

**PART I General**

**I.1 REFERENCES**

- .1 American Society for Testing and Materials International (ASTM)
  - .1 ASTM C423-02a, Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
  - .2 ASTM E1264-98, Standard Classification for Acoustical Ceiling Products.
  - .3 ASTM E1477-98a(2003), Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers.
- .2 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-51.34-M86, Vapour Barrier, Polyethylene Sheet, for Use in Building Construction and Amendment No. 1 1988.
  - .2 CAN/CGSB-92.1-M89, Sound Absorptive Prefabricated Acoustical Units.
- .3 Canadian Standards Association (CSA International)
  - .1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.
- .4 Department of Justice Canada (Jus)
  - .1 Canadian Environmental Protection Act (CEPA), 1999, c. 33.
  - .2 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34.
- .5 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .6 Underwriter's Laboratories of Canada (ULC)
  - .1 CAN/ULC-S102-2003, Surface Burning Characteristics of Building Materials and Assemblies.

**I.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data: submit WHMIS MSDS in accordance with Section 01 47 15 - Sustainable Requirements: Construction.
- .3 Co-ordinate submittal requirements and provide submittals required by Section 01 47 15 - Sustainable Requirements: Construction.
- .4 Submit duplicate samples of each type of acoustical units.

**I.3 QUALITY ASSURANCE**

- .1 Health and Safety:
  - .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

#### **I.4 DELIVERY, STORAGE AND HANDLING**

- .1 Protect on site stored or installed absorptive material from moisture damage.
- .2 Store extra materials required for maintenance, where directed by Departmental Representative.
- .3 Waste Management and Disposal:
  - .1 Separate waste materials for recycling in accordance with Section 01 74 21 - Construction /Demolition Waste Management and Disposal.
  - .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
  - .3 Place materials defined as hazardous or toxic in designated containers in accordance with Section 01 35 43 - Environmental Procedures.
  - .4 Handle and dispose of hazardous materials in accordance with CEPA,TDGA, Regional and Municipal, regulations.
  - .5 Ensure emptied containers are sealed and stored safely in accordance with Section 01 35 43 - Environmental Procedures.

#### **I.5 ENVIRONMENTAL REQUIREMENTS**

- .1 Permit wet work to dry before beginning to install.
- .2 Maintain uniform minimum temperature of 15 degrees C and humidity of 20% before and during installation.
- .3 Store materials in work area 48 hours prior to installation.

#### **I.6 EXTRA MATERIALS**

- .1 Provide extra materials of acoustic units in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Provide acoustical units amounting to 2% of gross ceiling area for each pattern and type required for project.
- .3 Ensure extra materials are from same production run as installed materials.
- .4 Clearly identify each type of acoustic unit, including colour and texture.
- .5 Deliver to Departmental Representative, upon completion of the work of this section.

### **PART 2 Products**

#### **2.1 SUSPENSION SYSTEM MATERIALS**

- .1 Non-fire Rated Grid (for ACT-1): ASTM C635, exposed T components die cut and interlocking. Commercial quality cold rolled steel with galvanized coating Exposed Grid Surface Width: 15/16 inch
- .2 Grid Finish: White.

- .3 Accessories: Stabilizer bars, clips, splices, perimeter moldings, required for suspended grid system.
- .4 Support Channels and Hangers: Galvanized steel; size and type to suit application and ceiling system flatness requirement specified.

## **2.2 ACOUSTIC UNIT MATERIALS**

- .1 Acoustic Panels (ACT-1): 610 x 610 x 16 mm; Square Edge, white surface colour, high humidity and sag resistant, non directional pattern, no added formaldehyde.
  - .1 Acceptable Materials – the above performance criteria is based on CertainTeed, Baroque, BET-197, 24 x 48 x 5/8

## **2.3 ACCESSORIES**

- .1 Touch-up Paint: Type and colour to match acoustic and grid units.

## **PART 3 Execution**

### **3.1 EXAMINATION**

- .1 Verify that layout of hangers will not interfere with other work.

### **3.2 INSTALLATION - LAY-IN GRID SUSPENSION SYSTEM**

- .1 Install suspension system in accordance with manufacturer's instructions and as supplemented in this section.
- .2 Install system in accordance with ASTM C636.
- .3 Install system capable of supporting imposed loads to a deflection of 1/360 maximum.
- .4 Locate system on room axis according to reflected plan.
- .5 Install after major above ceiling work is complete. Coordinate the location of hangers with other work.
- .6 Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- .7 Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
- .8 Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability. Support fixture loads by supplementary hangers located within 150 mm of each corner; or support components independently.
- .9 Do not eccentrically load system, or produce rotation of runners.
- .10 Perimeter Molding:

- .1 Install edge molding at intersection of ceiling and vertical surfaces.
- .2 Use longest practical lengths.
- .3 Miter corners.
- .4 Provide at junctions with other interruptions.

### **3.3 INSTALLATION - ACOUSTIC UNITS**

- .1 Install acoustic units in accordance with manufacturer's instructions.
- .2 Fit acoustic units in place, free from damaged edges or other defects detrimental to appearance and function.
- .3 Install acoustic units level, in uniform plane, and free from twist, warp, and dents.
- .4 Cutting Acoustic Units:
  - .1 Cut to fit irregular grid and perimeter edge trim.

### **3.4 ERECTION TOLERANCES**

- .1 Maximum Variation from Flat and Level Surface: 3mm in 3m.

**END OF SECTION**

**PART I General**

**I.1 REFERENCES**

- .1 ASTM E84-09c - Test Method for Surface Burning Characteristics of Building Materials.
- .2 ASTM F1066-04 - Vinyl Composition Floor Tile.
- .3 ASTM F1303-04(2009) - Sheet Vinyl Floor Covering with Backing.
- .4 ASTM F1700-04 - Solid Vinyl Floor Tile.
- .5 ASTM F1859-10 - Rubber Sheet Floor Covering Without Backing.
- .6 ASTM F1860-10 - Rubber Sheet Floor Covering With Backing.
- .7 ASTM F1861-08 - Resilient Wall Base.
- .8 ASTM F1913-04(2010) - Vinyl Sheet Floor Covering Without Backing.
- .9 ASTM F2169-02(2008) - Resilient Stair Treads.
- .10 CAN/ULC-S102.2-07 - Surface Burning Characteristics of Flooring, Floor Covering and Miscellaneous Materials and Assemblies.

**I.2 SUBMITTALS**

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Shop Drawings: Indicate seaming plan, borders, and patterns.
- .3 Samples: Submit two (2) samples, 300 x 300 mm in size illustrating colour and pattern for each floor material for each colour specified.

**I.3 REGULATORY REQUIREMENTS**

- .1 Conform to applicable code for flame/smoke rating requirements.

**I.4 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials in accordance with Section 01 35 41 - Waste Management and Disposal.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Dispose of unused finish and adhesive materials at official hazardous material collections site.
- .4 Do not dispose of unused finish and adhesive materials into sewer system, into streams, lakes, onto ground or in other locations where it will pose health or environmental hazard.

**I.5 ENVIRONMENTAL REQUIREMENTS**

- .1 Store materials for three (3) days prior to installation in area of installation to achieve temperature stability.

- .2 Maintain ambient temperature required by adhesive manufacturer three (3) days prior to, during, and 24 hours after installation of materials.

## **1.6 MAINTENANCE DATA**

- .1 Provide manufacturers instructions covering care and maintenance of materials of this section as per Section 01 78 10.

## **1.7 EXTRA MATERIALS**

- .1 Provide 2% or 5 sq m of flooring, whichever is greater.

## **PART 2 Products**

### **2.1 MATERIALS - SHEET FLOORING**

- .1 Resilient Sheet Flooring:
  - .1 Sheet Vinyl, homogeneous construction, Phthalate Free, Floor Score Certified meets CA 011350

### **2.2 ACCESSORIES**

- .1 Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.
- .2 Primers and Adhesives: Waterproof; low VOC types recommended by flooring manufacturer.
- .3 Welding Rod: Multicolour to match flooring.
- .4 Rubber base
  - .1 100mm high
  - .2 manufactured inside and outside corners
  - .3 base complete with toe
  - .4 floorscore certified
  - .5 Phthalate, halogen and Chlorine free

## **PART 3 Execution**

### **3.1 EXAMINATION**

- .1 Verify floors are dry to a maximum moisture content acceptable to flooring and adhesive manufacturer, and exhibit negative alkalinity, carbonization, or dusting.

### **3.2 PREPARATION**

- .1 Remove sub-floor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with sub-floor filler to achieve smooth, flat, hard surface.
- .2 Prohibit traffic until filler is cured.
- .3 Remove all existing floor adhesive or skim coat prior to applying flooring.
- .4 Vacuum clean substrate.
- .5 Apply primer to surfaces.

### **3.3 INSTALLATION - SHEET FLOORING**

- .1 Install in accordance with manufacturer's instructions.
- .2 Spread only enough adhesive to permit installation of materials before initial set.
- .3 Set flooring in place, press with roller to attain full adhesion.
- .4 Provide minimum of 1/3 full roll width. Double cut sheet; provide continuously heat welded seal.
- .5 Terminate flooring at centerline of door openings where adjacent floor finish is dissimilar.
- .6 Install transition strips at unprotected or exposed edges, and where flooring terminates.
- .7 Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.
- .8 Install flooring tight to all millwork and provide rubber base at all walls.

### **3.4 CLEANING**

- .1 Section 01 74 00: Cleaning. Clean Work.
- .2 Remove excess adhesive from floor, base, and wall surfaces without damage.
- .3 Clean and seal floor and base surfaces in accordance with manufacturer's instructions.

### **3.5 PROTECTION OF FINISHED WORK**

- .1 Prohibit traffic on floor finish for 48 hours after installation.

**END OF SECTION**

**PART I General**

**I.1 REFERENCES**

- .1 ASTM D2240-05(2010) - Standard Test Method for Rubber Property—Durometer Hardness.
- .2 ASTM D570 - 98(2010)e1 - Standard Test Method for Water Absorption of Plastics.
- .3 ASTM E96-10 - Standard Test Methods for Water Vapor Transmission of Materials.
- .4 ASTM E648-10e1 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.
- .5 ASTM D7234-05 - Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers.
- .6 ASTM D4060-10 - Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser.
- .7 ASTM D4226-11 - Standard Test Methods for Impact Resistance of Rigid Poly(Vinyl Chloride) (PVC) Building Products.
- .8 ASTM C579 - 01(2006) Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
- .9 ASTM C722-04 - Chemical-Resistant Resin Monolithic Surfacing.
- .10 ASTM C811-98 (2008) - Practise for Surface Preparation of Concrete for Application of Chemical-Resistant Resin Monolithic Surfacing.
- .11 ASTM D570-98 (2005) - Water Absorption of Plastics.
- .12 ASTM D638-08 - Tensile Properties of Plastics.
- .13 ASTM D695-08 - Compressive Properties of Rigid Plastics.
- .14 ASTM C811 - 98(2008) Standard Practice for Surface Preparation of Concrete for Application of Chemical-Resistant Resin Monolithic Surfacing.
- .15 ASTM D905-08- Strength Properties of Adhesive Bonds in Shear by Compression Loading.
- .16 ASTM D1044-08 - Resistance of Transparent Plastics to Surface Abrasion.
- .17 ASTM D1360-98 (2004) - Fire Retardancy of Paints (Cabinet Method).
- .18 ASTM D2240 - 05(2010) - Standard Test Method for Rubber Property—Durometer Hardness.
- .19 ASTM E84-08a - Test Method for Surface Burning Characteristics of Building Materials.
- .20 ASTM E96/E96M-05 - Test Methods for Water Vapour Transmission of Materials.
- .21 ANSI A118.10 - Specifications for load bearing, bonded, waterproof membranes for thin-set ceramic tile and dimension stone installation.
- .22 CAN/ULC-S102-07 - Test for Surface Burning Characteristics of Building Materials and Assemblies.

**I.2 SUBMITTALS FOR REVIEW**

- .1 Section 01 33 00: Submission procedures.
- .2 Product Data:



- .1 For each type of product indicated. Include manufacturer's technical data, installation instructions, and recommendations for each resinous flooring component required. Include certification indicating compliance of materials with project requirements.
- .2 Provide data on specified products, describing physical characteristics; sizes, patterns and colours available.
- .3 Shop Drawings: Indicated thicknesses, materials, finishes, details, joints, transitions, and caps.
- .1 Samples: Submit two (2) samples, 150 mm square in size illustrating colour and pattern for each floor material for each colour specified, applied to a rigid backing by Installer for this project.
  - .1 For initial selection of colors and finishes, submit manufacturer's color charts showing full range of colors and finishes available.

### **I.3 SUBMITTALS FOR INFORMATION**

- .1 Section 01 33 00: Submission procedures.
- .2 Installation Data: Manufacturer's application instructions and special installation requirements indicating special procedures, perimeter conditions requiring special attention.

### **I.4 CLOSEOUT SUBMITTALS**

- .1 Section 01 78 10: Submission procedures.
- .2 Operation and Maintenance Data: Include maintenance procedures, recommended maintenance materials, procedures for stain removal, repairing surface, and suggested schedule for cleaning.

### **I.5 QUALITY ASSURANCE**

- .1 All materials, including primers, resins, curing agents, finish coats, aggregates and sealants are manufactured and tested under an ISO 9001 registered quality system.
- .2 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five (5) years documented experience.
- .3 Installer Qualifications: Company specializing in performing the work of this section with minimum five (5) years documented experience and approved by the manufacturer.
- .4 Supervisor Qualifications: Trained by product manufacturer.
- .5 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.
- .6 Source Limitations: Obtain primary resinous flooring materials, including primers, resins, hardening agents, grouting coats, and topcoats, through one source from a single manufacturer. Provide secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from source recommended by manufacturer of primary materials.

## **I.6 REGULATORY REQUIREMENTS**

- .1 Conform to applicable code for flame/smoke rating requirements in accordance with CAN/ULC-S102 and ASTM E84 as required.

## **I.7 MOCK-UP**

- .1 Section 01 45 00: Requirements for mock-up.
- .2 Provide 300 (1 foot) x 1200 mm (4 feet) mock-up including full-thickness flooring, Including a 48-inch (1200-mm) length of integral cove base.
- .3 Locate where directed by Departmental Representative.
- .4 Approved mock-up may remain as part of the Work.
- .5 Do not proceed until work has been reviewed.

## **I.8 DELIVERY, STORAGE, AND PROTECTION**

- .1 Store resin materials in a dry, secure area.
- .2 Material shall be delivered to job site and checked by flooring contractor for completeness and shipping damage prior to job start.
- .3 All materials used shall be factory blended and packaged in single, easy to manage batches to eliminate on site blending errors. Only the on-site weighing of catalyst shall be acceptable.
- .4 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.
- .5 Store materials for three days prior to installation in area of installation to achieve temperature stability.
- .6 Delivery, storage , and protection to manufacturer's recommendations.

## **I.9 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials in accordance with Project requirements specified in Section 01 74 19 - Construction Demolition Waste Management.

## **I.10 ENVIRONMENTAL REQUIREMENTS**

- .1 Maintain ambient temperature required by manufacturer three days prior to, during, and 24 hours after installation of materials.
- .2 Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring application.
- .3 Close spaces to traffic during resinous flooring application and for not less than 24 hours after application, unless manufacturer recommends a longer period.
- .4 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 vapour barrier or exterior applied waterproofing membrane must be present for concrete slabs below grade.
- .5 Utilities, including electric, water, heat (air temperature between 32 and 85°F/0 and 30°C) and finished lighting to be supplied by General Contractor.
- .6 Job area to be free of other trades during, and for a period of 4 hours, after flooring system installation.

- .7 Protection of finished flooring system from damage by subsequent trades shall be the responsibility of the General Contractor.

### **I.11 WARRANTY**

- .1 Provide a twenty four (24) month warranty to include coverage for failure to meet specified requirements.
- .2 Include coverage against flooring delamination from substrate and degradation of surface finish.
- .3 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 disqualified.

## **PART 2 Products**

### **2.1 MATERIALS**

- .1 Epoxy Flooring:
- .1 System Characteristics:
- .1 Nominal 12 – 16mil, 100% solids, 0 VOC, two component, moisture tolerant, chemical resistant, bisphenol F epoxy floor coating. 100% solids.
- .2 System Components:
- .1 Physical Properties: Provide flooring system in which minimum physical properties of the complete system, including primers, fillers, aggregates, and sealers, and when tested in accordance with standards or procedures referenced below, are as follows:

Hardness 85-90

(ASTM D-2240, Shore D)

Impact Resistance >160 in-lbs

(ASTM D-2794)

Abrasion Resistance 0.06 gm max. weight loss

(ASTM D-4060, CS-17, 1 kg Load, 1,000 cycles)

Bond Strength >400 psi

(ASTM D-7234)(100% concrete failure)

Heat Resistance Limitation 200°F/93°C

(for continuous exposure)

250°F/121°C

(for intermittent spills)

Cure Rate allow 4-5 hours for tack-free surface  
(at 77°F/25°C) 24 hours min. for normal operations

Fire Resistance of Dry Film Class A  
(CAN/ULC S102.2) Flame Spread – 7  
Smoke Developed - 45

.3 Location: Refer to Room Finish Schedule.

## **2.2 ACCESSORIES**

- .1 As recommended by manufacturer and accepted by Departmental Representative.
- .2 Base Caps:
  - .1 Plastic Strips as recommended by manufacturer to suit application.
- .3 Subfloor Filler: Type recommended by flooring material manufacturer.
- .4 Primers and Adhesives: Waterproof; types recommended by flooring manufacturer.
- .5 Patching and Fill Material: Resinous product of or approved by resinous flooring manufacturer and recommended by manufacturer for application indicated. No Single component or cementitious materials.
- .6 Joint Sealant: Type recommended or produced by resinous flooring manufacturer for type of service and joint condition indicated.
- .7 100mm high cove base.

## **PART 3 Execution**

### **3.1 EXAMINATION**

- .1 Verify existing conditions before starting work.
- .2 Verify that surfaces are smooth and flat with maximum variation of 6mm in 3m, and are ready to receive work.
- .3 Verify concrete floors are dry to a maximum moisture content of 7 percent, and exhibit negative alkalinity, carbonization, or dusting.
- .4 Verify surfaces are free of substances that may impair adhesion of new adhesive and finish materials.

### **3.2 PREPARATION**

- .1 General: Prepare and clean substrates according to resinous flooring manufacturer's written instructions for substrate indicated. Provide clean, dry, and neutral Ph substrate for resinous flooring application.
- .2 Apply, trowel, and float filler to achieve smooth, flat, hard surface. Grind irregularities above the surface level. Prohibit traffic until filler is cured.

- .3 Vacuum clean substrate.
- .4 Apply primer to surfaces as recommended by manufacturer.
- .5 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 recommended by manufacture's written instructions.
  - .2 Repair damaged and deteriorated concrete according to resinous flooring manufacturer's written recommendations.
  - .3 Verify that concrete substrates are dry.
    - .1 Perform in situ probe test, ASTM F 2170. Proceed with application only after substrates do not exceed a maximum potential equilibrium relative humidity of 80 percent.
    - .2 Perform additional moisture tests recommended by manufacturer. Proceed with application only after substrates pass testing.
  - .4 Verify that concrete substrates have neutral Ph and that resinous flooring will adhere to them. Perform tests recommended by manufacturer. Proceed with application only after substrates pass testing.
- .6 Resinous Materials: Mix components and prepare materials according to resinous flooring manufacturer's written instructions.
- .7 Broadcast: Apply decorative, vinyl chip broadcast into the wet primer until refusal. Strict adherence to manufacturer's coverage rates shall be maintained.
- .8 Topcoat: Mix material according to manufacturer's recommended procedures. Topcoat material shall be applied in two coats at 6-8 mils per coat immediately after mixing using high quality medium nap rollers. Strict adherence to manufacturer's coverage rates shall be maintained.
- .9 Use patching and fill material to fill holes and depressions in substrates according to manufacturer's written instructions.
- .10 Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer's written recommendations. Allowances should be included for joint fill material.

### **3.3 INSTALLATION - GENERAL**

- .1 General: Apply components of resinous flooring system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness indicated.
- .2 Integral Cove Base: 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, and top coating of cove base. Round internal and external corners.

### **3.4 TERMINATIONS**

- .1 Chase edges to "lock" the coating system into the concrete substrate along lines of termination.
- .2 Penetration Treatment: Lap and seal coating onto the perimeter of the penetrating item by bridging over compatible elastomer at the interface to compensate for possible movement.

- .3 Trenches: Continue coating system into trenches to maintain monolithic protection. Treat cold joints to assure bridging of potential cracks.
- .4 Treat floor drains by chasing the coating to lock in place at point of termination.

### **3.5 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.

### **3.6 INSTALLATION - STRIPS**

- .1 Install base strips straight and level to locations where base cove is exposed.

### **3.7 INSTALLATION - FLOORING**

- .1 Install flooring to manufacturer instructions.
- .2 Apply to a thickness to match existing.
- .3 Finish to smooth level surface.
- .4 Install flooring in pan type floor access covers.
- .5 Cove at vertical surfaces.

### **3.8 FIELD QUALITY CONTROL**

- .1 Material Sampling: Owner may at any time and any numbers of times during resinous flooring application require material samples for testing for compliance with requirements.
  - .1 Owner will engage an independent testing agency to take samples of materials being used. Material samples will be taken, identified, sealed, and certified in presence of Contractor.
  - .2 Testing agency will test samples for compliance with requirements, using applicable referenced testing procedures or, if not referenced, using testing procedures listed in manufacturer's product data.
  - .3 Engage service of an independent coating inspector to perform core tests to verify installation thickness meets the requirements of the specification. Repair to the Departmental Representative's satisfaction any damage in the flooring system.
  - .4 If test results show applied materials do not comply with specified requirements, pay for testing, remove noncomplying materials, prepare surfaces coated with unacceptable materials, and reapply flooring materials to comply with requirements.

### **3.9 PROTECTION OF FINISHED WORK**

- .1 Prohibit traffic on floor finish for 48 hours after installation.
- .2 Barricade area to protect flooring until cured.

- .3 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 18 hours.
- .4 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.
- .5 Cleaning: Remove temporary covering and clean resinous flooring just prior to final inspection. Use cleaning materials and procedures recommended by resinous flooring manufacturer.

**END OF SECTION**

**Part I General**

**I.1 REFERENCES**

- .1 Department of Justice Canada (Jus)
  - .1 Canadian Environmental Protection Act (CEPA), 1999, c. 33
- .2 Environmental Protection Agency (EPA)
  - .1 EPA Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 - 1995, (for Surface Coatings).
- .3 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .4 Master Painters Institute (MPI)
  - .1 MPI Architectural Painting Specifications Manual, 2004.
- .5 National Fire Code of Canada - 1995
- .6 Society for Protective Coatings (SSPC)
  - .1 SSPC Painting Manual, Volume Two, 8th Edition, Systems and Specifications Manual.
- .7 Transport Canada (TC)
  - .1 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34 .

**I.2 QUALITY ASSURANCE**

- .1 Qualifications:
  - .1 Contractor: minimum of five years proven satisfactory experience. Provide list of last three comparable jobs including, job name and location, specifying authority, and project manager.
  - .2 Journeymen: qualified journeymen who have "Tradesman Qualification Certificate of Proficiency" engaged in painting work.
  - .3 Apprentices: working under direct supervision of qualified trades person in accordance with trade regulations.
- .2 Pre-Installation Meeting:
  - .1 Convene pre-installation meeting one week prior to beginning work of this Section on-site installations in accordance with Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart.
    - .1 Verify project requirements.
    - .2 Review installation and substrate conditions.
    - .3 Coordination with other building subtrades.
    - .4 Review manufacturer's installation instructions and warranty requirements.
- .3 Health and Safety:



- .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

- .4 Verification: contractor's verification in accordance with Section 01 47 17 - Sustainable Requirements: Contractor's Verification.

### **I.3 SCHEDULING**

- .1 Submit work schedule for various stages of painting to Departmental Representative for review. Submit schedule minimum of 48 hours in advance of proposed operations.
- .2 Obtain written authorization from Departmental Representative for changes in work schedule.
- .3 Schedule painting operations to prevent disruption of occupants.

### **I.4 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit product data and instructions for each paint and coating product to be used.
  - .2 Submit product data for the use and application of paint thinner.
  - .3 Submit two copies of Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS) in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOCs during application and curing.
- .3 Samples:
  - .1 Submit full range colour sample chips to indicate where colour availability is restricted.
  - .2 Retain reviewed samples on-site to demonstrate acceptable standard of quality for appropriate on-site surface.
  - .3 Test reports: submit certified test reports for paint from approved independent testing laboratories, indicating compliance with specifications for specified performance characteristics and physical properties.
    - .1 Lead, cadmium and chromium: presence of and amounts.
    - .2 Mercury: presence of and amounts.
    - .3 Organochlorines and PCBs: presence of and amounts.
  - .4 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
  - .5 Manufacturer's Instructions:
    - .1 Submit manufacturer's installation application instructions.
  - .6 Closeout Submittals: submit maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals include following:
    - .1 Product name, type and use.
    - .2 Manufacturer's product number.
    - .3 Colour numbers.
    - .4 MPI Environmentally Friendly classification system rating.

## **I.5 MAINTENANCE**

- .1 Extra Materials:
  - .1 Deliver to extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Section 01 78 00 - Closeout Submittals.
  - .2 Quantity: provide one - four litre can of each type and colour of primer stain finish coating. Identify colour and paint type in relation to established colour schedule and finish system.
  - .3 Delivery, storage and protection: comply with Departmental Representative requirements for delivery and storage of extra materials.

## **I.6 DELIVERY, STORAGE AND HANDLING**

- .1 Packing, Shipping, Handling and Unloading:
  - .1 Pack, ship, handle and unload materials in accordance with Section 01 61 00 - Common Product Requirements and manufacturer's written instructions.
- .2 Acceptance at Site:
  - .1 Identify products and materials with labels indicating:
    - .1 Manufacturer's name and address.
    - .2 Type of paint or coating.
    - .3 Compliance with applicable standard.
    - .4 Colour number in accordance with established colour schedule.
- .3 Remove damaged, opened and rejected materials from site.
- .4 Storage and Protection:
  - .1 Provide and maintain dry, temperature controlled, secure storage.
  - .2 Store materials and supplies away from heat generating devices.
  - .3 Store materials and equipment in well ventilated area with temperature range 7 degrees C to 30 degrees C.
- .5 Store temperature sensitive products above minimum temperature as recommended by manufacturer.
- .6 Keep areas used for storage, cleaning and preparation clean and orderly. After completion of operations, return areas to clean condition.
- .7 Remove paint materials from storage only in quantities required for same day use.
- .8 Fire Safety Requirements:
  - .1 Provide one 9 kg Type B fire extinguisher adjacent to storage area.
  - .2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
  - .3 Handle, store, use and dispose of flammable and combustible materials in accordance with National Fire Code of Canada requirements.
- .9 Waste Management and Disposal:

- .1 Separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper plastic polystyrene corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan (WMP).
- .4 Separate for reuse recycling and place in designated containers Steel Metal Plastic waste in accordance with Waste Management Plan (WMP).
- .5 Place materials defined as hazardous or toxic in designated containers.
- .6 Handle and dispose of hazardous materials in accordance with CEPA, TDGA, Regional and Municipal, regulations.
- .7 Ensure emptied containers are sealed and stored safely.
- .8 Unused paint coating materials must be disposed of at official hazardous material collections site as approved by Departmental Representative
- .9 Paint, stain and wood preservative finishes and related materials (thinners, and solvents) are regarded as hazardous products and are subject to regulations for disposal. Information on these controls can be obtained from Provincial Ministries of Environment and Regional levels of Government.
- .10 Material which cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.
- .11 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.
- .12 To reduce the amount of contaminants entering waterways, sanitary/storm drain systems or into ground follow these procedures:
  - .1 Retain cleaning water for water-based materials to allow sediments to be filtered out.
  - .2 Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.
  - .3 Return solvent and oil soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.
  - .4 Dispose of contaminants in approved legal manner in accordance with hazardous waste regulations.
  - .5 Empty paint cans are to be dry prior to disposal or recycling (where available).
- .13 Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility.

## **I.7 SITE CONDITIONS**

- .1 Heating, Ventilation and Lighting:
  - .1 Ventilate enclosed spaces.

- .2 Provide heating facilities to maintain ambient air and substrate temperatures above 10 degrees C for 24 hours before, during and after paint application until paint has cured sufficiently.
- .3 Provide continuous ventilation for seven days after completion of application of paint.
- .4 Coordinate use of existing ventilation system with Departmental Representative and ensure its operation during and after application of paint as required.
- .5 Provide temporary ventilating and heating equipment where permanent facilities are not available or supplemental ventilating and heating equipment if ventilation and heating from existing system is inadequate to meet minimum requirements.
- .6 Provide minimum lighting level of 323 Lux on surfaces to be painted.
- .2 Temperature, Humidity and Substrate Moisture Content Levels:
  - .1 Unless pre-approved written approval by Specifying body Paint Inspection Agency Authority and product manufacturer, perform no painting when:
    - .1 Ambient air and substrate temperatures are below 10 degrees C.
    - .2 Substrate temperature is above 32 degrees C unless paint is specifically formulated for application at high temperatures.
    - .3 Substrate and ambient air temperatures are not expected to fall within MPI or paint manufacturer's prescribed limits.
    - .4 The relative humidity is under 85% or when the dew point is more than 3 degrees C variance between the air/surface temperature. Paint should not be applied if the dew point is less than 3 degrees C below the ambient or surface temperature. Use sling psychrometer to establish the relative humidity before beginning paint work.
    - .5 Rain or snow are forecast to occur before paint has thoroughly cured or when it is foggy, misty, raining or snowing at site.
    - .6 Ensure that conditions are within specified limits during drying or curing process, until newly applied coating can itself withstand 'normal' adverse environmental factors.
  - .2 Perform painting work when maximum moisture content of the substrate is below:
    - .1 Allow new concrete and masonry to cure minimum of 28 days.
    - .2 15% for wood.
    - .3 12% for plaster and gypsum board.
  - .3 Test for moisture using calibrated electronic Moisture Meter. Test concrete floors for moisture using "cover patch test".
  - .4 Test concrete, masonry and plaster surfaces for alkalinity as required.
- .3 Surface and Environmental Conditions:
  - .1 Apply paint finish in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.
  - .2 Apply paint to adequately prepared surfaces and to surfaces within moisture limits.
  - .3 Apply paint when previous coat of paint is dry or adequately cured.

- .4 Additional interior application requirements:
  - .1 Apply paint finishes when temperature at location of installation can be satisfactorily maintained within manufacturer's recommendations.
  - .2 Apply paint in occupied facilities during silent hours only. Schedule operations to approval of Departmental Representative such that painted surfaces will have dried and cured sufficiently before occupants are affected.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Paint materials listed in the MPI Approved Products List (APL) are acceptable for use on this project.
- .2 Provide paint materials for paint systems from single manufacturer.
- .3 Only qualified products with E3 "Environmentally Friendly" rating are acceptable for use on this project.
- .4 Conform to latest MPI requirements for interior painting work including preparation and priming.
- .5 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, etc.) in accordance with MPI Architectural Painting Specification Manual "Approved Product" listing.
- .6 Linseed oil, shellac, and turpentine: highest quality product from approved manufacturer listed in MPI Architectural Painting Specification Manual, compatible with other coating materials as required.
- .7 Paints, coatings, adhesives, solvents, cleaners, lubricants, and other fluids:
  - .1 Water-based Water soluble Water clean-up.
  - .2 non-flammable biodegradable.
  - .3 Manufactured without compounds which contribute to ozone depletion in the upper atmosphere.
  - .4 Manufactured without compounds which contribute to smog in the lower atmosphere.
  - .5 Do not contain methylene chloride, chlorinated hydrocarbons, toxic metal pigments.
- .8 Formulate and manufacture water-borne surface coatings with no aromatic solvents, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium or their compounds.
- .9 Flash point: 61.0 degrees C or greater for water-borne surface coatings and recycled water-borne surface coatings.
- .10 Ensure manufacture and process of both water-borne surface coatings and recycled water-borne surface coatings does not release:
  - .1 Matter in undiluted production plant effluent generating 'Biochemical Oxygen Demand' (BOD) in excess of 15 mg/L to natural watercourse or sewage treatment facility lacking secondary treatment.

- .2 Total Suspended Solids (TSS) in undiluted production plant effluent in excess of 15 mg/L to natural watercourse or a sewage treatment facility lacking secondary treatment.
- .11 Water-borne paints and stains, recycled water-borne surface coatings and water borne varnishes to meet minimum "Environmentally Friendly" E2 rating.
- .12 Recycled water-borne surface coatings to contain 50 % post-consumer material by volume.
- .13 Recycled water-borne surface coatings must not contain:
  - .1 Lead in excess of 600.0 ppm weight/weight total solids.
  - .2 Mercury in excess of 50.0ppm weight/weight total product.
  - .3 Cadmium in excess of 1.0ppm weight/weight total product.
  - .4 Hexavalent chromium in excess of 3.0 ppm weight/weight total product.
  - .5 Organochlorines or polychlorinated biphenyls (PCBS) in excess of 1.0 ppm weight/weight total product.

## 2.2 COLOURS

- .1 Departmental Representative after Contract award, submit proposed Colour Schedule to Departmental Representative for review.
- .2 Colour schedule will be based upon selection of five base colours and three accent colours. No more than eight colours will be selected for entire project and no more than three colours will be selected in each area.
- .3 Selection of colours from manufacturers full range of colours.
- .4 Where specific products are available in restricted range of colours, selection based on limited range.
- .5 Second coat in three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats.

## 2.3 MIXING AND TINTING

- .1 Perform colour tinting operations prior to delivery of paint to site. Obtain written approval from Departmental Representative for tinting of painting materials.
- .2 Mix paste, powder or catalyzed paint mixes in accordance with manufacturer's written instructions.
- .3 Use and add thinner in accordance with paint manufacturer's recommendations. Do not use kerosene or similar organic solvents to thin water-based paints.
- .4 Thin paint for spraying in accordance with paint manufacturer's instructions.
- .5 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

## 2.4 GLOSS/SHEEN RATINGS

- .1 Paint gloss is defined as sheen rating of applied paint, in accordance with following values:

	Gloss @ 60 degrees	Sheen @ 85 degrees
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Gloss Level 1 - Matte Finish (flat)	Max. 5	Max. 10
Gloss Level 2 - Velvet-Like Finish	Max.10	10 to 35
Gloss Level 3 - Eggshell Finish	10 to 25	10 to 35
Gloss Level 4 - Satin-Like Finish	20 to 35	min. 35
Gloss Level 5 - Traditional Semi-Gloss Finish	35 to 70	
Gloss Level 6 - Traditional Gloss	70 to 85	
Gloss Level 7 - High Gloss Finish	More than 85	

- .2 Gloss level ratings of painted surfaces as indicated as noted on Finish Schedule.

## 2.5 INTERIOR PAINTING SYSTEMS

- .1 Concrete vertical surfaces: including horizontal soffits:
- .1 INT 3.1A - Latex insert gloss level finish (over sealer).
  - .2 INT 3.1B - Latex insert texture type aggregate/latex/ insert gloss level finish.
  - .3 INT 3.1C - High performance architectural latex insert gloss level finish.
  - .4 INT 3.1D - Alkyd insert gloss level finish.
  - .5 INT 3.1E - Latex insert gloss level finish.
  - .6 INT 3.1F - Epoxy (tile-like) finish for smooth concrete.
  - .7 INT 3.1G - Waterborne epoxy (tile-like) finish for smooth concrete.
  - .8 INT 3.1H - Multicolour finish.
  - .9 INT 3.1J - Water repellent paintable finish.
  - .10 INT 3.1K - Concrete stain finish.
  - .11 INT 3.1L - Waterborne light industrial insert gloss level coating.
  - .12 INT 3.1M - Institutional low odour/low VOC insert gloss level finish.
  - .13 INT 3.1N - Latex insert gloss level aggregate coating.insert texture type
- .2 Concrete horizontal surfaces: floors and stairs:
- .1 INT 3.2A - Latex floor enamel gloss low gloss finish.
  - .2 INT 3.2B - Alkyd floor enamel gloss low gloss finish.
  - .3 INT 3.2C - Epoxy finish.
  - .4 INT 3.2D - Pigmented polyurethane finish.
  - .5 INT 3.2E - Concrete stain finish.
  - .6 INT 3.2F - Concrete floor sealer.
  - .7 INT 3.2G - Waterborne concrete floor sealer.
  - .8 INT 3.2H - Latex zone/traffic marking finish for parking lines, etc..
  - .9 INT 3.2J - Alkyd zone/traffic marking finish for parking lines, etc..
  - .10 INT 3.2K - Clear (2 component) polyurethane finish.
  - .11 INT 3.2L - Waterborne epoxy floor finish.
- .3 Cementitious composition board surfaces:
- .1 INT 3.3A - Latex insert gloss level finish.

- .2 INT 3.3B - High performance architectural latex insert gloss level finish.
- .3 INT 3.3C - Alkyd insert gloss level finish.
- .4 INT 3.3D - Waterborne epoxy (tile like) finish.
- .5 INT 3.3E - Epoxy (tile like) finish.
- .6 INT 3.3F - Multicolour finish.
- .7 INT 3.3G - Institutional low odour/low VOC insert gloss level finish.
- .8 INT 3.3H - Waterborne light industrial insert gloss level coating.
- .4 Concrete masonry units: smooth and split face block and brick:
  - .1 INT 4.2A - Latex insert gloss level finish.
  - .2 INT 4.2B - Latex insert gloss level aggregate coating.insert texture type
  - .3 INT 4.2C - Alkyd insert gloss level finish.
  - .4 INT 4.2D - High performance architectural latex insert gloss level finish.
  - .5 INT 4.2E - Institutional low odour/low VOC insert gloss level finish.
  - .6 INT 4.2F - Epoxy (tile-like) finish for dry environments.
  - .7 INT 4.2G - Epoxy (tile-like) finish for wet environments.
  - .8 INT 4.2H - Multicolour finish.
  - .9 INT 4.2J - Waterborne epoxy (tile-like) finish for dry environments.
  - .10 INT 4.2K - Waterborne light industrial insert gloss level coating.
  - .11 INT 4.2L - Water repellent non-paintable finish do not use on light weight block.
  - .12 INT 4.2M - Water repellent paintable finish do not use on light weight block.
  - .13 INT 4.2N - Alkyd insert gloss level finish (over latex sealer).
- .5 Structural steel and metal fabrications: columns, beams, joists:
  - .1 INT 5.1A - Quick dry enamel gloss semi-gloss finish.
  - .2 INT 5.1B - Waterborne light industrial insert gloss level coating.
  - .3 INT 5.1C - Waterborne dry wall finish.
  - .4 INT 5.1CC - Waterborne dry wall finish (over quick dry shop primer) for dry locations only.
  - .5 INT 5.1D - Alkyd dry wall finish.
  - .6 INT 5.1DD - Alkyd dry wall finish (over quick dry shop primer)for dry locations only.
  - .7 INT 5.1E Alkyd - insert gloss level finish.
  - .8 INT 5.1F - Pigmented polyurethane finish (over epoxy primer).
  - .9 INT 5.1G - Pigmented polyurethane finish (over high-build epoxy).
  - .10 INT 5.1H - Pigmented polyurethane finish (over epoxy and inorganic zinc).
  - .11 INT 5.1J - Pigmented polyurethane finish (over epoxy and epoxy zinc rich primer).
  - .12 INT 5.1K - Waterborne epoxy finish.
  - .13 INT 5.1L - Epoxy finish.
  - .14 INT 5.1M - Aluminum paint finish.



- .15 INT 5.1N - Waterborne light industrial insert gloss level coating (over epoxy primer).
- .16 INT 5.1P - High build epoxy (over epoxy zinc rich primer).
- .17 INT 5.1Q - Latex insert gloss level finish (over alkyd primer).
- .18 INT 5.1R - High performance architectural latex insert gloss level finish.
- .19 INT 5.1S - Institutional low odour/low VOC insert gloss level finish.
- .20 INT 5.1T - Alkyd insert gloss level finish (over surface tolerant primer).
- .21 INT 5.1U - Epoxy finish (over self-priming epoxy).
- .22 INT 5.1V - Pigmented polyurethane finish (over self-priming epoxy).
- .23 INT 5.1W - Alkyd insert gloss level finish (over quick dry shop primer) for dry locations only.
- .24 INT 5.1X - Latex insert gloss level finish (over quick dry shop primer) for dry locations only.
- .25 INT 5.1Y - Not Applicable.
- .26 INT 5.1Z - Quick dry shop paint finish (for dry locations only) do not topcoat.
- .6 Steel - high heat: (boilers, furnaces, heat exchangers, breeching, pipes, flues, stacks, etc., with temperature range as noted):
  - .1 INT 5.2A - Heat resistant enamel finish, maximum 205 degrees C.
  - .2 INT 5.2B - Heat resistant aluminum paint finish, maximum 427 degrees C.
  - .3 INT 5.2C - Inorganic zinc rich coating, maximum 400 degrees C.
  - .4 INT 5.2D - High heat resistant coating, maximum 593 degrees C.
- .7 Galvanized metal: doors, frames, railings, misc. steel, pipes, overhead decking, and ducts.
  - .1 INT 5.3A - Latex insert gloss level finish.
  - .2 INT 5.3B - Waterborne light industrial insert gloss level coating.
  - .3 INT 5.3C - Alkyd insert gloss level finish (over cementitious primer).
  - .4 INT 5.3D - Epoxy finish (over epoxy primer).
  - .5 INT 5.3E - Epoxy finish (over vinyl wash primer and epoxy primer).
  - .6 INT 5.3F - Alkyd dry wall finish for use in low contact/low traffic areas only.
  - .7 INT 5.3G - Aluminum paint finish.
  - .8 INT 5.3H - Waterborne dry wall finish for use in low contact/low traffic areas only.
  - .9 INT 5.3J - Latex insert gloss level finish (over waterborne primer).
  - .10 INT 5.3K - Waterborne light industrial insert gloss level coating (over waterborne primer).
  - .11 INT 5.3L - Alkyd insert gloss level finish (over non-cementitious primer).
  - .12 INT 5.3M - High performance architectural latex insert gloss level finish.
  - .13 INT 5.3N - Institutional low odour/low VOC insert gloss level finish.
- .8 Dimension lumber: columns, beams, exposed joists, underside of decking:
  - .1 INT 6.2A - Latex insert gloss level finish (over alkyd primer).
  - .2 INT 6.2B - High performance architectural latex insert gloss level finish.

- .3 INT 6.2C - Alkyd insert gloss level finish.
- .4 INT 6.2D - Latex insert gloss level finish (over latex primer).
- .5 INT 6.2E - Multicolour finish.
- .6 INT 6.2F - Pigmented fire retardant insert gloss level coating (ULC rated).
- .7 INT 6.2G - Clear fire retardant insert gloss level coating (ULC rated).
- .8 INT 6.2H - Polyurethane varnish insert gloss level finish.
- .9 INT 6.2J - Polyurethane varnish insert gloss level finish (over stain).
- .10 INT 6.2K - Alkyd varnish insert gloss level finish (over stain and sealer).
- .11 INT 6.2L - Institutional low odour/low VOC insert gloss level finish.
- .12 INT 6.2M - Waterborne clear acrylic insert gloss level finish (over stain).
- .13 INT 6.2N - Clear moisture cured polyurethane gloss flat finish.
- .14 INT 6.2P - Alkyd varnish insert gloss level finish.
- .9 Dressed lumber: including doors, door and window frames, casings, mouldings:
  - .1 INT 6.3A - High performance architectural latex insert gloss level finish.
  - .2 INT 6.3B - Alkyd insert gloss level finish.
  - .3 INT 6.3BB - Waterborne alkyd gloss finish interior doors and frames in non-humid locations only.
  - .4 INT 6.3C - Semi-transparent stain finish do not use on doors.
  - .5 INT 6.3D - Alkyd varnish insert gloss level finish (over stain).
  - .6 INT 6.3E - Polyurethane varnish insert gloss level finish (over stain).
  - .7 INT 6.3F - Lacquer insert gloss level finish (over stain).
  - .8 INT 6.3G - Pigmented lacquer insert gloss level finish.
  - .9 INT 6.3H - Clear lacquer insert gloss level finish.
  - .10 INT 6.3J - Alkyd varnish insert gloss level finish.
  - .11 INT 6.3K - Polyurethane varnish insert gloss level finish.
  - .12 INT 6.3L - Epoxy finish.
  - .13 INT 6.3M - Danish oil finish.
  - .14 INT 6.3N - Multicolour finish.
  - .15 INT 6.3P - Waterborne light industrial insert gloss level coating.
  - .16 INT 6.3Q - Waterborne clear acrylic insert gloss level finish.
  - .17 INT 6.3R - Pigmented fire retardant insert gloss level finish (ULC rated).
  - .18 INT 6.3S - Clear fire retardant finish (ULC rated).
  - .19 INT 6.3T - Latex semi-gloss gloss finish (over latex primer).
  - .20 INT 6.3U - Latex semi-gloss gloss finish (over alkyd primer).
  - .21 INT 6.3V - Institutional low odour/low VOC insert gloss level finish.
  - .22 INT 6.3W - Waterborne clear acrylic insert gloss level finish (over stain).
  - .23 INT 6.3X - Clear moisture cured polyurethane gloss flat finish.
  - .24 INT 6.3Y - Clear moisture cured polyurethane gloss flat finish (over stain).
  - .25 INT 6.3Z - Clear (2 component) polyurethane finish.
- .10 Wood paneling and casework: partitions, panels, shelving, millwork:

- .1 INT 6.4A - Latex insert gloss level finish (over alkyd sealer).
- .2 INT 6.4B - Alkyd insert gloss level finish (over alkyd sealer).
- .3 INT 6.4C - Semi-Transparent stain finish.
- .4 INT 6.4D - Alkyd varnish insert gloss level finish (over stain).
- .5 INT 6.4E - Polyurethane varnish insert gloss level finish (over stain).
- .6 INT 6.4F - Lacquer insert gloss level finish (over stain).
- .7 INT 6.4G - Alkyd varnish insert gloss level finish.
- .8 INT 6.4H - Pigmented lacquer insert gloss level finish.
- .9 INT 6.4J - Polyurethane varnish insert gloss level finish.
- .10 INT 6.4K - Danish oil finish.
- .11 INT 6.4L - Multicolour finish.
- .12 INT 6.4M - Waterborne clear acrylic insert gloss level finish.
- .13 INT 6.4N - Waterborne light industrial insert gloss level coating.
- .14 INT 6.4P - Pigmented fire retardant insert gloss level coating (ULC rated).
- .15 INT 6.4Q - Clear fire retardant coating (ULC rated).
- .16 INT 6.4R - Latex semi-gloss gloss finish (over latex primer).
- .17 INT 6.4S - High performance architectural latex insert gloss level finish.
- .18 INT - 6.4T Institutional low odour/low VOC insert gloss level finish.
- .19 INT 6.4U - Waterborne clear acrylic insert gloss level finish (over stain).
- .20 INT 6.4V - Clear moisture cured polyurethane gloss flat finish (over stain).
- .21 INT 6.4W - Lacquer insert gloss level finish (over wood stain).
- .22 INT 6.4X - Pigmented lacquer insert gloss level finish.
- .23 INT 6.4Y - Clear lacquer insert gloss level finish.
- .11 Fibreglass: panels, trims, fabrications:
  - .1 INT 6.7A - Latex insert gloss level finish.
  - .2 INT 6.7B - Alkyd insert gloss level finish.
  - .3 INT 6.7C - Waterborne light industrial insert gloss level coating.
  - .4 INT 6.7D - Epoxy finish.
  - .5 INT 6.7E - Pigmented polyurethane finish.
  - .6 INT 6.7F - Waterborne epoxy insert gloss level finish.
  - .7 INT 6.7G - Multicolour finish.
  - .8 INT 6.7H - High performance acrylic latex insert gloss level finish.
  - .9 INT 6.7J - Institutional low odour/low VOC insert gloss level finish.
- .12 Plastic: lumber, panels, trims, fabrications, vinyl wall covering, PVA/PVC materials:
  - .1 INT 6.8A - High performance architectural latex insert gloss level finish.
  - .2 INT 6.8B - Alkyd insert gloss level finish.
  - .3 INT 6.8C - Waterborne light industrial insert gloss level coating.
  - .4 INT 6.8D - Multicolour finish.
  - .5 INT 6.8E - Latex insert gloss level finish.
  - .6 INT 6.8F - Institutional low odour/low VOC insert gloss level finish.

- .13 Spray textured surfaces: ceilings:
  - .1 INT 9.1A - Latex flat finish spray application only.
  - .2 INT 9.1B - Latex insert gloss level finish (over alkyd sealer).
  - .3 INT 9.1C - Alkyd flat finish.
  - .4 INT 9.1D - Alkyd insert gloss level finish (over alkyd sealer).
  - .5 INT 9.1E - Latex finish spray application only.
- .14 Plaster and gypsum board: gypsum wallboard, drywall, "sheet rock type material", and textured finishes:
  - .1 INT 9.2A - Latex insert gloss level finish (over latex sealer).
  - .2 INT 9.2B - High performance architectural latex insert gloss level finish.
  - .3 INT 9.2C - Alkyd insert gloss level finish (over latex sealer).
  - .4 INT 9.2E - Epoxy (tile-like) finish.
  - .5 INT 9.2F - Waterborne epoxy (tile-like) finish.
  - .6 INT 9.2G - Multicolour finish.
  - .7 INT 9.2H - Clear Pigmented fire retardant coating (ULC rated).
  - .8 INT 9.2J - Waterborne fire retardant coating (ULC rated).
  - .9 INT 9.2K - Latex insert gloss level finish (over alkyd primer) for plaster surfaces only.
  - .10 INT 9.2L - Waterborne light industrial insert gloss level coating.
  - .11 INT 9.2M - Institutional low odour/low VOC insert gloss level finish.

## **2.6 SOURCE QUALITY CONTROL**

- .1 Perform following tests on each batch of consolidated post-consumer material before surface coating is reformulated and canned. Testing by laboratory or facility which has been accredited by Standards Council of Canada.
  - .1 Lead, cadmium and chromium are to be determined using ICP-AES (Inductively Coupled Plasma - Atomic Emission Spectroscopy) technique no. 6010 as defined in EPA SW-846.
  - .2 Mercury is to be determined by Cold Vapour Atomic Absorption Spectroscopy using Technique no. 7471 as defined in EPA SW-846.
  - .3 Organochlorines and PCBs are to be determined by Gas Chromatography using Technique no. 8081 as defined in EPA SW-846.

## **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 data sheet.

### **3.2 GENERAL**

- .1 Perform preparation and operations for interior painting in accordance with MPI Architectural Painting Specifications Manual except where specified otherwise.
- .2 Apply paint materials in accordance with paint manufacturer's written application instructions.

### **3.3 EXAMINATION**

- .1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Departmental Representative damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.
- .2 Conduct moisture testing of surfaces to be painted using properly calibrated electronic moisture meter, except test concrete floors for moisture using simple "cover patch test". Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.
- .3 Maximum moisture content as follows:
  - .1 Stucco, plaster and gypsum board: 12%.
  - .2 Concrete: 12%.
  - .3 Clay and Concrete Block/Brick: 12%.
  - .4 Wood: 15%.

### **3.4 PREPARATION**

- .1 Protection:
  - .1 Protect existing building surfaces and adjacent structures from paint splatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore surfaces as directed by Departmental Representative.
  - .2 Protect items that are permanently attached such as Fire Labels on doors and frames.
  - .3 Protect factory finished products and equipment.
  - .4 Protect passing pedestrians, building occupants and general public in and about the building.
- .2 Surface Preparation:
  - .1 Remove electrical cover plates, light fixtures, surface hardware on doors, bath accessories and other surface mounted equipment, fittings and fastenings prior to undertaking painting operations. Identify and store items in secure location and re-installed after painting is completed.
  - .2 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.
  - .3 Place "WET PAINT" signs in occupied areas as painting operations progress. Signs to approval of Departmental Representative.
- .3 Clean and prepare surfaces in accordance with MPI Architectural Painting Specification Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:

- .1 Remove dust, dirt, and other surface debris by vacuuming, wiping with dry, clean cloths or compressed air.
- .2 Wash surfaces with a biodegradable detergent and bleach where applicable and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.
- .3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.
- .4 Allow surfaces to drain completely and allow to dry thoroughly.
- .5 Prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.
- .6 Use trigger operated spray nozzles for water hoses.
- .7 Many water-based paints cannot be removed with water once dried. Minimize use of mineral spirits or organic solvents to clean up water-based paints.
- .4 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pretreatment as soon as possible after cleaning and before deterioration occurs.
- .5 Where possible, prime non-exposed surfaces of new wood surfaces before installation. Use same primers as specified for exposed surfaces.
  - .1 Apply vinyl sealer to MPI #36 over knots, pitch, sap and resinous areas.
  - .2 Apply wood filler to nail holes and cracks.
  - .3 Tint filler to match stains for stained woodwork.
- .6 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.
- .7 Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements. Remove traces of blast products from surfaces, pockets and corners to be painted by brushing with clean brushes blowing with clean dry compressed air vacuum cleaning.
- .8 Touch up of shop primers with primer as specified.
- .9 Do not apply paint until prepared surfaces have been accepted by Departmental Representative.

### **3.5 APPLICATION**

- .1 Method of application to be as approved by Departmental Representative. Apply paint by brush roller air sprayer airless sprayer. Conform to manufacturer's application instructions unless specified otherwise.
- .2 Brush and Roller Application:
  - .1 Apply paint in uniform layer using brush and/or roller type suitable for application.
  - .2 Work paint into cracks, crevices and corners.
  - .3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.

- .4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces free of roller tracking and heavy stipple.
- .5 Remove runs, sags and brush marks from finished work and repaint.
- .3 Spray application:
  - .1 Provide and maintain equipment that is suitable for intended purpose, capable of atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.
  - .2 Keep paint ingredients properly mixed in containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.
  - .3 Apply paint in uniform layer, with overlapping at edges of spray pattern. Back roll first coat application.
  - .4 Brush out immediately all runs and sags.
  - .5 Use brushes and rollers to work paint into cracks, crevices and places which are not adequately painted by spray.
- .4 Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access.
- .5 Apply coats of paint continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
- .6 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- .7 Sand and dust between coats to remove visible defects.
- .8 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as tops of interior cupboards and cabinets and projecting ledges.
- .9 Finish inside of cupboards and cabinets as specified for outside surfaces.
- .10 Finish closets and alcoves as specified for adjoining rooms.
- .11 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

### **3.6 MECHANICAL/ELECTRICAL EQUIPMENT**

- .1 Paint finished area exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment with colour and finish to match adjacent surfaces, except as indicated.
- .2 Boiler room, mechanical and electrical rooms: paint exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment.
- .3 Other unfinished areas: leave exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment in original finish and touch up scratches and marks.
- .4 Touch up scratches and marks on factory painted finishes and equipment with paint as supplied by manufacturer of equipment.
- .5 Do not paint over nameplates.
- .6 Keep sprinkler heads free of paint.

- .7 Paint inside of ductwork where visible behind grilles, registers and diffusers with primer and one coat of matt black paint.
- .8 Paint fire protection piping red.
- .9 Paint disconnect switches for fire alarm system and exit light systems in red enamel.
- .10 Paint natural gas piping yellow.
- .11 Paint both sides and edges of backboards for telephone and electrical equipment before installation. Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.
- .12 Do not paint interior transformers and substation equipment.

### **3.7 SITE TOLERANCES**

- .1 Walls: no defects visible from a distance of 1000 mm at 90 degrees to surface.
- .2 Ceilings: no defects visible from floor at 45 degrees to surface when viewed using final lighting source.
- .3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

### **3.8 FIELD QUALITY CONTROL**

- .1 Interior painting and decorating work shall be inspected by a Paint Inspection Agency (inspector) acceptable to the specifying authority and local Painting Contractor's Association. Painting contractor shall notify Paint Inspection Agency a minimum of one week prior to commencement of work and provide a copy of project painting specification, plans and elevation drawings (including pertinent details) as well as a Finish Schedule.
- .2 Interior surfaces requiring painting shall be inspected by Paint Inspection Agency who shall notify Departmental Representative and General Contractor in writing of defects or problems, prior to commencing painting work, or after prime coat shows defects in substrate.
- .3 Where "special" painting, coating or decorating system applications (i.e. elastomeric coatings) or non-MPI listed products or systems are to be used, paint or coating manufacturer shall provide as part of this work, certification of surfaces and conditions for specific paint or coating system application as well as on site supervision, inspection and approval of their paint or coating system application as required at no additional cost to Departmental Representative.
- .4 Standard of Acceptance:
  - .1 Walls: no defects visible from a distance of 1000 mm at 90 degrees to surface.
  - .2 Ceilings: no defects visible from floor at 45 degrees to surface when viewed using final lighting source.
  - .3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.
- .5 Field inspection of painting operations to be carried out by independent inspection firm as designated by Departmental Representative.



- .6 Advise Departmental Representative when surfaces and applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.
- .7 Cooperate with inspection firm and provide access to areas of work.
- .8 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Departmental Representative.

### **3.9 RESTORATION**

- .1 Clean and re-install hardware items removed before undertaken painting operations.
- .2 Remove protective coverings and warning signs as soon as practical after operations cease.
- .3 Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.
- .4 Protect freshly completed surfaces from paint droppings and dust to approval of Departmental Representative. Avoid scuffing newly applied paint.
- .5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Departmental Representative.

**END OF SECTION**