturer's Warranty: Provide manufacturer's standard form in which manufacturer agrees to repair or replace products that fail in materials or workmanship during the following period after substantial completion:
1. Plastic Toilet Partitions: Against corrosion, breakage, and delamination: 15 years.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Acceptable Manufacturers: Bradley, Bradmar Solid Plastic Toilet Partitions

### **2.2 MATERIALS**

- A. Plastic Panels: High density polyethylene (HDPE) suitable for exposed applications, waterproof, non-absorbent, and graffiti-resistant textured surface, Class C.

- 1. Provide panels with minimum 30 percent pre-consumer recycled content.

- B. Zinc Aluminum Magnesium and Copper Alloy (Zamac): ASTM B 86.

- C. Stainless Steel Sheet: ASTM A 240 or A 666, 300 series.

- D. Stainless Steel Castings: ASTM A 743/A 743M.

- E. Aluminum: ASTM B 221.

### **2.3 PLASTIC TOILET COMPARTMENTS**

- A. Toilet Compartment Type: (TP:1)

- 1. Overhead braced.

- a. Basis of Design Product: Bradley, Mills Partitions, Sentinel, Series 400.

- B. Urinal Screen Style: (TP:2)

- 1. Wall hung with brackets:

- a. Basis of Design Product: Bradley, Mills Partitions, Model No. 4.

- C. Door, Panel, and Pilaster Construction, General: HDPE, with a 3/16" (4.8mm) radiused edge.

- 1. Provide exposed surfaces free of pitting, visible seams and fabrication marks, stains, or other imperfections.
  - 2. Provide aluminum heat sink at bottom edge of panels and doors.

- D. Door Construction: 1 inch (25 mm) thick.

- E. Panel Construction: 1 inch (25 mm) thick.

- F. Pilaster Construction: 1 inch (25 mm) thick.

- G. Headrail: Extruded anodized aluminum headrail with anti-grip profile. Clamps around pilaster and is secured to the wall with stainless steel brackets.

- H. Shoes: 4 inches (76 mm) high minimum, 300 series stainless steel with No. 4 satin brushed finish.

- I. Urinal-Screen Construction: Matching toilet compartment panel construction



J. Brackets (Fittings):

1. Stirrup Type: Ear or U-brackets; stainless steel.
2. Full-Height (Continuous) Type: Heavy Duty brackets required; stainless steel.
3. Anti- Microbial Finish required.

K. Plastic Panel Finish: Manufacturer's standard impregnated finish, with one color in each room.

1. Color: Deep Blue S203

2.4 HARDWARE

A. Hardware, Heavy Duty: Manufacturer's heavy-duty stainless steel, including stainless steel tamper-resistant fasteners:

1. Hinges: Self-closing integral, nylon, gravity-type adjustable to hold doors open at any angle up to 90 degrees, with emergency access by lifting door.
2. Latch and Keeper: Surface-mounted slide latch with flat rubber-faced combination door strike and keeper, with provision for emergency access, meeting requirements for accessibility at accessible compartments.
3. Coat Hook: Combination hook and rubber-tipped stop, sized to prevent door from hitting compartment-mounted accessories. Provide wall bumper where door abuts wall. Provide formed L-shaped hook without stop at outswing doors. Mount with stainless steel through-bolts.
4. Door Pull: Standard unit on outside of inswing doors. Provide pulls on both sides of outswing doors.
5. Anti-microbial finish required for all hardware.

2.5 FABRICATION

A. Overhead-Braced Units: Provide manufacturer's standard corrosion-resistant supports, leveling mechanism, and anchors at pilasters to suit floor conditions. Provide shoes at pilasters to conceal supports and leveling mechanism.

B. Door Size and Swings: Unless otherwise indicated, provide 24-inch- (610-mm-) wide, in-swinging doors for standard toilet compartments and 36-inch- (914-mm-) wide, out-swinging doors with a minimum 32-inch- (813-mm-) wide clear opening for compartments designated as accessible. Site confirm all dimensions.

**PART 3 - EXECUTION**

3.1 EXAMINATION

A. Examine work area to site verify that measurements, substrates, supports, and environmental conditions are in accordance with manufacturer's requirements to allow installation.

1. Proceed with installation once conditions meet manufacturer's requirements.

3.2 INSTALLATION

A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position with manufacturer's recommended anchoring devices.

- B. Install toilet partitions and screens in spaces with operating, temperature-controlled HVAC systems. Shield partitions and screens from direct sunlight.
- C. Clearances: Install with clearances indicated on Drawings. Where clearances are not indicated, allow maximum 1/2 inch (13 mm) between pilasters and panels, and 1 inch (25 mm) between panels and walls.
- D. Stirrup Brackets: Secure panels to walls and to pilasters with no fewer than three brackets attached at midpoint and near top and bottom of panel. Locate wall brackets so holes for wall anchors occur in masonry or tile joints. Align brackets at pilasters with brackets at walls.

### 3.3 ADJUSTING

- A. Hardware Adjustment: Adjust and lubricate hardware according to hardware manufacturer's written instructions for proper operation. Set hinges on in-swinging doors to hold doors open approximately 15 degrees from closed position when unlatched. Set hinges on out-swinging doors to return doors to fully closed position.

### 3.4 FINAL CLEANING

- A. Remove packaging and construction debris and legally dispose of off-site.
- B. Clean partition and screen surfaces with materials and cleansers in accordance with manufacturer's recommendations.

END OF SECTION 10 21 13.19

## **PART 1 GENERAL**

- 1.1 ACTION AND INFORMATIONAL SUBMITTALS
  - .1 Submit the following:
  - .2 Product Data:
    - .1 Provide manufacturer's printed product literature and data sheets for metal lockers and include product characteristics, performance criteria, physical size, finish and limitations.
  - .3 Shop Drawings:
    - .1 Indicate on drawings: type and class of locker, thicknesses of metal, fabricating and assembly methods, assembled banks of lockers, tops, hooks, shelves, bases, trim, numbering, filler panels, end/back panels, doors, handles, locking method, ventilation method, and selected finishes.
  - .4 Samples:
    - .1 Submit duplicate [50 x 50] mm samples of colour and finish on actual base metal.
    - .2 Samples will be returned for inclusion into work.
- 1.2 DELIVERY, STORAGE AND HANDLING
  - .1 Deliver, store and handle materials to site in accordance with manufacturer's written instructions.
  - .2 Delivery and Acceptance Requirements:
    - .1 Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
  - .3 Storage and Handling Requirements:
    - .1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
    - .2 Store and protect metal lockers from nicks, scratches, and blemishes.
    - .3 Replace defective or damaged materials with new.
- 1.3 QUALITY ASSURANCE
  - .1 Request for substitution will be considered during Tender Period. Equivalent product of other manufacturers may be substituted only on approval of City of Winnipeg Contract Administrator in writing. Request will be subject to specification requirements described in this section
  - .2 Qualifications of alternative lockers will be evaluated only if they are submitted with supporting documents to show that they are equal to or better than these specification standards.
- 1.4 WARRANTY
  - .1 Lockers are warranted for a period of two years against defective parts and workmanship, excluding vandalism and improper installation.

1.5 CHEMICAL SAFETY

- .1 All materials are to be completely asbestos free. The paint used shall be a powder coating completely free of all lead and chromate.

1.6 MATERIALS AND CONSTRUCTION

- .1 Each locker built shall have a door mounted in a frame. Individual top, bottom, side, back, shelves, with a common side separating compartments.
- .2 All locker parts shall be made of mild cold rolled sheet steel free from surface imperfections and contaminants which would be detrimental to the acceptance of a high grade hybrid epoxy polyester powder finish. At a slight extra cost, locker parts may be made from galvanized steel. Assembly fasteners shall be zinc plated flat head screws with hex nuts. Rivets (Advel #1661-0613) 3/16" aluminum dome head 8-25 dome with steel shaft are also available upon request.

**Part 2 PRODUCTS**

**2.1 MANUFACTURED UNITS**

- .1 Lockers: to CAN/CGSB-44.40, Type 1-Single full-height locker, Class 2 - A bank of two or more lockers, freestanding.
- .1 **Size:** 18" (457mm) wide x 24" (610 mm) deep x 72" (1828 mm) high, steel thickness, no less than 24-gauge thickness.
- .2 **Basis of Design:** Hadrian Emperor (Corridor) Locker
- .3 **Assembly:** knock down construction.
- .4 **Top:** sloped.
- .5 **Doors:** Doors shall be of a double-pan design consisting of a 20-gauge outer panel welded to a 24-gauge inner panel to form a rigid box construction that resists prying. The outer panel to be double flanged on all four edges and the inner panel single flanged on all four edges, providing extraordinary rigidity when both panels are welded together. A structural and sound deadening 1" cell honeycomb core is bonded to the inner surfaces. The door shall be flush with the frame and include a recessed handle and recessed number plate, both of which eliminate protruding parts. As an up-charge option, doors may be constructed with a 16-gauge outer panel. Doors are hinged on the right and swing from left to right.
- .6 **Door Frames:** Both vertical members shall be not less than 16-gauge and formed into a rigid channel 5/8" wide exposed frame and 2 7/16" side depth. Hadrian's exclusive frame size offers wide door opening and ease of installing extra deep frame onto body, especially when rivets are used for assembly. The frame shall be completed by 3" high top and bottom cross members of not less than 18 gauge formed as an open box channel and welded to the verticals. The bottom frames' full-width lintel extends back and down to form a rigid box to support the bottom shelf. Both vertical frame members shall be formed to offer a full-length 7/16" wide continuous door strike. The latch vertical member shall include a welded 11-gauge padlock hasp together with a 7/16" O.D. air-cushioned rubber bumper. No fasteners shall be exposed on fronts of locker doors and frames.
- .7 **Body:** Sides and backs shall be no less than 24-gauge and should not contain extra unnecessary holes unless otherwise specifically used for the assembly of the lockers and accessories on the project. Edges shall be formed to provide a strong and rigid assembly when bolted or riveted together. Locker backs are flanged at right angles providing a triple thickness of metal at the back corner connections. Shelves, tops and bottoms shall be interchangeable; not less than

- 22-gauge and formed into a sturdy pan with a lip formed front edge for additional strength and safety.
- .8 **Latching/Locking Device- Single Point:** Trouble-free use is achieved with no sliding rods, springs, turn handles or moving latches. An 11-gauge 2" x 3/4" padlock hasp shall be securely welded to the continuous strike midway up on the frame and centered at the handle location. The hasp shall be formed to protrude through an extruded aluminum recessed handle, which is cliplocked and bonded to the door. The handle's inner surface shall be concave and grooved for fingertip door control. To keep the door closed when not in use, a 1/2" O.D. nylon friction catch shall be installed on the door to engage the frame in four (4) locations. Padlock is standard.
- .9 **Hinge- Continuous:** A full-length 18-gauge continuous piano hinge shall be securely welded to the frame and fastened to the door with screws or rivets. Hinge shall maximize security and enhance resistance to abuse and vandalism.
- .10 **Ventilation:** Airflow is achieved through 4 sets of 5 unobstructed louvers 3/4" wide x 1/4" high in the vertical frame members. Provide 18 each 3/16" diameter perforations at outside perimeter of each top, shelf, and bottom to offer additional ventilation throughout the inside of each locker.
- .11 **Number Plate:** Each door shall have a high strength black laminated plastic number plate, 2 1/2" wide x 1 1/8" high with white numbers not less than 7/16" high. Plates shall accommodate up to four digits, be nestled in a recess flush with door surface and shall be fastened to door with two rivets. Numbering Sequence to be provided by City of Winnipeg and WFPS.
- .12 **Interior Equipment:** Standard equipment in the single-tier locker shall be one hat shelf and three single prong coat hooks. Double prong coat hooks and 1" O.D. coat rods with stainless steel brackets shall be made available upon request. All hooks are chrome plated steel with ball point heads and attached to shelves with two fasteners.
- .13 **Finish:** All steel parts and aluminum pedestals shall be thoroughly machine cleaned, phosphatised, and finished with a high-performance epoxy powder coating, baked on to provide a uniform, smooth, protective finish. Colors shall be selected from Hadrian's standard color card. All interior body parts are finished in standard Light Grey #535.
- .14 **Base:** 4" high (102) mm base required.

## 2.2 ACCESSORIES.

- .1 **Locking system:** Standard Padlock

## Part 3 EXECUTION

### 3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates and surfaces to receive metal lockers previously installed under other Sections or Contracts are acceptable for product installation in accordance with manufacturer's instructions prior to metal locker installation.
- .2 Inform City of Winnipeg Contract Administrator of unacceptable conditions immediately upon discovery.
- .3 Proceed with installation only after unacceptable conditions have been remedied [and after receipt of written approval from City of Winnipeg Contract Administrator.

### **3.2 INSTALLATION**

- .1 Assemble and install lockers in accordance with manufacturer's written instructions. Although assembly by bolting is acceptable, manufacturer recommends assembly by riveting. Rivets provide solid permanent fastening but allow for faster removal by drilling where future rearrangement of lockers or replacement of damaged parts may be required.
- .2 Safely and securely anchor all lockers properly to walls and/or floors as required. Use fasteners appropriate to load and the substrate.
- .3 Install lockers and bench/pedestals in strict accordance with the manufacturer's assembly instructions to achieve a plumb, level and rigid installation.
- .4 Install filler panels (false fronts) where indicated and where obstructions occur.
- .5 Install finished end panels to exposed ends of locker banks.
- .6 Install locker numbers and attach number plates (as provided by City of Winnipeg) in sequence after all lockers have been installed.

### **3.3 ADJUSTMENT**

- .1 Adjust metal lockers for correct function and operation in accordance with manufacturer's written instructions.
- .2 Lubricate moving parts to operate smoothly and fit accurately.
- .3 Upon completion of installation, inspect lockers and adjust as necessary for proper door closing. Touch up scratches and abrasions to match original finish.

### **3.4 CLEANING**

- .1 Progress Cleaning:
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

### **3.5 PROTECTION**

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

**END OF SECTION 10 51 13**