Part 1 General

1.1 SECTION INCLUDES

.1 Gypsum board wall panels

.2 Gypsum Board soffit and ceiling panels

.3 Accessories and Trim

1.2 REFERENCES

.1 American Society for Testing and Materials International, (ASTM)

- .1 ASTM C 473 – Standard Test Methods for Physical Testing of Gypsum Panel Products
- .2 ASTM C 475 – Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board
- .3 ASTM C 514 – Standard Specifications for Nails for the Application of Gypsum Board
- .4 ASTM C 665 – Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing
- .5 ASTM C 840 – Standard Specification for Application and Finishing of Gypsum Board
- .6 ASTM C 954 – Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. to 0.112 in. in Thickness
- .7 ASTM C 1002 – Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs
- .8 ASTM C 1047 – Standard Specification for Accessories For Gypsum Wallboard and Gypsum Veneer Base
- .9 ASTM C 1396 – Standard Specification for Gypsum Board
- .10 ASTM C 1629 – Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels
- .11 ASTM D 3273 – Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
- .12 ASTM E 84 – Test Method for Surface Burning Characteristics of Building Materials
- .13 ASTM E 119 – Standard Test Methods for Fire Tests of Building Construction and Materials
- .14 ASTM G 21 – Standard *Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi*

.2 Underwriters' Laboratories of Canada (ULC)

- .1 CAN/ULC-S101 – Fire Endurance Tests of Building Construction and Materials
- .2 CAN/ULC-S102 – Surface Burning Characteristics of Building Materials and Assemblies
- .3 CAN/ULC-A82-20 Series – Methods of Testing Gypsum and Gypsum Products
- .4 CAN/ULC-A82.27 – Gypsum Board

.5 CAN/ULC-A82-31 – *Gypsum Board Application*

.3 Gypsum Association (GA)

.1 GA-214 - Recommended Levels of Gypsum Board Finish
.2 GA-216 - Application and Finishing of Gypsum Board
.3 GA-231 - Assessing Water damage to Gypsum Board
.4 GA-238 - Guidelines for the Prevention of Mold Growth on Gypsum Board

1.3 SHOP DRAWINGS

.1 Submit fire rated partition assemblies, ULC Design No.'s to Contract Administrator for approval.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver materials in original packages, containers or bundles bearing manufacturers brand name and identification.

.2 Store materials inside, level, under cover. Keep dry. Protect from weather, other elements and damage from construction operations and other causes.

.3 Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal accessories and trim from being bent or damaged.

1.5 SITE ENVIRONMENTAL REQUIREMENTS

.1 Maintain temperature minimum 10 degrees C, maximum 21 degrees C for 48 hours prior to and during application of gypsum boards and joint treatment, and for at least 48 hours after completion of joint treatment.

.2 Apply board and joint treatment to dry, frost free surfaces.

.3 Ventilation: Ventilate building spaces as required to remove excess moisture that would prevent drying of joint treatment material immediately after its application.

1.6 QUALIFICATIONS

.1 Dry wall installers: minimum 5 years proven experience.

1.7 SAMPLES

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

1.8 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 00 - Cleaning and Waste Management.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Divert unused gypsum from landfill to gypsum recycling facility for disposal.

.4 Divert unused metal materials from landfill to metal recycling.

.5 Divert unused wood materials from landfill to recycling facility.

.6 Divert unused paint and caulking material from landfill to official hazardous material collections site.

.7 Do not dispose of unused paint and caulking materials into sewer systems, into lakes, streams, onto ground or in other locations where it will pose health or environmental hazard.

Part 2 Products

2.1 MANUFACTURER

.1 Basis of Design: CertainTeed Gypsum, Inc.; 4300 West Cypress Street, Suite 500, Tampa, FL 33607; 1-800-233-8990 (1-866-427-2872); www.certainteed.com

.2 Equivalent Design: Manufacturer with products of equivalent design may include, but are not limited to:

.1 National Gypsum Company

.2 USG Corporation

2.2 GYPSUM WALL BOARD PANELS

.1 Regular Gypsum Board: Gypsum core panel solid set core enclosed in paper. Complying with ASTM C1396.

.1 Basis of Design: CertainTeed Regular, manufactured by CertainTeed Gypsum, Inc.

.2 Thickness: 1/2 inch

.3 Width: 48 inches

.4 Length: Use longest length available to avoid joints

.5 Edges: Tapered

.2 Fire Rated Gypsum Board: Gypsum core panel with a specially formulated core for use in fire-resistive Type X designs. Complying with ASTM C 1396.

.1 Basis of Design: CertainTeed Type X, manufactured by CertainTeed Gypsum, Inc.

.2 Thickness: 5/8 inch

.3 Width: 48 inches

.4 Length: Use longest length available to avoid joints

.5 Edges: Tapered

.3 Abuse Resistant Gypsum Board: Gypsum core panel with a specially formulated core for resistance to abuse. Complying with ASTM C 1396 and ASTM C 1629.

.1 Basis of Design: CertainTeed Abuse Resistant Type C Gypsum Board, manufactured by CertainTeed Gypsum, Inc.

.2 Thickness: 1/2 inch

.3 Width: 48 inches

.4 Length: Use longest length available to avoid joints

.5 Edges: Tapered

.4 Fire Rated Abuse Resistant Gypsum Board: Gypsum core panel with a specially formulated core for resistance to abuse core and use in fire-resistive Type X design. Complying with ASTM C 1396 and ASTM C 1629.

.1 Basis of Design: CertainTeed Abuse Resistant Type X Gypsum Board, manufactured by CertainTeed Gypsum, Inc.

.2 Thickness: 5/8 inch

.3 Width: 48 inches

.4 Length: Use longest length available to avoid joints

.5 Edges: Tapered

2.3 GYPSUM BOARD CEILING AND SOFFIT PANELS

.1 Interior Ceiling Board

.1 Regular Gypsum Ceiling Board: Gypsum Core panel with enhanced sag resistant core. Complying with ASTM C 1396.

.1 Basis of Design: CertainTeed Interior Ceiling, manufactured by CertainTeed Gypsum, Inc.

.2 Thickness: 1/2 inch.

.3 Width: 48 inches.

.4 Length: Use longest length available to avoid joints

.5 Edges: Tapered

.2 Fire Rated Gypsum Board: Gypsum core panel with a specially formulated core for use in fire-resistive Type X designs. Complying with ASTM C 1396.

.1 Basis of Design: CertainTeed Type X, manufactured by CertainTeed Gypsum, Inc.

.2 Thickness: 5/8 inch

.3 Width: 48 inches

.4 Length: Use longest length available to avoid joints

.5 Edges: Tapered

2.4 ACCESSORIES

.1 Interior Trim: Complying with ASTM C 1047.

.1 Corner Bead

.2 Casing Beads: U-Bead

.3 Control Joint

.2 Fasteners:

.1 Screws: ASTM C 1002 as recommended by panel manufacturer.

.2 Nails: ASTM C 514 with heads, lengths, configurations, and finish as recommended by panel manufacturer.

.3 Adhesive: Recommended by panel manufacturer.

.4 Joint Treatment

.1 Tape: Comply with ASTM C 475

.2 Joint Compound: Comply with ASTM C 475

.5 Texture Finishes

.1 Primer
.2 Wall Texture: Fine
.3 Ceiling Texture: Fine

.6 Sealant

.1 Acoustical Sealant: Nondrying, non-hardening, non-skinning, non-staining, non-bleeding, gunnable type as recommended by panel manufacturer.

.7 Insulation

.1 Insulation: ASTM C 665, Type I, mineral fiber insulation blankets without membrane facing.
.2 Refer to Section 07 21 16 Blanket Insulation.

.8 Vapour Barrier Membrane

.1 Refer to Section 07 27 00 – Sheet Air Barriers.

Part 3 Execution

3.1 EXAMINATION

.1 Examine gypsum board panels for damage and existence of mold. Install undamaged panels

.2 Examine gypsum board in accordance with GA 231 for water damage.

3.2 INSTALLATION

.1 Comply with ASTM C 840

3.3 FINISHING

.1 General: Comply with ASTM C 840

.1 Level 1: Plenums, service corridors; above ceilings
.2 Level 2: Areas of water resistant gypsum backing board under tile; exposed areas where appearance is not critical.
.3 Level 3: Areas to receive heavy or medium textured coatings; heavy-grade wallcoverings.
.4 Level 4: Areas to receive flat sheen paint finish; light textured coatings; lightweight wallcoverings.
.5 Level 5: Areas to receive gloss, semi-gloss sheen paints; critical lighting conditions.

3.4 PROTECTION

.1 Protect installed products from damage during remainder of the construction period.

.2 Remove and replace panels that are damaged.

3.5 SCHEDULES

.1 Construct fire rated assemblies where indicated, seal penetrations, as per Section 07 84 00 – Firestopping.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 American Society for Testing and Materials International, (ASTM).

.1 ASTM C645, Specification for Nonstructural Steel Framing Members.

.2 ASTM C754, Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.

.2 Canadian General Standards Board (CGSB).

.1 CAN/CGSB-1.40, Primer, Structural Steel, Oil Alkyd Type.

1.2 SUBMITTALS

.1 Submit samples in accordance with Section 01 33 00 – Submittal Procedures.

.2 Submit duplicate 300 mm x 300 mm samples of cement parging on plywood and metal lath backup, showing the colour and texture of the parging finish.

.3 The accepted samples will become the standard for this project, and all parging Work will match the accepted samples.

1.3 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle all material so as to prevent the inclusion of foreign materials and the damage of materials by water or breakage.

.2 Deliver and store packaged materials in original packages until ready for use. Packages or materials showing evidence of water or other damage will be rejected.

.3 All materials to be of the respective qualities specified herein. Deliver materials to the job in ample time to facilitate inspection and testing of the same.

1.4 QUALITY ASSURANCE

.1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.

.2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

.3 Pre-Installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 00 – Cleaning and Waste Management.

.2 Place materials defined as hazardous or toxic waste in designated containers.

.3 Ensure emptied containers are sealed and stored safely for disposal away for public.

.4 Use chemical hardeners that are non-toxic, biodegradable and have zero or low VOC's.

.5 Dispose of surplus chemical and finishing materials in accordance with Federal, Provincial and Municipal regulations.

Part 2 Products

2.1 MATERIALS

.1 Metal Studs and Runners:

.1 ASTM C645, "C" shaped, gauge:

.1 Provide 25 gauge studs, except as otherwise indicated or specified. Provide heavier gauge if required.

.2 At door [and borrowed light] frames, provide (2) 25 gauge minimum studs at each jamb. Where wall is indicated or specified to be typically framed with 20 gauge studs, provide (2) 20 gauge studs at each jamb.

.3 Provide 20 gauge studs at walls to receive cement backer board and water resistant gypsum board with ceramic tile facing.

.4 Provide 20 gauge studs at interior walls to receive abuse resistant gypsum board.

.5 Provide 14 gauge steel studs (600S162-68) where indicated.

.6 Provide 16 gauge steel studs (600S125-54) where indicated.

.7 Provide runner gauge as recommended by stud manufacturer.

.2 Depth of sections: As indicated.

.3 Corrosion protection: G40 hot-dipped galvanized coating per ASTM A525.

.2 Shaft Wall Supports:

.1 Conform to ASTM A446, Grade A, with G40 hot-dipped galvanized coating per ASTM A525.

.2 Studs:

.1 Shape: "CH", "J" or "E" or as standard with manufacturer.

.2 Gauge: As required to fulfill performance criteria, minimum 25 gauge. Provide 20 gauge for jamb and lintel components.

.3 Size: As indicated.

.4 J runners: 24 gauge, size as required for coordination with studs.

.3 Metal Furring Channels:

.1 Hat-shaped:

.1 ASTM C645, 7/8 inch high, 25 gauge, with G40 hot-dipped galvanized coating per ASTM A525.

.2 Provide 20 gauge at furring to receive tile backer board.

.3 Acceptable products: DWC-25 for ½" and 5/8" gypsum board and DWC-20 by USG.

.2 Z-shaped: ASTM C645, depths as indicated, 24 gauge minimum, with G40 hot-dipped galvanized coating per ASTM A525.

.3 Resilient: Manufacturer's standard type designed to reduce sound transmission; ½ inch deep, 25 gauge steel with G40 hot-dipped galvanized coating per ASTM A525.

2.2 CEILING AND SOFFIT SUPPORT MATERIALS

.1 Hanger Anchorage Devices: Screws, clips, bolts or other devices compatible with indicated structural anchorage for ceiling hangers and whose suitability has been proven through standard construction practices or by certified test data.

.2 Powder-Actuated Fasteners in Concrete: Fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers [and with capability to sustain, without failure, a load equal to 10x calculated loads].

.3 Post-tensioned Concrete Slabs:

.1 For inserts placed in post-tensioned concrete Work, maintain 3 inch clearance between inserts and prestressing strands.

.2 If insert is in conflict with strand, insert must be moved to avoid strand. Do not move strands to avoid inserts.]

.4 Hangers:

.1 Steel wire or rods, sizes to comply with requirements of ASTM C754 for ceiling or soffit area and loads to be supported.

.2 Wire: ASTM A 641, soft, Class 1 galvanized.

.3 Rods and flats:

.1 Mild steel components.

.2 Finish: Galvanized or painted with rust-inhibitive paint for interior Work; galvanized for exterior Work.

.5 Framing System:

.1 Main runners:

.1 Cold-rolled, "C" shaped steel channels, 16 gauge minimum.

.2 Finish: Galvanized with G40 hot-dip galvanized coating per ASTM A525 [for exterior Work]; galvanized or painted with rust-inhibitive paint for other interior Work.

.3 Form to required radius at curved ceilings.

.2 Cross furring: Hat-shaped steel furring channels, ASTM C645, 7/8 inch high, 25 gauge, galvanized.

.3 Furring anchorages: 16 gauge galvanized wire ties, manufacturer's standard wire-type clips, bolts, nails or screws recommended by furring manufacturer and complying with ASTM C754.

2.3 ACCESSORIES

.1 Acoustical sealant: to Section 07 92 00 – Joint Sealants.

.2 Insulating strip: rubberized, moisture resistant 3 mm thick cork foam strip, 12 mm wide, with self-sticking adhesive on one face, lengths as required.

.3 Dampproof course: closed cell, polyethylene foam, 6.3 mm thick, 89 mm wide.

Part 3 Execution

3.1 ERECTION

.1 Align partition tracks at floor and ceiling and secure at 600 mm o.c maximum.

.2 Allow minimum deflection gap of 16.5 mm for double track **or** slotted single top track.

.3 Install damp proof course under stud shoe tracks of partitions on slabs on grade.

.4 Place studs vertically at 400 mm o.c and not more than 50 mm from abutting walls, and at each side of openings and corners. Position studs in tracks at floor and ceiling. Cross brace steel studs as required to provide rigid installation to manufacturer's instructions.

.5 Erect metal studding to tolerance of 1:1000.

.6 Attach studs to bottom and ceiling track using screws.

.7 Co-ordinate erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.

.8 Co-ordinate erection of studs with installation of door/window frames and special supports or anchorage for Work specified in other Sections.

.9 Provide two studs extending from floor to ceiling at each side of openings wider than stud centres specified. Secure studs together, 50 mm apart using column clips or other approved means of fastening placed alongside frame anchor clips.

.10 Erect track at head of door/window openings and sills of sidelight/window openings to accommodate intermediate studs. Secure track to studs at each end, in accordance with manufacturer's instructions. Install intermediate studs above and below openings in same manner and spacing as wall studs.

.11 Frame openings and around built-in equipment, cabinets, access panels, on four sides. Extend framing into reveals. Check clearances with equipment suppliers.

.12 Provide 40 mm stud or furring channel secured between studs for attachment of fixtures behind lavatory basins, toilet and bathroom accessories, and other fixtures including grab bars and towel rails, attached to steel stud partitions.

.13 Install steel studs or furring channel between studs for attaching electrical and other boxes.

.14 Extend partitions to ceiling height except where noted otherwise on drawings.

.15 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs.

.16 Install continuous insulating strips to isolate studs from uninsulated surfaces, where applicable.

.17 Install two continuous beads of acoustical sealant under studs and tracks around perimeter of sound control partitions.

3.2 HAT CHANNEL FURRING

.1 Attach hat-shaped furring channels either vertically or horizontally with fasteners through alternate wing flanges (staggered).

.2 Space furring channels at 24 inches on center, unless otherwise indicated. Where furring is indicated to receive backer board, water resistant gypsum board with ceramic tile, or veneer plaster, space at 16 inches on center.

.3 Install furring channels within 4 inches of floor line and ceiling line.]

3.3 Z-FURRING

.1 Securely attach narrow flanges of members to wall with concrete stub nails or power-driven fasteners, except as otherwise indicated.

.2 Sequence furring installation with installation of insulation.

3.4 CEILING AND SOFFIT SUPPORT SYSTEMS

.1 Secure hangers or rods to structural support by connecting directly to structure where possible; otherwise connect to inserts, clips or other anchorage devices or fasteners indicated.

.2 Space main runners, hangers and furring according to requirements of ASTM C754, except as otherwise indicated.

.3 Where spacing of structural members, or width of ducts or other equipment, prevents regular spacing of hangers, provide supplemental hangers and suspension members and reinforce nearest affected hangers to span extra distance.

.4 Attach directly to structural elements only; do not attach to metal deck. Loop hangers and wire-tie directly or provide anchors or inserts.

3.5 CLEANING

.1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 ASTM International:

.1 ASTM C635 Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.

.2 ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.

.3 ASTM E1264 Standard Classification for Acoustical Ceiling Products.

.2 Ceilings and Interior Systems Construction Association (CISCA):

.1 CISCA Code of Practices.

1.2 SYSTEM DESCRIPTION

.1 Performance Requirements:

.1 Provide acoustical ceiling assembly designed and tested to provide surface burning characteristics (ASTM E84) as follows:

.2 Flamespread: 0.

.3 Smoke Developed: 0.

.2 Provide acoustical ceiling system which has been manufactured, fabricated and installed to provide Noise Reduction Coefficient (NRC) rating as follows:

.1 .40 (NRC)

1.3 SUBMITTALS

.1 General: Submit listed submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data: Submit manufacturer’s product data and installation instructions.

.3 Samples: Submit selection and verification samples: 6 inch × 6 inch (152 × 152 mm) sample for each wood fiber ceiling unit required, showing full range of exposed texture to be expected in completed work.

.4 Quality Assurance/Control Submittals: Submit the following:

.1 Certificates: Submit manufacturer’s certificate that products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

.1 Installer Qualifications: Utilize an installer having demonstrated experience on projects of similar size and complexity.

.2 Regulatory Requirements and Approvals:

.1 Underwriters’ Laboratories of Canada (ULC) label.

.1 Structural Cement-Fiber Unit-535X

1.5 DELIVERY, STORAGE & HANDLING

.1 General: Comply with Division 1 Product Requirement Section.

.2 Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

.1 Provide labels indicating brand name, style, size and thickness.

.3 Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.

.1 Prevent soiling, physical damage or wetting.

.2 Store cartons open at each end to stabilize moisture content and temperature.

1.6 PROJECT/SITE CONDITIONS

.1 Environmental Requirements:

.1 Do not install ceiling panels until building is closed in and HVAC system is operational.

.2 Locate materials onsite at least 24 hours before beginning installation to allow materials to reach temperature and moisture content equilibrium.

.3 Maintain the following conditions in areas where acoustical materials are to be installed 24 hours before, during and after installation:

.1 Relative Humidity: 65 - 75%.

.2 Uniform Temperature: 13 - 21 degrees C.

1.7 MAINTENANCE

.1 Provide extra materials in accordance with Section 01 78 00 - Closeout Submittals.

.1 Extra Materials: Provide 10% additional material for use by The Owner in building maintenance and repair.

.2 Provide new unopened cartons of extra materials, packaged with protective covering for storage and identified with appropriate labels.

Part 2 Products

2.1 MANUFACTURER

.1 CertainTeed Ceilings

.1 Address: P.O. Box 860 Valley Forge, PA 19482

.2 Telephone: 800-233-8990

.3 Web: www.certainteed.com

2.2 ACOUSTICAL CEILING UNITS

.1 Acoustical Ceiling Panel (ACP) – [Type ACP-1]:

.1 Name: Performa Sand Micro SHM-197

.2 Physical Characteristics:

.1 Type: III (per ASTM E1264)

.2 Form: 2 (per ASTM E1264)
.3 Pattern: C E (per ASTM E1264)
.4 Size: 24” x 48”
.5 Thickness: 5/8"
.6 Edge: Square

.2 Washable Acoustical Ceiling Panel (ACP) – [Type ACP-2]:

.1 Name: Performa Vinyl Rock 1140-CRF-1
.1 Physical Characteristics:
.2 Type: XX (per ASTM E1264)
.3 Pattern: G (per ASTM E1264)
.4 Size: 24” x 48”
.5 Thickness: 1/2"
.6 Edge: Square

2.3 SUSPENSION SYSTEM

.1 Manufacturer: CertainTeed Ceilings

.2 Product

.1 Name: 15/16” Classic Hook

.3 Physical Characteristics

.1 Structural Classification: Intermediate Duty (per ASTM C635)
.2 Double web design manufactured of hot-dipped galvanized steel

.4 Flange Size:

.1 15/16”

.5 Color: White

.6 Components

.1 Main Runners
.1 Size: 12’
.2 Cross Tees
.1 Size: 4’
.2 Joinery: Hook
.3 Edge Molding
.1 Type: channel
.2 Profile: As selected by the Architect

.3 Attachment Devices: Anchors sufficient for five-times design load indicated in ASTM C635 (Table 1). Wire for hangers of size and type to suit intended application, complying with ASTM C641, Class 1 zinc coating, not less than 12 gauge.

2.4 SUBSTITUTIONS:

.1 In accordance with B7.

Part 3 Execution

3.1 EXAMINATION

.1 Site Verification of Conditions:

.1 Examine surfaces scheduled to receive suspended or directly attached acoustical units for unevenness, irregularities and dampness that would affect quality and execution of work.

.2 Do not proceed with installation of ceiling system until unacceptable conditions are corrected.

3.2 EXAMINATION

.1 Unless otherwise directed by the reflected ceiling plan, measure the space in which the ceiling system is to be installed and establish a layout that balances border widths at opposite ends of the ceiling.

.2 When possible, coordinate the ceiling system layout to avoid the use of less than half width panels at the perimeter.

3.3 INSTALLATION

.1 Install the ceiling system in accordance with the following:

.1 Manufacturer's printed instructions

.2 ASTM C636

.3 Ceilings & Interior Systems Construction Association (CISCA) recommendations

.4 Applicable local code requirements

.5 Approved shop drawings

3.4 CLEANING

.1 Clean exposed surfaces of acoustical ceilings, trim, edge moldings and suspension members to comply with manufacturer's instructions for cleaning.

.2 Touch up any minor finish damage.

.3 Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

3.5 PROTECTION

.1 Protect installed work from damage due to subsequent construction activity, including temperature and humidity limitations and dust control, so that the work will be without damage and deterioration at the time of acceptance by the Contract Administrator.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 American Society for Testing and Materials International (ASTM)

- .1 ASTM F1861 – 08 (2012)e1 Standard Specification for Resilient Wall Base
- .2 ASTM F137 - 08 Standard Test Method for Flexibility of Resilient Flooring Materials with Cylindrical Mandrel Apparatus
- .3 ASTM F1515 - 03(2008) Standard Test Method for Measuring Light Stability of Resilient Flooring by Color Change
- .4 ASTM F925 – 02 (2008) Standard Test Method for Resistance to Chemicals of Resilient Flooring
- .5 ASTM E84 - 12c Standard Test Method for Surface Burning Characteristics of Building Materials
- .6 ASTM E648 - 10e1 Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source
- .7 ASTM F925 – 02 (2008) Standard Test Method for Resistance to Chemicals of Resilient Flooring

.2 National Fire Protection Association (NFPA)

- .1 NFPA 253: Standard Method of Test For Critical Radiant Flux Of Floor Covering Systems Using A Radiant Heat Energy Source
- .2 NFPA 255: Standard Method of Test of Surface Burning Characteristics of Building Materials

1.2 SUBMITTALS

.1 Product Data: For each type of product indicated.

.2 Samples for Initial Selection: For each type of product indicated.

.3 Samples for Verification: For each type of product indicated, in manufacturer's standard-size

.4 Samples but not less than 12” long (305 mm), of each resilient product color, texture, and pattern required.

.5 Product Schedule: For resilient base: Locations as indicated on Drawings**.**

.6 Submit WHIMIS MSDS – Material Safety Data Sheets in accordance with Section 01 33 23 - Shop Drawings, Product Data, and Samples, with the VOC levels highlighted.

1.3 QUALITY ASSURANCE

.1 Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.

- .1 Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

.2 Mockups: Provide resilient products with mockups specified in other Sections.

1.4 DELIVERY, STORAGE, AND HANDLING

.1 Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 degrees F or more than 90 degrees F.

1.5 PROJECT CONDITIONS

.1 Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 degrees F or more than 95 degrees F, in spaces to receive resilient products during the following time periods:

.1 48 hours before installation.

.2 During installation.

.3 48 hours after installation.

.2 Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 degrees F or more than 95 degrees F.

.3 Install resilient products after other finishing operations, including painting, have been completed.

1.6 EXTRA MATERIALS

.1 Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

.1 Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.

Part 2 Product

2.1 RESILIENT BASE

.1 Johnsonite BaseWorks Thermoset Rubber Wall Base.

.1 Performance Characteristics

.1 Meets or exceeds the performance requirements for resistance to heat/light aging, chemicals, and dimensional stability when tested to the methods, as described, in ASTM F-1861.

.2 Flexibility: ASTM F 137 - Will not crack, break, or show any signs of fatigue when bent around a 1/4" (6.4 mm) diameter cylinder.

.3 Resistance to Light: ASTM F 1515 – Passes $\Delta E \leq 8.0$

.4 Chemical Resistance: ASTM F 925 Passed – Acetic Acid 5%, Isopropyl Alcohol 70%, Sodium Hydroxide 5%, Hydrochloric Acid 5%, Ammonia 5%, Phenol 5%, and Acid Sulfuric 5%.

.5 Fire Resistance:

.1 ASTM E 84/NFPA 255 (Flame/Smoke) – Class B, < 450

.2 ASTM E 648 (NFPA 253): Critical Radiant Flux – Class 1

.6 Chemical Resistance (ASTM F 925): Passed - 5% Acetic acid, 70% Isopropyl alcohol, Sodium hydroxide solution (5% NaOH), Hydrochloric acid solution (5% HCl), Sulfuric acid solution (5% H2SO4), Household ammonia solution (5% NH4OH), Household bleach (5.25% NaOCl), Disinfectant cleaner (5% active phenol)

.2 Material Requirement: Type TS rubber, vulcanized thermoset
.3 Manufacturing Method: Group I solid, homogeneous
.4 Style: Cove base with toe Butt to new or existing flooring.
.5 Minimum Thickness: 0.125 inch.
.6 Height: 4” (100 mm)
.7 Lengths: Cut to suit
.8 Outside Corners: Preformed.
.9 Inside Corners: Preformed.
.10 Finish: Low luster.
.11 Colors and Patterns:
.1 20 Charcoal WG
.2 40 Black

2.2 RESILIENT MOULDINGS AND TRANSITIONS

.1 Johnsonite Wheeled Traffic Transitions.

.1 CTA-XX-H: 1/4" (6.35 mm) to 1/8" (3.18 mm) material, 2-1/2" (6.35 cm) cap with 1-3/4" (4.45 cm) wide support base, Patented wheel traffic design (1:13 slope), U.S. Patent #5,581,967.
.1 Colour: 20 Charcoal WG
.2 CTA-XX-J: 1/4" (6.35 mm) material to floor, 2-1/2" (6.35 cm) cap with 2-1/8" (5.4 cm) wide support base, Patent pending wheel traffic design (1:7 slope).
.1 Colour: 20 Charcoal WG

.2 Johnsonite Reducer Mouldings:

.1 SSR-XX-B: 1/8" (3.18 mm) material to floor. Same as SSR-XX-A, but without self-stick backing, 35 ft. (10.67 m) coils - 70 ft. (21.34 m) per carton.
.1 Colour: 20 Charcoal WG

2.3 RESILIENT STAIR NOSINGS

.1 Johnsonite Visually Impaired Vinyl Stair Nosings.

.1 VIRCN-XX-A Visually Impaired Double Undercut Carpet Vinyl Stair Nosing, 2" (5.08 cm) hinged square nose configuration 3-1/8" (7.94cm) tread depth with 2" (5.08 cm) wide co-extruded contrasting color strip, undercut for 1/4" (6.35 mm) to 5/16" (7.94 mm) carpet.
.1 Nosing Colour: 20 Charcoal WG
.2 Contrasting Strip Colour: 40 Black

2.4 SUBSTITUTIONS

.1 In accordance with B7.

2.5 INSTALLATION MATERIALS

.1 Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by manufacturer for applications indicated.

.2 Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.

.1 Use adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

.1 Rubber Base Adhesives: Not more than 50 g/L.

Part 3 Execution

3.1 EXAMINATION

.1 Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

.2 Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

.3 Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

.1 Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

3.3 RESILIENT BASE INSTALLATION

.1 Comply with manufacturer's written instructions for installing resilient base.

.2 Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

.3 Install resilient base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.

.4 Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

.5 Do not stretch resilient base during installation.

.6 On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.

.7 Preformed Corners: Install preformed corners before installing straight pieces.

.8 Job-Formed Corners:

.1 Outside Corners: Use straight pieces of maximum lengths possible. Form without producing discoloration (whitening) at bends.

.2 Inside Corners: Use straight pieces of maximum lengths possible.

3.4 RESILIENT TRANSITIONS AND MOULDINGS INSTALLATION

.1 Comply with manufacturer's written instructions for installing transitions and mouldings.

.2 Apply resilient transitions and mouldings at all flooring edges and transitions and as recommended by the flooring product manufacturer, types as indicated on the drawings or as recommended by the flooring manufacturer.

3.5 RESILIENT STAIR NOSINGS INSTALLATION

.1 Comply with manufacturer's written instructions for installing resilient stair nosings.

.2 Apply resilient stair nosings as indicated on the drawings, types as indicated and to suit the adjacent flooring materials.

3.6 CLEANING AND PROTECTION

.1 Comply with manufacturer's written instructions for cleaning and protection of resilient products.

.2 Perform the following operations immediately after completing resilient product installation:

.1 Remove adhesive and other blemishes from exposed surfaces.

.2 Sweep and vacuum surfaces thoroughly.

.3 Damp-mop surfaces to remove marks and soil.

.3 Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

.4 Cover resilient products until Substantial Completion.

END OF SECTION

PART 1 General

1.1 REFERENCES

.1 American Society for Testing and Materials International (ASTM)

- .1 ASTM F1303-[04], Standard Specification for Sheet Vinyl Floor Covering with Backing.
- .1 ASTM D2047: Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as measured by the James Machine.
- .2 ASTM D2240: Standard Test Method for Rubber Property (Durometer Hardness).
- .3 ASTM D5116: Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials/Products.
- .4 ASTM E648: Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.
- .5 ASTM E662: Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
- .6 ASTM E1745: Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.
- .7 ASTM F710: Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
- .8 ASTM F970: Standard Test Method for Static Load Limit.
- .9 ASTM F1344: Standard Specification for Rubber Floor Tile (Sections 7.1-7.6, 8.4-8.6).
- .10 ASTM F1869: Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
- .11 ASTM F2170: Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.

.2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

- .1 Material Safety Data Sheets (MSDS).

.3 South Coast Air Quality Management District (SCAQMD), California State

- .1 SCAQMD Rule 1113-[04], Architectural Coatings.
- .2 SCAQMD Rule 1168-[05], Adhesives and Sealants Applications.

.4 GREENGUARD Environmental Institute (GEI)

- .1 GREENGUARD Indoor Air Quality Certified®.
- .2 GREENGUARD Children and Schools Certified®.

.5 National Fire Protection Association

- .1 NFPA 101: Life Safety Code®.

.6 International Organization for Standardization (ISO)

- .1 ISO 9001: Quality Management Systems - Requirements.
- .2 ISO 14001: Environmental Management Systems - Requirements with Guidance for Use

1.2 SUBMITTALS

.1 Submit samples in accordance with Section 01 33 00 – Submittal Procedures.

.2 Samples: Submit two samples, 12”x12” in size illustrating colour and pattern for each floor material for each colour specified.

.3 Submit two 12” long samples of base for each colour specified.

.4 Submit WHIMIS MSDS – Material Safety Data Sheets in accordance with Section 01 33 00 – Submittal Procedures, with the VOC levels highlighted.

1.3 QUALITY ASSURANCE

.1 Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.

.1 Critical Radiant Flux Classification: Class I, not less than 0.45 watts per square centimeter.

.2 Mockups: Provide resilient products with mockups specified in other Sections.

.3 During flooring installation, the flooring manufacturer representative and floor Contractor shall conduct on-Site meetings for installation procedures and techniques for the entire flooring installation.

1.4 REGULATORY REQUIREMENTS

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

1.5 ENVIRONMENTAL PERFORMANCE REQUIREMENTS

.1 The VOC content of the adhesives, sealants, and sealant primers used must be less than the VOC content limits of the State of California’s South Coast Air Quality Management District (SCAQMD) Rule #1168 (effective date of January 2007). The following are the VOC limits from Rule 1168:

.1 Architectural Sealants – 250 g/L
.2 Non-membrane Roof Sealant – 300 g/L
.3 Roadway – 250 g/L
.4 Other Sealants – 420 g/L
.5 Non-porous Architectural Sealant Primer – 250 g/L
.6 Porous Architectural Sealant Primer – 775 g/L
.7 Modified Bituminous Sealant Primer – 500 g/L
.8 Other Sealant Primer – 750 g/L
.9 Indoor Carpet and Carpet Pad Adhesives – 50 g/L
.10 Wood Flooring Adhesives – 100 g/L
.11 Rubber Floor Adhesives – 60 g/L
.12 Subfloor Adhesives – 50 g/L
.13 Ceramic Tile Adhesives – 65 g/L
.14 VCT and Asphalt Tile Adhesives – 50 g/L
.15 Gypsum Board and Panel Adhesives – 50 g/L
.16 Cove Base Adhesive – 50 g/L

.17 Multipurpose Construction Adhesives – 70 g/L
.18 Structural Glazing Adhesive – 100 g/L
.19 PVC Welding – 510 g/L
.20 CPVC Welding – 490 g/L
.21 ABS Welding – 325 g/L
.22 Plastic Cement Welding – 250 g/L
.23 Adhesive Primer for Plastic – 550 g/L
.24 Contact Adhesive – 80 g/L
.25 Special Purpose Contact Adhesive – 250 g/L
.26 Structural Wood Member Adhesive – 140 g/L
.27 Sheet Applied Rubber Lining Operations – 850 g/L
.28 Top and Trim Adhesive – 250 g/L
.29 Metal to Metal Adhesive – 30 g/L
.30 Plastic Foams Adhesive – 50 g/L
.31 Porous Material Adhesive (except wood) – 50 g/L
.32 Wood Adhesive – 30 g/L
.33 Fiberglass Adhesive – 80 g/L
.34 Duct Sealants – 250 g/L

.2 Laminate Adhesives must contain no urea-formaldehyde.

1.6 MAINTENANCE DATA

.1 Provide manufacturer's instructions covering care and maintenance of materials of this section as per Section 01 33 00 – Submittal Procedures.

.2 Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

1.8 EXTRA MATERIALS

.1 Provide extra materials of resilient sheet flooring and adhesives in accordance with Section 01 78 00 - Closeout Submittals.

.2 Provide 2% or 250 sq ft of flooring, whichever is greater, and 250 sq ft of base, of each material specified.

.3 Extra materials one piece and from same production run as installed materials.

.4 Identify each roll of sheet flooring and each container of adhesive.

1.7 PROJECT CONDITIONS

.1 Install resilient products after other finishing operations, including painting, have been completed.

.2 Maintain ambient temperatures within range recommended by Manufacturer, but not less than 65 deg F (18 deg C) or more than 85 deg F (29 deg C) in spaces to receive resilient products during the following time periods:

.1 48 hours before installation.
.2 During installation.

.3 48 hours after installation.

.3 Maintain the ambient relative humidity between 40% and 60% during installation.

.4 Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 13 degrees C or more than 29 degrees C.

PART 2 Products

2.1 PRODUCT CONDITIONS

.1 Resilient flooring must:

.1 Meet or exceed all applicable governmental and industrial safety and performance standards; and

.2 Be manufactured and transported in such a manner that all steps of the process, including the disposal of waste products arising therefrom, will meet the requirements of all applicable governmental acts, by laws and regulations including, for facilities located in Canada, the Fisheries Act and the Canadian Environmental Protection Act (CEPA).

2.2 ACCEPTABLE MANUFACTURERS AND PRODUCTS:

.1 Acceptable Manufacturers:

.1 Johnsonite iQ Optima Homogeneous Vinyl Sheet Flooring (or approved equal in accordance with B7) with the following physical characteristics:

.1 Complies with requirements for ASTM F 1913 Standard Specification for Vinyl Sheet Floor Covering without Backing.

.2 iQ construction: no wax, no finish for life of product.

.3 Roll/Sheet Width: 6'-6" (2 m)

.4 Wear layer/Overall thickness: .080" (2.0 mm).

.5 ASTM D 2047, Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring of 0.6 or greater.

.6 ASTM F 970, Standard Test Method for Static Load Limit – 250 PSI.

.7 ASTM E 648, Standard Test method for Critical Radiant Flux of 0.45 watts/cm2 or greater, Class I

.8 Contains 25% pre-consumer recycled content

.9 100% Recyclable

.10 NSF-332 Platinum Certified

.11 Phthalate-free (except for recycled material)

.12 iQ Natural contains 16% rapidly renewable content (Castor Oil) and 75% Natural Materials

.13 Colours:

.1 SVF 1: 871 Arctic Winter W

.2 SVF 2: 833 Juniper

2.3 INSTALLATION MATERIALS

.1 Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation.

.2 Adhesives: As recommended by manufacturer to meet Site conditions.

.1 Johnsonite #925 Resilient Flooring Adhesive (or approved equal).

.2 Johnsonite #975 Two-Part Urethane Adhesive (or approved equal).

2.4 VINYL COVE BASE:

.1 Turn up and continue vinyl sheet flooring and cove base up sides of walls and up millwork to heights and locations as indicated on drawings.

2.5 ACCESSORIES:

.1 Edge protection strips: rubber with lip to extend under floor finish, with shoulder flush with top of adjacent flooring. Colours to be selected by Contract Administrator.

.1 Acceptable material: Johnsonite

.2 Primers and adhesives:

.1 Water-resistant, of type recommended by manufacturer for specific material on applicable substrate, above, on or below grade.

.2 For sheet flooring self-cove base use same adhesive used for flooring. Linoleum paste or cove base adhesives not acceptable for this application.

.3 Primers and adhesives to meet low VOC requirements.

.3 Subfloor filler and leveler:

.1 Cementitious underlayment, trowelable, non-shrink water-resistant, minimum compressive strength 4200 psi (29 MPa) after 28 day cure. Premix requiring only the addition of water.

.2 Use manufacturer's recommended primers on all surfaces to receive cementitious underlayment.

.3 Gypsum based products are not acceptable for sub-floor fillers and levelers.

.4 Acceptable material: Elsro Ardex K-55, Mapei Plani/Patch, EP Para-Patch System (or approved equal).

.4 Heat weld threads: by same manufacturer as sheet flooring. Colours to be selected by Contract Administrator. Allow for multiple colour selection.

.5 Flooring protection: heavy duty, non-staining, kraft paper.

.6 Cove former: To be Erv Parent 1 1/4" radius cove former (or approved equal).

.7 Cove Caping: To be Erv Parent-CHR3 aluminum cap (or approved equal).

.1 Mechanically fasten to wall.

.8 Provide transition/reducing strips tapered to meet abutting materials.

.9 Provide threshold of thickness and width as shown on the drawings.

.10 Provide resilient edge strips of width shown on the drawings, of equal gauge to the flooring, homogeneous vinyl or rubber composition, tapered or bullnose edge, with color to match or contrast with the flooring, or as selected by the Contract Administrator from standard colors available.

.11 Provide metal edge strips of width shown on the drawings and of required thickness to protect exposed edges of the flooring. Provide units of maximum available length to minimize the number of joints. Use butt-type metal edge strips for concealed anchorage, or overlap-type metal edge strips for exposed anchorage. Unless otherwise shown, provide strips made of extruded aluminum with a mill finish.

.12 Sealant (caulking): one component, mildew resistant silicone, as specified in Section 07 92 00 - Joint Sealants.

.1 Do not use caulking that emits strong odors, contains toxic chemicals, or is not certified as mould resistant in air handling units.

.2 When low toxicity caulks are not possible, confine usage to areas which off-gas to the exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off-gas time.

.13 Sealer and wax: type recommended by resilient flooring material manufacturer for material type and location.

PART 3 Execution

3.1 EXAMINATION

.1 Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

.2 Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

.3 Verify that correct slopes have been provided to floor drains prior to installation of Resilient Sheet Flooring.

.4 Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

.1 Prepare substrates according to manufacturer’s written instructions to ensure adhesion of Resilient Sheet Flooring.

.1 Verify that substrates are dry and free of curing compounds, sealers, and hardeners.

.2 Remove substrate paint, coatings and other substances that are incompatible with adhesives or contain soap, wax, oil, solvents, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.

.3 Mechanically remove contamination on the substrate that may cause damage to the resilient flooring material. Permanent and non-permanent markers, pens, crayons, paint, etc., must not be used to write on the back of the flooring material or used to mark the substrate as they could bleed through and stain the flooring material.

.4 Prepare Substrates according to ASTM F 710 including the following:

.1 Moisture Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.

.1 Perform anhydrous calcium chloride test, ASTM F 1869. Results must not exceed 5 lbs. Moisture Vapor Emission Rate per 1,000 sq. ft. in 24 hours.

.2 –or –

.3 Perform relative humidity test using in situ probes, ASTM F 2170. Must not exceed 80%.

.2 A pH test for alkalinity must be conducted. Results should range between 7 and 9. If the test results are not within the acceptable range of 7 to 9, the installation must not proceed until the problem has been corrected.

.3 Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer.

.2 Fill cracks, holes, depressions and irregularities in the substrate with good quality Portland cement based underlayment leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.

.3 Make transitions between different flooring materials smooth, level, and flush by building up subfloor with smooth gradual ramping of filler.

.4 Floor covering shall not be installed over expansion joints.

.5 Ensure sub-floor filler is fully bonded to substrates. Remove and replace unsound areas.

.6 Do not install resilient products until they are same temperature as the space where they are to be installed.

.1 Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.

.7 Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.3 RESILIENT SHEET FLOORING INSTALLATION

.1 Comply with manufacturer's written instructions for installing resilient sheet flooring.

.2 Resilient Sheet Flooring:

.1 Install with adhesive as specified by the resilient sheet flooring manufacturer for the site conditions and follow adhesive label for proper use.

.2 Install rolls in sequential order following roll numbers on the labels.

.3 Reverse sheets unless instructed otherwise in manufacturer’s installation instructions.

.4 Roll the flooring in both directions using a 100 pound three-section roller.

.5 Vinyl sheet flooring must be welded.

.6 Note: It is recommended to heat weld seams to provide a more sterile and water tight seam.

.7 Resilient Sheet Flooring may be flash coved.

.1 Use a cove Filler Strip.

.2 Net fit flooring material into the appropriate cove cap.

.8 Make level and good to be flush with abutting surfaces.

3.4 RESILIENT SHEET FLOORING INSTALLATION AT DRAINS

.1 Comply with manufacturer’s written instructions for installation of resilient sheet flooring at floor drains and cleanouts.

.2 Ensure top of flooring meets flush with top of drain. Flooring must be sealed to all drain outlets and cleanouts to ensure a permanent watertight installation.

3.5 CLEANING AND PROTECTION

.1 Comply with manufacturer's written instructions for cleaning and protection of resilient products.

.2 Perform the following operations immediately after completing resilient product installation:

- .1 Remove adhesive and other blemishes from exposed surfaces.
- .2 Sweep and vacuum surfaces thoroughly.
- .3 Damp-mop surfaces to remove marks and soil.

.3 Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

- .1 No traffic for 24 hours after installation.
- .2 No heavy traffic, rolling loads, or furniture placement for 72 hours after installation.

.4 Cover resilient products until Substantial Completion.

.5 Wait 72 hours after installation before performing initial cleaning.

.6 A regular maintenance program must be started after the initial cleaning.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 American Society for Testing and Materials International (ASTM)

- .1 ASTM D2047: Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as measured by the James Machine.
- .2 ASTM D2240: Standard Test Method for Rubber Property (Durometer Hardness).
- .3 ASTM D5116: Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials/Products.
- .4 ASTM E648: Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.
- .5 ASTM E662: Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
- .6 ASTM E1745: Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.
- .7 ASTM F710: Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
- .8 ASTM F970: Standard Test Method for Static Load Limit.
- .9 ASTM F1344: Standard Specification for Rubber Floor Tile (Sections 7.1-7.6, 8.4-8.6).
- .10 ASTM F1869: Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
- .11 ASTM F2170: Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.

.2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

- .1 Material Safety Data Sheets (MSDS).

.3 South Coast Air Quality Management District (SCAQMD), California State

- .1 SCAQMD Rule 1113-[04], Architectural Coatings.
- .2 SCAQMD Rule 1168-[05], Adhesives and Sealants Applications.

.4 GREENGUARD Environmental Institute (GEI)

- .1 GREENGUARD Indoor Air Quality Certified®.
- .2 GREENGUARD Children and Schools Certified®.

.5 National Fire Protection Association

- .1 NFPA 101: Life Safety Code®.

.6 International Organization for Standardization (ISO)

- .1 ISO 9001: Quality Management Systems - Requirements.
- .2 ISO 14001: Environmental Management Systems - Requirements with Guidance for Use.

1.2 SUBMITTALS

.1 Submit samples in accordance with Section 01 33 00 – Submittal Procedures.

.2 Samples: Submit two samples, 12”x12” in size illustrating colour and pattern for each floor material for each colour specified.

.3 Submit shop drawings, seaming plan, coving details, and manufacturer's technical data, installation and maintenance instructions.

.4 Submit WHIMIS MSDS – Material Safety Data Sheets in accordance with Section 01 33 23 - Shop Drawings, Product Data, and Samples, with the VOC levels highlighted.

1.3 ENVIRONMENTAL PERFORMANCE REQUIREMENTS

.1 The VOC content of the adhesives, sealants, and sealant primers used must be less than the VOC content limits of the State of California’s South Coast Air Quality Management District (SCAQMD) Rule #1168 (effective date of January 2007). The following are the VOC limits from Rule 1168:

.1 Architectural Sealants – 250 g/L
.2 Non-membrane Roof Sealant – 300 g/L
.3 Roadway – 250 g/L
.4 Other Sealants – 420 g/L
.5 Non-porous Architectural Sealant Primer – 250 g/L
.6 Porous Architectural Sealant Primer – 775 g/L
.7 Modified Bituminous Sealant Primer – 500 g/L
.8 Other Sealant Primer – 750 g/L
.9 Indoor Carpet and Carpet Pad Adhesives – 50 g/L
.10 Wood Flooring Adhesives – 100 g/L
.11 Rubber Floor Adhesives – 60 g/L
.12 Subfloor Adhesives – 50 g/L
.13 Ceramic Tile Adhesives – 65 g/L
.14 VCT and Asphalt Tile Adhesives – 50 g/L
.15 Gypsum Board and Panel Adhesives – 50 g/L
.16 Cove Base Adhesive – 50 g/L
.17 Multipurpose Construction Adhesives – 70 g/L
.18 Structural Glazing Adhesive – 100 g/L
.19 PVC Welding – 510 g/L
.20 CPVC Welding – 490 g/L
.21 ABS Welding – 325 g/L
.22 Plastic Cement Welding – 250 g/L
.23 Adhesive Primer for Plastic – 550 g/L
.24 Contact Adhesive – 80 g/L
.25 Special Purpose Contact Adhesive – 250 g/L
.26 Structural Wood Member Adhesive – 140 g/L
.27 Sheet Applied Rubber Lining Operations – 850 g/L
.28 Top and Trim Adhesive – 250 g/L
.29 Metal to Metal Adhesive – 30 g/L

.30 Plastic Foams Adhesive – 50 g/L

.31 Porous Material Adhesive (except wood) – 50 g/L

.32 Wood Adhesive – 30 g/L

.33 Fiberglass Adhesive – 80 g/L

.34 Duct Sealants – 250 g/L

.2 Laminate Adhesives must contain no urea-formaldehyde.

1.4 MAINTENANCE MATERIAL SUBMITTALS

.1 Provide extra materials of resilient sheet flooring and adhesives in accordance with Section 01 78 00 - Closeout Submittals.

.2 Provide 2% or 250 sq ft of flooring, whichever is greater, and 250 sq ft of base, of each material specified.

.3 Extra materials one piece and from same production run as installed materials.

.4 Identify each roll of sheet flooring and each container of adhesive.

1.5 QUALITY ASSURANCE

.1 Manufacturer must be certified ISO 9001 and ISO 14001.

.2 Manufacturer must have experience in the manufacturing of specified flooring.

.3 Installer must have performed installations of the same scale in the last three (3) years.

.4 Installer to be recognized and approved by the flooring Manufacturer.

.5 Installation of mock-up is highly recommended and must be deemed acceptable by Contract Administrator. Mock-up is to be installed following the same procedures and utilizing the same specified materials that will be used for the actual project.

.6 During flooring installation, the flooring manufacturer representative and floor Contractor shall conduct on-Site meetings for installation procedures and techniques for the entire flooring installation.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Materials must be delivered in Manufacturer's original, unopened and undamaged containers with identification labels intact.

.2 Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by Manufacturer, but not less than 55 deg F (13 deg C) or more than 85 deg F (29 deg C).

.3 Material need not suffer damage during handling (i.e. edge chipping, excessive warping, etc.).

1.7 SITE CONDITIONS

.1 The Contractor shall be responsible for ensuring all Site conditions meet the requirements of the flooring Manufacturer.

.2 Maintain ambient temperatures within range recommended by the Manufacturer, but not less than 65 deg F (18 deg C) or more than 85 deg F (29 deg C) in spaces to receive resilient products during the following time periods:

.1 48 hours before installation.

.2 During installation.

.3 48 hours after installation.

.3 Maintain the ambient relative humidity between 40% and 60% during installation.

.4 Until Substantial Completion, maintain ambient temperatures within range recommended by Manufacturer, but not less than 55 deg F (13 deg C) or more than 85 deg F (29 deg C).

.5 Installation to be carried out no sooner than the specified curing time of concrete subfloor (normal density concrete curing time is approximately 28 days for development of design strength). Do not install flooring over concrete slabs until they are sufficiently dry to achieve a bond with the adhesive, in accordance with the manufacturer's recommended bond and moisture tests.

.6 Moisture vapor emission content of the concrete slab must not exceed the tolerance of the adhesive used, when tested using the anhydrous calcium chloride test as per ASTM F1869 and/or using the in-situ probes test as per ASTM F2170. The pH of the concrete slab must be between 7 and 8.5.

.7 Installation of flooring will not commence unless all other trades in the building are completed. It is the Contractor’s responsibility to maintain a secure and clean working area before, during and after the installation of the flooring.

1.8 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 00 – Cleaning and Waste Management.

.2 Place materials defined as hazardous or toxic waste in designated containers.

.3 Ensure emptied containers are sealed and stored safely for disposal away for public.

.4 Use chemical hardeners that are non-toxic, biodegradable and have zero or low VOC’s.

.5 Dispose of surplus chemical and finishing materials in accordance with Federal, Provincial and Municipal regulations.

1.9 WARRANTY

.1 Provide Manufacturer’s current standard warranty.

.2 Resilient rubber flooring is warranted to be free from manufacturing defects for a period of one (1) year from the date of shipment from the Manufacturer.

.3 Resilient rubber flooring is warranted against excessive wear under normal usage for a period of ten (10) years from the date installation.

Part 2 Products

2.1 RESILENT RUBBER TILE FLOORING

.1 Johnsonite Solid Colour Rubber Tile Flooring (or approved equal in accordance with B7).

.1 Colours:

.1 40 Black

.2 Nominal total thickness: 1/8"/0.125in. (3.2mm)

.3 Tile Size: 24 in. x 24 in. (610 mm x 610 mm)

.4 Texture: Raised Round with .025" (0.635 mm) Disk Height

.5 Composition:

.1 Complies with requirements for ASTM F 1344 Standard Specification for Rubber Floor Tile, Class 1-A and 1-B.

.2 Manufactured from a homogeneous composition of 100% synthetic rubber.

.3 ASTM D 2240 Standard Test Method for Rubber Property—Durometer Hardness: 65 Shore A.

.4 ASTM D 3389 Standard Test Method for Coated Fabrics Abrasion Resistance: < 1.00 gram weight loss.

.5 ASTM D 2047, Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring: Exceeds Federal Standards and A.D.A. requirements for slip-resistant.

.6 ASTM F 970, Standard Test Method for Static Load Limit – passes at 250 PSI.

.7 ASTM E 989, Standard Classification for Rating Impact Insulation (IIC) using ASTM E 492, Acoustical Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine – 40 IIC.

.8 ASTM E 648, Standard Test method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source – equal to or greater than 0.45 watts/cm2.

.9 SCS FloorScore® Certified and meets California Specifications Section 01350.

.10 Phthalate, chlorine and halogen free.

.11 NSF-332 Gold Certified.

.12 Johnsonite facilities are ISO 9001 and ISO 14001 Certified.

.13 Possible LEED contributions for Johnsonite Rubber Flooring include MR2; MR5; and EQ4.3.

2.2 RESILENT RUBBER STAIR TREADS

.1 Johnsonite **VIRHS-RD** (Visually Impaired) - Roundel Round Raised Disk Pattern Rubber Stair Tread, 2" (5.08 cm) hinged square nose configuration, .210" (5.33 mm) to .113" (2.87 mm) tapered 12-1/4" (31.12 cm) tread depth with 2" (5.0 cm) wide contrasting solid rubber color insert strip.

.1 Tread Colour: 20 Charcoal WG

.2 Contrasting Strip Colour: 40 Black

2.3 SUBSTITUTIONS

.1 In accordance with B7.

2.4 INSTALLATION MATERIALS

.1 Trowelable Leveling and Patching Compounds: Latex-modified, Portland cement based or blended hydraulic-cement-based formulation.

.2 Adhesives and sealants: As recommended by Johnsonite to meet Site conditions.

.1 Do not use caulking that emits strong odors, contains toxic chemicals, or is not certified as mould resistant in air handling units.

.2 When low toxicity caulks are not possible, confine usage to areas which off-gas to the exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off-gas time.

.3 Edge protection strips: rubber with lip to extend under floor finish, with shoulder flush with top of adjacent flooring. Colours selected by Contract Administrator.

.4 Provide transition/reducing strips tapered to meet abutting materials.

.5 Provide threshold of thickness and width as shown on the drawings.

.6 Provide resilient edge strips of width shown on the drawings, of equal gauge to the flooring, homogeneous vinyl or rubber composition, tapered or bullnose edge, with color to match or contrast with the flooring, or as selected by the Contract Administrator from standard colors available.

.7 Provide metal edge strips of width shown on the drawings and of required thickness to protect exposed edges of the flooring. Provide units of maximum available length to minimize the number of joints. Use butt-type metal edge strips for concealed anchorage, or overlap-type metal edge strips for exposed anchorage. Unless otherwise shown, provide strips made of extruded aluminum with a mill finish.

Part 3 Execution

3.1 EXAMINATION

.1 Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

.2 Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

.3 Proceed with installation only after unsatisfactory conditions have been corrected.

.4 Concrete subfloors to be placed a minimum of twenty-eight (28) days prior to the installation of rubber flooring.

.5 Concrete subfloors on or below grade are installed over a suitable moisture retardant membrane.

.6 Water vapor membrane complies with specification in ASTM E1745.

.7 No concrete sealers or curing compounds are applied or mixed with the subfloors.

.8 HVAC (Heating, Ventilating and Air Conditioning) unit must be operational to reflect in-service conditions.

.9 Moisture and alkalinity tests must be performed. Moisture vapor emission content of the concrete slab must not exceed the tolerance of the adhesive used, when tested using the anhydrous calcium chloride test as per ASTM F1869 and/or using the in-situ probes test as per ASTM F2170. The pH of the concrete slab must be between 7 and 8.5.

.10 Smooth, dense finish, highly compacted with a tolerance of 1/8'' in a 10 ft radius (3.2 mm in 3.05 m radius). Floor Flatness (FF) and Floor Levelness (FL) numbers are not recognized.

3.2 PREPARATION

.1 Prepare substrates according to manufacturer's written instructions to ensure adhesion of Resilient Rubber Tile Flooring.

.1 Refer to Section 09 65 16 – Resilient Sheet Flooring for concrete substrate dehumidification process.

.2 Verify that substrates are dry and free of curing compounds, sealers, and hardeners.

.3 Remove substrate paint, coatings and other substances that are incompatible with adhesives or contain soap, wax, oil, solvents, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.

.4 Mechanically remove contamination on the substrate that may cause damage to the resilient flooring material. Permanent and non-permanent markers, pens, crayons, paint, etc., must not be used to write on the back of the flooring material or used to mark the substrate as they could bleed through and stain the flooring material.

.5 Prepare Substrates according to ASTM F 710 including the following:

.1 Moisture Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.

.1 Perform anhydrous calcium chloride test, ASTM F 1869. Results must not exceed 5 lbs. Moisture Vapor Emission Rate per 1,000 sq. ft. in 24 hours.

– or –

.2 Perform relative humidity test using in situ probes, ASTM F 2170. Must not exceed 80%.

.2 A pH test for alkalinity must be conducted. Results should range between 7 and 9. If the test results are not within the acceptable range of 7 to 9, the installation must not proceed until the problem has been corrected.

.3 Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer.

.6 Wood subfloors must have a minimum 18" (45.7 cm) of cross-ventilated space beneath the bottom of the joist.

.1 The floor must be rigid, free of movement.

.2 Single wood and tongue and groove subfloors should be covered with ¼" (6.4 mm) or ½" (12.7 mm) APA approved underlayment plywood.

.1 Use ¼" (6.4 mm) thick underlayment panels for boards with a face width of 3" (76 mm) or less.

.2 Use ½" (12.7 mm) thick underlayment panels for boards with a face width wider than 3" (76 mm).

.3 Do not install over OSB (Oriented Strand Board), particle board, chipboard, or composite type underlayments.

.7 Fill cracks, holes, depressions and irregularities in the substrate with good quality Portland cement based underlayment leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.

.8 Floor covering shall not be installed over expansion joints.

.9 Do not install resilient products until they are same temperature as the space where they are to be installed.

.1 Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.

.10 Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

.11 Account for differing thickness of flooring with leveling compound and ensure that top of all flooring types meet flush with one another.

3.3 RESILIENT RUBBER TILE FLOORING INSTALLATION

.1 Comply with Manufacturer's written instructions for installing resilient tile flooring.

.2 Resilient Rubber Floor Tile:

.1 Install with adhesive specified by manufacturer for the Site conditions and follow adhesive label for proper use.

.2 Do not Quarter Turn tile.

.3 Roll the flooring in both directions using a 100 pound three-section roller.

3.4 RESILIENT RUBBER TREAD INSTALLATION

.1 Comply with Manufacturer's written instructions for installing resilient rubber treads.

.2 Apply resilient rubber treads as indicated on the drawings, types as indicated and to suit the adjacent flooring materials.

3.5 REPAIR

.1 Repair material must be from the same dye lot as material supplied for initial installation.

.2 Repairs are to be performed by qualified installers/technicians only.

3.6 PROTECTION AND CLEANING

.1 Comply with manufacturer's written instructions for cleaning and protection of resilient products.

.2 Perform the following operations immediately after completing resilient product installation:

.1 Remove adhesive and other blemishes from exposed surfaces.

.2 Sweep and vacuum surfaces thoroughly.

.3 Damp-mop surfaces to remove marks and soil.

.3 Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

.1 No traffic for 24 hours after installation.

.2 No heavy traffic, rolling loads, or furniture placement for 72 hours after installation.

.4 Cover flooring until Substantial Completion.

.5 Wait 72 hours after installation before performing initial cleaning.

.6 A regular maintenance program must be started after the initial cleaning.

END OF SECTION

PART 1 General

1.1 REFERENCES

.1 Canadian General Standards Board (CGSB):

.1 CAN/CGSB-4.129-93: Carpet for Commercial Use;

.2 CAN/CGSB-4-GP-156: Direct Glue-Down Carpet, Guide to Selection and Installation.

.2 American Society for Testing and Materials (ASTM):

.1 ASTM E648 Class 1 (glue down) – Standard test method for critical radiant flux of floor-covering systems using a radiant heat Energy Source;

.2 ASTM E-662 Less than 450 – Standard test method for Specific optical density of smoke generated by solid materials;

.3 ASTM D5252 – Standard practice for the operation of the Hexapod Tumble Drum Tester;

.4 ASTM F710 03, Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring;

.5 ASTM F1869 03, Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride;

.6 ASTM- F2170, Situ Probe rH Test Method.

.3 Carpet and Rug Institute (CRI):

.1 CRI 104 2002, Standard for Installation of Commercial Carpet;

.2 CRI Indoor Air Quality Carpet Testing Program.

.4 American Association of Textile Chemists and Colorists:

.1 Color Fastness to Lightfastness ASTCC 16-E;

.5 American Association of Textile Chemists and Colorists (AATCC):

.1 Electrostatic Propensity of Carpet, AATCC -134 under 3.5KV;

.6 Underwriters' Laboratories of Canada (ULC):

.1 CAN/ULC-S102, Surface Burning Characteristics of Building Materials and Assemblies;

1.2 SUBMITTALS

.1 Submit samples in accordance with Section 01 33 00 – Submittal Procedures.

.2 Samples: Submit full size carpet tile samples and 12"x12" samples for sheet carpet of each type of carpet, in each specified pattern, color and construction.

.3 Manufacturer's Data: Two (2) copies of carpet manufacturer's specifications and installation instructions for carpet and related items specified.

.4 All applicable product warranties provided by manufacturer.

.5 Submit two sets of tile layout drawings, complete with carpet tile schedule and room designation consistent with construction drawings.

.6 Coordinate site visit to inspect for special procedures and perimeter conditions.

.7 Submit WHIMIS MSDS – Material Safety Data Sheets in accordance with Section 01 33 00 – Submittal Procedures, with the VOC levels highlighted.

1.3 QUALITY ASSURANCE

.1 The carpet manufacturer shall have no less than fifteen years of production experience with modular carpet similar to type specified. Published product literature of carpet manufacturer must clearly indicate compliance of products with requirements of this section.

.2 Mockups: Provide carpet products with mockups specified in other Sections.

.3 During flooring installation, the flooring manufacturer representative and floor Contractor shall conduct on-Site meetings for installation procedures and techniques for the entire flooring installation.

1.4 MAINTENANCE DATA

.1 Provide manufacturer's instructions covering care and maintenance of materials of this section as per Section 01 33 00 – Submittal Procedures.

.2 Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.

1.8 EXTRA MATERIALS

.1 Provide extra materials of carpet tile and sheet carpet and accessories in accordance with Section 01 78 00 - Closeout Submittals.

.2 Provide 2% or 250 sq ft of flooring, whichever is greater, and 250 sq ft of base, of each material specified.

.3 Extra materials of sheet goods shall be one piece and from same production run as installed materials.

.4 Extra materials to be packaged with protective covering for storage. Identify extra materials with labels describing contents.

1.5 PROJECT CONDITIONS

.1 Install carpet products after other finishing operations, including painting, have been completed.

.2 Maintain ambient temperatures within range recommended by Manufacturer, but not less than 65 deg F (18 deg C) or more than 85 deg F (29 deg C) in spaces to receive carpet products during the following time periods:

.1 48 hours before installation.
.2 During installation.
.3 48 hours after installation.

.3 Maintain the ambient relative humidity between 40% and 60% during installation.

.4 Operate ventilation fans of appropriate size, at maximum capacity during carpet tile and adhesive removal and during and for at least 72 hours after glue-down installation.

.5 Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 13 degrees C or more than 29 degrees C.

1.6 REMOVAL OF EXISTING CARPET TILE, ADHESIVE AND WASTE REMOVAL

.1 Separate and recycle waste management and disposal in accordance with Division 01, Section 01 74 00 Cleaning and Waste Management.

.2 Refer to Division 01 for requirements pertaining to noise and dust control and use of premises.

.3 Use vacuum equipped with power head/sweeper to vacuum existing carpet tile prior to removal.

.4 Apply fine mist water spray to carpet tile to minimize dust generation during removal. Avoid spraying near electrical outlets.

.5 Remove from site existing carpet tile as indicated.

1.7 PRODUCT HANDLING, DELIVERY AND STORAGE

.1 Deliver carpet tile and other accessories in original cartons or packaging clearly marked with the manufacturer's name, material description, colour, pattern, size, type, dye lot and quantity.

.2 Store under cover and away from moisture. Keep dry at all times.

1.8 WARRANTY

.1 Provide the following written warranties by carpet manufacturer for a period of not less than 15 years:

.1 Wear: Surface fiber wear shall not be more than 10% by weight in 15 years. (Note: Wear warranty shall not require use of chair pads)

.2 Static: Static generation at less than 3.0 kV at 70º F, and 20% R.H.

.3 No delamination

.4 No edge ravel

.5 No dimensional instability (i.e., shrinkage, curling and doming) which adversely affect the ability of the tile to lay flat

.6 Mergeability: Carpet that is of the same style/color, but from different dyelots and/or manufacturing dates, may be merged and used interchangeably, both at initial installation and at later selective replacement, to create a continuous carpeted surface with no tile appearing out of place

.2 Submit manufacturer's NVLAP certified test results to show that carpet meets or exceeds product performance specification criteria for carpet testing requirements.

PART 2 Products

2.1 ACCEPTABLE MANUFACTURERS AND PRODUCTS:

.1 Acceptable Manufacturers:

.1 Interface Flooring Systems (Canada) Inc.

.2 Acceptable Products:

.1 CPT 1 – Interface, B703, Net Effect Collection, Colour 103966 Caspian, GlassBac® Backing

.1 Product Specifications:

.1 Product Number: 124970AK00

.2 Product Construction: Tufted Cut Pile

.2 CPT 2 – Interface, B702, Net Effect Collection, Colour 102901 Caspian, GlassBac®RE Backing

.1 Product Specifications:

.1 Product Number: 126620AK0H

.2 Product Construction: Tufted Pattern Loop

.3 CPT 3 – Interface, B701, Net Effect Collection, Colour 102893 Caspian, GlassBac®RE Backing

.1 Product Number: 126560AK0H

.2 Product Construction: Tufted Sheared

.4 Sheet carpet on stairs and landings – Interface, B703, Net Effect Collection, Colour 103966 Caspian, unbacked sheet good.

2.2 SUBSTITUTIONS

.1 In accordance with B7.

2.3 MATERIAL COMPONENTS

.1 Carpet tile construction must meet or exceed the following:

.1 Fibre Content: 100% nylon, bulk continuous filament, and permanently conductive fibres to control electrostatic propensity.

.2 Dye Method: 100% Solution Dyed. Accepted is minimum 90% Solution Dyed, 10% Space Dyed.

.3 Pile Characteristics: Cut pile, Multi-level loop, textured level loop, or level loop.

.4 Tufted Weight: 18 oz. minimum.

.5 Gauge: 1/10” minimum.

.6 Stitches per inch: 8.00” minimum.

.7 Pile Density: 6000oz./cy minimum.

.8 Tile size: 250mm x 1000mm

.9 Backing System:

.10 Manufacturer’s standard vinyl or thermoplastic hard backed or cushion thermoplastic backing system.

.11 Recyclable content.

.12 Maintaining a 100% true moisture barrier between the secondary backing and the substrate below.

.13 A pre-adhered backing system may be used as an alternate to an applied releasable adhesive to the surface substrate.

.14 Color and Pattern: As selected by Contract Administrator from manufacturer’s standard range

.15 Carpet tiles to be a herringbone or ashlar pattern as indicated. Where multiple carpet types are used in a mixture allow for an even blend of each type.

.16 Inherent Static Control less than 3.0 Kilovolts at 21°C and 20% relative humidity.

.17 Delimitation to ASTM D3936 to min 2.5 Lbs/in.

.18 Soil/Stain protection.

2.4 INSTALLATION MATERIALS

.1 Leveling compound: Latex type as recommended by carpet manufacturer. Must be compatible with carpet adhesive and curing/sealing compound on concrete.

.2 Installation connectors: Compounded acrylic adhesive, applied to PET polyester backing with PET polyester release liner (clear 3" x 3" polyester squares with small quantity of a pressure sensitive adhesive applied on one side of the polyester film). The squares connect the carpet modules together to form a stable surface over almost any hard surface. The connectors shall contain no liquid components and shall have "zero" calculated VOC's.

.3 Carpet edge guard, non-metallic:

.1 Non-metallic, extruded or molded heavy-duty rubber "T" shaped cap insert and minimum 50 mm wide extruded aluminum anchorage flange, profiled to accept cap.

.2 Colour: selected by Contract Administrator from manufacturer's standard range. A different colour will be selected for each different colour of carpet tile.

.4 Transitions: Refer to Section 09 65 13 - Resilient Base and Accessories.

.5 Resilient Base: Refer to Section 09 65 13 - Resilient Base and Accessories.

.6 Stair Nosings: Refer to Section 09 65 13 - Resilient Base and Accessories.

.7 Miscellaneous materials - As recommended by manufacturer of carpet. Other carpeting products to be selected by installation provider to meet project requirements.

PART 3 Execution

3.1 EXAMINATION

.1 Examine substrates, areas, and conditions, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerance and other conditions that may affect the performance of the carpet tile.

.2 Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

.1 Comply with Carpet Manufacturers written instructions for preparing substrates indicated to receive carpet installation.

.2 Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions and protrusions in the substrate. Fill or level cracks, holes and depressions 3mm wide or wider and protrusions more than 0.8mm, unless more stringent requirements are identified in the carpet tile manufacturer's written instructions.

.3 Trowel and float to produce a smooth, flat surface. Allow to cure properly.

.4 Remove coatings, including curing compounds and other substances from concrete subfloor that are not compatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents using mechanical methods recommended in writing by the carpet tile manufacturer.

.5 Broom and vacuum clean substrate to remove dust and other small particles. Cover prior to installing carpet tile.

.6 Substrate to have acceptable level of absorbency as per manufacturer's written instructions. After cleaning, examine substrates for acceptable levels of moisture, alkaline salts, carbonation, or dust before proceeding with installation.

.7 When underlayment has cured, clean substrate surface and allow to dry.

.8 To ensure requirements are achieved test cementitious substrate for porosity, moisture content and alkalinity.

3.3 INSTALLATION

.1 Comply with Carpet Manufacturers written instructions for carpet installation.

.2 Install carpet according to carpet manufacturer's printed instructions and in accordance with the Carpet and Rug Institute's Installation Standard.

.3 "Chair Pads" shall not be recommended or required within installation instructions.

.4 Comply with manufacturer's instructions and recommendations. A "no-glue" method of installation is preferred. In the event a releasable glue method of installation is required, the following adhesive description applies. Adhesive must be water-based and allow for removal of carpet tile at any time without damage to carpet or substrate. Adhesive must contain antimicrobial preservative and have "zero" calculated VOC's.

.5 Install carpet under open-bottom obstructions and under removable flanges and furnishings, and into alcoves and closets of each space.

.6 Provide cut outs where required. Conceal cut edges with protective edge guards or overlapping flanges.

.7 Run carpet under open bottom items such as heating convectors and install tight against walls, columns and cabinets so that the entire floor area is covered with carpet. Cover over all floor type door closures.

.8 Install edging guard at all openings and doors wherever carpet terminates, unless indicated otherwise.

.9 Cutting shall be done in accordance with the manufacturer's recommendation, using the tools designed for the carpet being installed.

.10 Use leveling compound where necessary. Any floor filling or leveling shall have a minimum of 4'0" of feather.

.11 Expansion joints: Do not bridge building expansion joints with continuous carpeting.

.12 Layout: Where multiple carpet types are used in a mixture allow for an even blend of each type. Where carpet types transition in an open area provide a smooth pattern transition. Layout and pattern to indicated on tile layout drawings.

3.4 CLEANING AND PROTECTION

.1 On completion of the installation in each area, all dirt, carpet scraps, etc. must be removed from the surface of the carpet.

.2 Remove debris, and sort pieces to be saved from scraps to be redirected and recycled.

.3 Protect carpeting against damage during construction.

.4 At the completion of the work and when directed by the construction manager, vacuum carpet using commercial dual motor vacuum of type recommended by carpet manufacturer. Remove spots and replace carpet where spots cannot be removed. Remove rejected carpeting and replace with new carpeting. Remove any protruding yarns with shears or sharp scissors.

END OF SECTION

Part 1

1.1 REFERENCES

.1 Environmental Protection Agency (EPA)

.1 Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 (for Surface Coatings).

.2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

.3 The Master Painters Institute (MPI)

.1 Architectural Painting Specification Manual - [February 2004].

.2 Standard GPS-1-[05], MPI Green Performance Standard for Painting and Coatings.

.4 National Fire Code of Canada.

.5 Society for Protective Coatings (SSPC)

.1 Systems and Specifications, SSPC Painting Manual [2005].

1.1 QUALITY ASSURANCE

.1 Contractor shall have a minimum of five years proven satisfactory experience. When requested, provide a list of last three comparable jobs including, job name and location, specifying authority, and project manager.

.2 Qualified journeyperson shall be engaged in painting work. Apprentices may be employed provided they work under the direct supervision of a qualified journeyperson in accordance with trade regulations.

.3 Conform to latest MPI requirements for exterior painting work including preparation and priming.

.4 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, etc.) shall be in accordance with MPI Painting Specification Manual "Approved Products" listing and shall be from a single manufacturer for each system used.

.5 Other paint materials such as linseed oil, shellac, turpentine, etc. shall be the highest quality product of an approved manufacturer listed in MPI Painting Specification Manual and shall be compatible with other coating materials as required.

.6 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Contract Administrator.

.7 Standard of Acceptance:

.1 Walls: No defects visible from a distance of 1000 mm at 90˚ to surface.

.2 Ceilings: No defects visible from floor at 45° to surface when viewed using final lighting source.

.3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

1.2 ENVIRONMENTAL PERFORMANCE REQUIREMENTS

.1 Provide paint products meeting MPI "Environmentally Friendly" E2 or E3 ratings based on VOC (EPA Method 24) content levels.

1.3 SCHEDULING OF WORK

.1 Submit work schedule for various stages of painting to Contract Administrator for approval. Submit schedule minimum of 48 hours in advance of proposed operations.

.2 Obtain written authorization from Contract Administrator for changes in work schedule.

.3 Schedule painting operations to prevent disruption of occupants in and about the building.

1.4 SUBMITTALS

.1 Submit product data and manufacturer's installation/application instructions for paints and coating products to be used and in accordance with Section 01 33 00 – Submittal Procedures.

.2 Submit WHMIS - MSDS - Material Safety Data Sheets.

.3 Upon completion, submit records of products used, records to be included in Operation and Maintenance Manuals. List products in relation to finish system and include the following:

.1 Product name, type and use.
.2 Manufacturer's product number.
.3 Colour numbers.
.4 Manufacturer's Material Safety Data Sheets (MSDS).
.5 MPI Environmentally Friendly classification system rating.

.4 Submit manufacturer’s application instructions for each product specified.

.5 Submit duplicate 200 x 300 mm sample panels of each paint, stain, clear coating, with specified paint or coating in colours, gloss/sheen and textures required to MPI Painting Specification Manual standards submitted on the following substrate materials:

.1 3 mm plate steel for finishes over metal surfaces.
.2 13 mm birch plywood for finishes over wood surfaces.
.3 50 mm concrete block for finishes over concrete or concrete masonry surfaces.
.4 13 mm gypsum board for finishes over gypsum board and other smooth surfaces.

.6 When approved, samples shall become acceptable standard of quality for appropriate on-site surface with one of each sample retained on-site.

.7 Submit full range of available colours where colour availability is restricted.

1.5 QUALITY CONTROL

.1 Provide mock-up in accordance with Section 01 45 00 - Quality Control.

.2 When requested by the Contract Administrator or Paint Inspection Agency, prepare and paint designated surface, area, room or item (in each colour scheme) to requirements specified herein, with specified paint or coating showing selected colours, gloss/sheen, textures and workmanship to MPI Painting Specification Manual standards for review and

approval. When approved, surface, area, room and/or items shall become acceptable standard of finish quality and workmanship for similar on-site work.

1.6 EXTRA MATERIALS

.1 Submit maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.

.2 Submit 1 - 4 litre can of each type and colour of finish coating. Identify colour and paint type in relation to established colour schedule and finish formula.

.3 Deliver to Contract Administrator and store where directed.

1.7 DELIVERY, HANDLING AND STORAGE

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Deliver and store materials in original containers, sealed, with labels intact.

.3 Labels shall clearly indicate:

.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.

.4 Remove damaged, opened and rejected materials from site.

.5 Provide and maintain dry, temperature controlled, secure storage.

.6 Observe manufacturer's recommendations for storage and handling.

.7 Store materials and supplies away from heat generating devices.

.8 Store materials and equipment in a well ventilated area with temperature range 7ºC to 30ºC.

.9 Store temperature sensitive products above minimum temperature as recommended by manufacturer.

.10 Keep areas used for storage, cleaning and preparation, clean and orderly to approval of Contract Administrator. After completion of operations, return areas to clean condition to approval of Contract Administrator.

.11 Remove paint materials from storage only in quantities required for same day use.

.12 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.

.13 Fire Safety Requirements:

.1 Provide one 9 kg Type ABC dry chemical 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 the National Fire Code of Canada.

.14 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials.

1.8 SITE REQUIREMENTS

.1 Heating, Ventilation and Lighting:

.1 Ventilate enclosed spaces.

.2 Perform no painting work unless adequate and continuous ventilation and sufficient heating facilities are in place to maintain ambient air and substrate temperatures above 10ºC for 24 hours before, during and after paint application until paint has cured sufficiently.

.3 Where required, provide continuous ventilation for seven days after completion of application of paint.

.4 Provide temporary ventilating and heating equipment where permanent facilities are not available.

.5 Perform no painting work unless a minimum lighting level of 323 Lux is provided on surfaces to be painted. Adequate lighting facilities shall be provided by Contractor.

.2 Temperature, Humidity and Substrate Moisture Content Levels:

.1 Unless specifically pre-approved by Contract Administrator and, applied product manufacturer, perform no painting work when:

.1 ambient air and substrate temperatures are below 10ºC.

.2 substrate temperature is over 32ºC unless paint is specifically formulated for application at high temperatures.

.3 substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's prescribed limits.

.4 the relative humidity is above 85% or when dew point is less than 3ºC variance between air/surface temperature.

.5 rain or snow are forecast to occur before paint has thoroughly cured or when it is foggy, misty, raining or snowing at site.

.2 Perform no painting work when maximum moisture content of substrate exceeds:

.1 12% for concrete and masonry (clay and concrete brick/block).

.2 15% for wood.

.3 12% for plaster and gypsum board.

.3 Conduct moisture tests using a properly calibrated electronic Moisture Meter, except test concrete floors for moisture using a simple "cover patch test".

.4 Test concrete, masonry and plaster surfaces for alkalinity as required.

.3 Surface and Environmental Conditions:

.1 Apply paint finish only 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 only to adequately prepared surfaces and to surfaces within moisture limits noted herein.

.3 Apply paint only when previous coat of paint is dry or adequately cured.

.4 Apply paint finishes only when conditions forecast for entire period of application fall within manufacturer's recommendations.

.5 Do not apply paint when:

.1 Temperature is expected to drop below 10ºC before paint has thoroughly cured.

.2 Substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's limits.

.3 Surface to be painted is wet, damp or frosted.

.6 Provide and maintain cover when paint must be applied in damp or cold weather. Heat substrates and surrounding air to comply with temperature and humidity conditions specified by manufacturer. Protect until paint is dry or until weather conditions are suitable.

.7 Schedule painting operations such that surfaces exposed to direct, intense sunlight are scheduled for completion during early morning.

.8 Remove paint from areas which have been exposed to freezing, excess humidity, rain, snow or condensation. Prepare surface again and repaint.

.9 Paint occupied facilities in accordance with approved schedule only. Schedule operations to approval of the Contract Administrator such that painted surfaces will have dried and cured sufficiently before occupants are affected.

1.9 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 00 – Cleaning and Waste Managament.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Place materials defined as hazardous or toxic in designated containers.

.4 Ensure emptied containers are sealed and stored safely.

.5 Unused paint, coating materials must be disposed of at official hazardous material collections site as approved by Contract Administrator.

.6 Paint, stain and wood preservative finishes and related materials (thinners, and solvents) are regarded as hazardous products and are subject to regulations for disposal.

.7 Material which cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.

.8 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.

.9 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.

.10 Empty paint cans are to be dry prior to disposal or recycling (where available).

Part 2 Products

2.1 MATERIALS

.1 Paint materials listed in the latest edition of the MPI Approved Products List (APL) are acceptable for use on this project.

.2 Paint materials for each coating formula to be products of a single manufacturer.

.3 Low odour products: whenever possible, select products exhibiting low odour characteristics. If two products are otherwise equivalent, select the product with the lowest odour. Only qualified products with E2 or E3 "Environmentally Friendly" rating are acceptable for use on this project.

.4 Paints, coatings, adhesives, solvents, cleaners, lubricants, and other fluids, shall:

.1 be water-based, water soluble, water clean-up.

.2 be non-flammable

.3 be manufactured without compounds which contribute to ozone depletion in the upper atmosphere.

.4 be manufactured without compounds which contribute to smog in the lower atmosphere.

.5 do not contain methylene chloride, chlorinated hydrocarbons, toxic metal pigments.

.5 Water-borne surface coatings must be manufactured and transported in a manner that steps of processes, including disposal of waste products arising therefrom, will meet requirements of applicable governmental acts, by-laws and regulations including, for facilities located in Canada, Fisheries Act and Canadian Environmental Protection Act (CEPA).

.6 Water-borne surface coatings must not be formulated or manufactured with aromatic solvents, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavelant chromium or their compounds.

.7 Water-borne surface coatings must have a flash point of 61.0ºC or greater.

.8 Both water-borne surface coatings and recycled water-borne surface coatings must be made by a process that does not release:

.1 Matter in undiluted production plant effluent generating a 'Biochemical Oxygen Demand' (BOD) in excess of 15 mg/L to a natural watercourse or a sewage treatment facility lacking secondary treatment.

.2 Total Suspended Solids (TSS) in undiluted production plant effluent in excess of 15 mg/L to a natural watercourse or a sewage treatment facility lacking secondary treatment.

.9 Water-borne paints and stains, and water borne varnishes must meet a minimum "Environmentally Friendly" E2 rating.

2.2 COLOURS

.1 Four (4) colours to be selected. Colours to match existing exterior colours as indicated. Contract Administrator will provide Colour and Finish Schedule after Contract award.

.2 Selection of colours will be from manufacturer's full range of colours.

.3 Where specific products are available in a restricted range of colours, selection will be based on the limited range.

.4 Second coat in a 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. On-site tinting of painting materials is allowed only with Contract Administrator's written permission.

.2 Paste, powder or catalyzed paint mixes shall be mixed in strict accordance with manufacturer's written instructions.

.3 Where thinner is used, addition shall not exceed paint manufacturer's recommendations. Do not use kerosene or any such organic solvents to thin water-based paints.

.4 Thin paint for spraying according in strict accordance with paint manufacturer's instructions. If directions are not on container, obtain instructions in writing from manufacturer and provide copy of instructions to Contract Administrator.

.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 shall be defined as the sheen rating of applied paint, in accordance with the following values:

Gloss Level /Category	Units @ 60E/	Units @ 85º
G1 - matte finish	0 to 5	max. 10
G2 - velvet finish	0 to 10	10 to 35
G3 - eggshell finish	10 to 25	10 to 35
G4 - satin finish	20 to 35	min. 35
G5 - semi-gloss finish	35 to 70	
G6 – gloss finish	70 to 85	
G7 - high gloss finish	> 85	

.2 Gloss level ratings of painted surfaces shall be as specified herein.

2.5 EXTERIOR PAINTING SYSTEMS

.1 The following paint formulas requires a three coat finish as indicated in the MPI Architectural Painting Specifications Manual.

.2 Asphalt Surfaces: zone/traffic marking for drive and parking areas, etc.

.1 EXT 2.1B Alkyd zone/traffic marking finish.

.3 Concrete Vertical Surfaces: (including horizontal soffits)

.1 EXT 3.1A – Latex G4 finish

.4 Concrete Horizontal Surfaces:

.1 EXT 3.2D - Alkyd floor enamel G4 finish.

.5 Clay Masonry Units: (pressed and extruded brick)

.1 EXT 4.1A - Latex G4 finish.

.6 Concrete Masonry Units: smooth and split face block and brick

.1 EXT 4.2A - Latex G4 finish.

.7 Structural Steel and Metal Fabrications:

.1 EXT 5.1J - Pigmented polyurethane finish (over high build epoxy).

.8 Galvanized Metal: not chromate passivated

.1 EXT 5.3D - Pigmented polyurethane finish for use in high contact/high traffic areas.

.9 Dimension Lumber: columns, beams, exposed joists, underside of decking, siding, fencing, etc.

.1 EXT 6.2L - Semi-transparent stain finish.

.2 EXT 6.2M - Latex G4 finish (over latex primer).

.10 Dressed Lumber: doors, door and window frames, casings, battens, smooth facias, etc.

.1 EXT 6.3L - Latex G4 finish (over latex primer)

.11 Wood Panelling: plywood siding, fascias, soffits, etc.

.1 EXT 6.4K - Latex G4 finish (over latex primer).

.12 Wood Decks and Stairs/Steps: using spaced lumber

.1 EXT 6.5A - Latex porch and floor G4 finish (over primer).

.2 EXT 6.5F - Deck stain finish.

.13 Stucco:

.1 EXT 9.1A - Latex G4 finish (over primer).

Part 3 Execution

3.1 GENERAL

.1 Perform preparation and operations for exterior painting in accordance with MPI Painting Specifications Manual except where specified otherwise.

.2 Apply all paint materials in accordance with paint manufacturer's written application instructions.

.3 Where there are multiple coats of finish – allow the first coat to dry thoroughly, sand lightly smooth finish before secondary and tertiary coats.

3.2 EXISTING CONDITIONS

.1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Contract Administrator damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.

.2 Conduct moisture testing of surfaces to be painted using a properly calibrated electronic moisture meter, except test concrete floors for moisture using a simple "cover patch test" and report findings to Contract Administrator. Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.

.3 Maximum moisture content as follows:

.1 Concrete: 12%.

.2 Clay and Concrete Block/Brick: 12%.

.3 Wood: 15%.

3.3 PROTECTION

.1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore such surfaces as directed by Contract Administrator.

.2 Cover or mask windows and other ornamental hardware adjacent to areas being painted to prevent damage and to protect from paint drops and splatters. Use non-staining coverings.

.3 Protect items that are permanently attached such as Fire Labels on doors and frames.

.4 Protect factory finished products and equipment.

.5 Protect passing pedestrians, building occupants and general public in and about the building.

.6 Remove electrical cover plates, light fixtures, surface hardware on doors, and all other surface mounted fittings, equipment and fastenings prior to undertaking any painting operations. Store for re-installation after painting is completed.

.7 Cover or move exterior furniture and portable equipment around building as necessary to carry out painting operations. Replace as painting operations progress.

.8 As painting operations progress, place "WET PAINT" signs in areas of work to approval of Contract Administrator.

3.4 CLEANING AND PREPARATION

.1 Clean and prepare exterior surfaces in accordance with MPI Painting Specification Manual requirements. Refer to the MPI Manual in regard to specific requirements and as follows:

.1 Remove dust, dirt, and other surface debris by 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. However, minimize the use of kerosene or any such organic solvents to clean up water-based paints.

.2 Prevent contamination of cleaned surfaces 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.

.3 Where possible, prime 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.

.4 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.

.5 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 or blowing with clean dry compressed air.

.6 Touch up of shop primers with primer as specified in applicable section. Major touch-up including cleaning and painting of field connections, welds, rivets, nuts, washers, bolts, and damaged or defective paint and rusted areas, shall be by supplier of fabricated material.

.7 Do not apply paint until prepared surfaces have been accepted by Contract Administrator.

3.5 APPLICATION

.1 Method of application to be as approved by Contract Administrator. 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 a uniform layer using brush and/or roller of types 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 shall be 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 properly 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 a uniform layer, with overlapping at edges of spray pattern.

.4 Brush out immediately runs and sags.

.5 Use brushes 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 and only when specifically authorized by Contract Administrator.

.5 Apply coats of paint as a 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 projecting ledges.

.9 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

3.6 MECHANICAL/ELECTRICAL EQUIPMENT

.1 Unless otherwise specified, paint exterior exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment with colour and finish to match adjacent surfaces, except as noted otherwise.

.2 Touch up scratches and marks on factory painted finishes and equipment with paint as supplied by manufacturer of equipment.

.3 Paint fire protection piping red.

.4 Do not paint over nameplates.

.5 Paint steel electrical light standards. Do not paint outdoor transformers and substation equipment.

3.7 FIELD QUALITY CONTROL

.1 Field inspection of exterior painting operations to be carried out by Contract Administrator.

.2 Advise Contract Administrator when each applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.

.3 Co-operate with Contract Administrator and provide access to areas of work.

3.8 RESTORATION

.1 Clean and re-install all 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 surfaces from paint droppings and dust to approval of Contract Administrator. Avoid scuffing newly applied paint.

.5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Contract Administrator.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Environmental Protection Agency (EPA)

.1 EPA Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 (for Surface Coatings).

.2 Master Painters Institute (MPI)

.1 MPI Architectural Painting Specifications Manual.

.2 Green Gerformance Standard (GPS-1-08 and GPS-2-08).

.3 Society for Protective Coatings (SSPC)

.1 SSPC Painting Manual, Volume Two, Systems and Specifications Manual.

.4 National Fire Code of Canada.

.5 Green Seal Organization, GS-03 Anti-Corrosive Paints, Second Edition January 7, 1997

.1 GS-11 paints First Edition, May 20, 1993.

.6 South Coast Air Quality Management District, rule #1113 (effective date 2007).

1.2 QUALITY ASSURANCE

.1 Contractor shall have a minimum of five years proven satisfactory experience. When requested, provide a list of last three comparable jobs including, job name and location, specifying authority, and project manager.

.2 Qualified journeymen shall be engaged in painting work. Apprentices may be employed provided they work under the direct supervision of a qualified journeyman in accordance with trade regulations.

.3 Conform to latest MPI requirements for interior painting work including preparation and priming.

1.3 ENVIRONMENTAL PERFORMANCE REQUIREMENTS

.1 Provide paint products meeting MPI Green Gerformance Standard (GPS-1-08 and GPS-2-08).

.2 Provide paint products meeting MPI Environmentally Friendly E2 or E3 ratings based on VOC (EPA Method 24) content levels.

1.4 SCHEDULING

.1 Submit work schedule for various stages of painting to Contract Administrator for approval. Submit schedule minimum of 48 hours in advance of proposed operations.

.2 Obtain written authorization from Contract Administrator for any changes in work schedule.

.3 Schedule painting operations to prevent disruption of occupants in and about the building.

1.5 SUBMITTALS

.1 Submit product data and manufacturer's installation/application instructions for each paint and coating product.

.2 Submit product data for the use and application of paint thinner.

.3 Submit WHMIS MSDS - Material Safety Data Sheets. Indicate VOCs during application and curing.

.4 Upon completion, submit records of products used, records to be included in Operating and Maintenance Manuals. List products in relation to finish system and include the following:

- .1 Product name, type and use
- .2 Manufacturer's product number
- .3 Colour numbers
- .4 MPI Environmentally Friendly Classification System Rating
- .5 Manufacturer's Material Safety Data Sheets (MSDS)

.5 Submit full range colour sample chips to indicate where colour availability is restricted.

.6 Submit duplicate 200 x 300 mm sample panels of each paint with specified paint or coating in colours, gloss/sheen and textures required to MPI Painting Specification Manual standards submitted on the following substrate materials:

- .1 3 mm steel plate for finishes over metal surfaces.
- .2 13 mm birch plywood for finishes over wood surfaces.
- .3 50 mm concrete block for finishes over concrete or concrete masonry surfaces.
- .4 13 mm gypsum board for finishes over gypsum board and other smooth surfaces.

.7 When approved, sample panels shall become acceptable standard of quality for appropriate on-site surface with one of each sample retained on-site.

1.6 QUALITY CONTROL

.1 Provide mock-up in accordance with Section 01 45 00 - Quality Control.

.2 When requested by Contract Administrator, prepare and paint designated surface, area, room or item (in each colour scheme) to requirements specified herein, with specified paint or coating showing selected colours, gloss/sheen, textures and workmanship to MPI Painting Specification Manual standards for review and approval. When approved, surface, area, room and/or items shall become acceptable standard of finish quality and workmanship for similar on-site work.

1.7 EXTRA MATERIALS

.1 Submit maintenance materials from same product run as products installed in accordance with Section 01 78 00 - Closeout Submittals. Package products with protective covering and identify with descriptive labels.

.2 Submit one - four litre can of each type and colour of finish coating. Identify colour and paint type in relation to established colour schedule and finish formula.

.3 Deliver to Contract Administrator and store where directed.

.4 Provide certificate signed by staff that extra materials have been received in order.

1.8 DELIVERY, HANDLING AND STORAGE

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Deliver and store materials in original containers, sealed, with labels intact.

.3 Labels shall clearly indicate:

.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.

.4 Remove damaged, opened and rejected materials from site.

.5 Provide and maintain dry, temperature controlled, secure storage.

.6 Observe manufacturer's recommendations for storage and handling.

.7 Store materials and supplies away from heat generating devices.

.8 Store materials and equipment in a well ventilated area with temperature range 7º C to 30º C.

.9 Store temperature sensitive products above minimum temperature as recommended by manufacturer.

.10 Keep areas used for storage, cleaning and preparation, clean and orderly to approval of Contract Administrator. After completion of operations, return areas to clean condition to approval of Contract Administrator.

.11 Remove paint materials from storage only in quantities required for same day use.

.12 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.

.13 Fire Safety Requirements:

.1 Provide minimum one 9 kg Type ABC dry chemical 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 the National Fire Code of Canada.

1.9 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 00 – Cleaning and Waste Management.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Place materials defined as hazardous or toxic in designated containers.

.4 Ensure emptied containers are sealed and stored safely.

.5 Unused paint, coating materials must be disposed of at official hazardous material collections site as approved by Contract Administrator.

.6 Paint, stain and wood preservative finishes and related materials (thinners, and solvents) are regarded as hazardous products and are subject to regulations for disposal.

.7 Material which cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.

.8 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.

.9 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).

1.10 SITE CONDITIONS

.1 Heating, Ventilation and Lighting:

.1 Ventilate enclosed spaces.

.2 Perform no painting work unless adequate and continuous ventilation and sufficient heating facilities are in place to maintain ambient air and substrate temperatures above 10°C for 24 hours before, during and after paint application until paint has cured sufficiently.

.3 Where required, provide continuous ventilation for seven days after completion of application of paint.

.4 Perform no painting work unless a minimum lighting level of 323 Lux is provided on surfaces to be painted. Adequate lighting facilities shall be provided by Contractor.

.2 Temperature, Humidity and Substrate Moisture Content Levels:

.1 Unless specifically pre-approved by the specifying body, Paint Inspection Agency and the applied product manufacturer, perform no painting work when:

.1 Ambient air and substrate temperatures are below 10°C.

.2 Substrate temperature is over 32°C unless paint is specifically formulated for application at high temperatures.

.3 Substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's prescribed limits.

.4 The relative humidity is above 60% or when the dew point is less than 3°C variance between the air/surface temperature.

.2 Perform no painting work when the maximum moisture content of the substrate exceeds:

.1 12% for concrete and masonry (clay and concrete brick/block).

.2 15% for wood.

.3 12% for plaster and gypsum board.

.3 Conduct moisture tests using a properly calibrated electronic Moisture Meter, except test concrete floors for moisture using a simple "cover patch test".

.4 Test concrete, masonry and plaster surfaces for alkalinity as required.

.3 Surface and Environmental Conditions:

.1 Apply paint finish only 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 only to adequately prepared surfaces and to surfaces within moisture limits noted herein.

.3 Apply paint only when previous coat of paint is dry or adequately cured.

.4 Additional Interior Application Requirements:

.1 Apply paint finishes only 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 Contract Administrator 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 Paint materials for paint systems shall be products of a single manufacturer.

.3 Low odor products. Whenever possible, select products exhibiting low odor characteristics. If two products are otherwise equivalent, select the product with the lowest odor. Only qualified products with E2 or E3 ”Environmentally Friendly” rating are acceptable for use on this project.

.4 Paints, coatings, adhesives, solvents, cleaners, lubricants, and other fluids, shall:

.1 be water-based, water soluble, water clean-up.

.2 be non-flammable.

.3 be manufactured without compounds which contribute to ozone depletion in the upper atmosphere.

.4 be manufactured without compounds which contribute to smog in the lower atmosphere.

.5 do not contain methylene chloride, chlorinated hydrocarbons, toxic metal pigments.

.5 Water-borne surface coatings must be manufactured and transported in a manner that steps of process, including disposal of waste products arising therefrom, will meet requirements of applicable governmental acts, by-laws and regulations including, for

facilities located in Canada, Fisheries Act and Canadian Environmental Protection Act (CEPA).

.6 Water-borne surface coatings must not be formulated or manufactured with aromatic solvents, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavelant chromium or their compounds.

.7 Water-borne surface coatings must have a flash point of 61.0°C or greater.

.8 Both water-borne surface coatings and recycled water-borne surface coatings must be made by a process that does not release:

.1 Matter in undiluted production plant effluent generating a 'Biochemical Oxygen Demand' (BOD) in excess of 15 mg/L to a natural watercourse or a sewage treatment facility lacking secondary treatment.

.2 Total Suspended Solids (TSS) in undiluted production plant effluent in excess of 15 mg/L to a natural watercourse or a sewage treatment facility lacking secondary treatment.

.9 Water-borne paints and stains, and water borne varnishes must meet a minimum "Environmentally Friendly" E2 rating.

2.2 COLOURS

.1 Six (6) colours. Refer to drawings for paint colour schedule.

.2 Selection of colours will be from manufacturer’s full range of colours.

.3 Where specific products are available in a restricted range of colours, selection will be based on the limited range.

.4 Second coat in a 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. On-site tinting of painting materials is allowed only with Contract Administrator’s written permission.

.2 Paste, powder or catalyzed paint mixes shall be mixed in strict accordance with manufacturer's written instructions.

.3 Where thinner is used, addition shall not exceed paint manufacturer's recommendations. Do not use kerosene or any such organic solvents to thin water-based paints.

.4 Thin paint for spraying according in strict accordance with paint manufacturer's instructions. If directions are not on container, obtain instructions in writing from manufacturer and provide copy of instructions to Contract Administrator.

.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 shall be defined as the sheen rating of applied paint, in accordance with the following values:

Gloss Level Category	Units @ 60°	Units @ 85°
G1 - matte finish	max. 5	max. 10
G2 - velvet finish	max. 10	10 to 35
G3 - eggshell finish	10 to 25	10 to 35
G4 - satin finish	20 to 35	min. 35
G5 - semi-gloss finish	35 to 70	
G6 - gloss finish	70 to 85	
G7 - high gloss finish	> 85	

.2 Gloss level ratings of painted surfaces shall be as specified herein.

2.5 INTERIOR PAINTING SYSTEMS

.1 The following paint formulas requires a three coat finish as indicated in the MPI Architectural Painting Specifications Manual.

.2 Concrete Vertical Surfaces: including horizontal soffits

.1 INT 3.1A Latex G5 finish (over sealer).

.3 Concrete Horizontal Surfaces: floors and stairs

.1 INT 3.2B Alkyd floor enamel low gloss finish.

.4 Clay Masonry Units: pressed and extruded brick

.1 INT 4.1A Latex G5 finish.

.5 Concrete Masonry Units: smooth and split face block and brick.

.1 INT 4.2A Latex G5 finish.

.6 Structural Steel and Metal Fabrications: columns, beams, joists, etc.

.1 INT 5.1E Alkyd G5 finish.

.7 Galvanized Metal: doors, frames, railings, misc. steel, pipes, overhead decking, ducts, etc.

.1 INT 5.3A Latex G5 finish.

.8 Dimension Lumber: columns, beams, exposed joists, underside of decking, etc.

.1 INT 6.2D Latex G5 finish (over latex primer).

.9 Dressed Lumber: including doors, door and window frames casings, mouldings, etc.

.1 INT 6.3T Latex G5 finish (over latex primer).
.2 INT 6.3X Polyurethane, clear, moisture cured semi gloss finish.
.3 INT 6.3Y Polyurethane, clear, moisture cured semi gloss finish (over stain).

.10 Wood Paneling and Casework: partitions, panels, shelving, millwork, etc.

.1 Transparent Finish over Stain: INT 6.4V Polyurethane, clear moisture cured semi gloss finish (over stain).

.11 Wood Floors and Stairs: including hardwood flooring, etc.

.1 INT 6.5B Polyurethane varnish gloss finish (over stain).
.2 INT 6.5C Polyurethane varnish gloss finish.

.12 Plaster and Gypsum Board: gypsum wallboard, drywall, “sheet rock type material”, etc and textured finishes:

.1 INT 9.2A Latex G5 finish (over latex sealer) for walls.

.2 INT 9.2A Latex G1 finish (over latex sealer) for ceilings.

.13 Canvas and Cotton coverings:

.1 INT 10.1B Alkyd G5 finish.

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 Painting Specifications Manual except where specified otherwise.

.2 Apply all paint materials in accordance with paint manufacturer's written application instructions.

.3 Apply paint to all interior building materials unless otherwise noted.

3.3 PROTECTION

.1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage. If damaged, clean and restore such surfaces as directed by Contract Administrator.

.2 Cover or mask floors, windows and other ornamental hardware adjacent to areas being painted to prevent damage and to protect from paint drops and splatters. Use non-staining coverings.

.3 Protect items that are permanently attached such as Fire Labels on doors and frames.

.4 Protect factory finished products and equipment.

.5 Protect passing pedestrians, building occupants and general public in and about the building.

.6 Remove electrical cover plates, light fixtures, surface hardware on doors, door stops, bath accessories and other surface mounted fittings and fastenings prior to undertaking any painting operations. Store for re-installation after painting is completed.

.7 As painting operations progress place “WET PAINT” signs in occupied areas to approval of Contract Administrator.

3.4 EXAMINATION

.1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Contract Administrator all damage, defects, unsatisfactory or unfavourable conditions before proceeding with work.

.2 Conduct moisture testing of surfaces to be painted using a properly calibrated electronic moisture meter, except test concrete floors for moisture using a simple “cover patch test” and report findings to Contract Administrator. Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.

.3 Maximum moisture content as follows:

.1 Plaster and wallboard: 12%

.2 Masonry/Concrete: 12%

.3 Concrete Block/Brick: 12%

.4 Wood: 15%

3.5 CLEANING AND PREPARATION

.1 Clean and prepare surfaces in accordance with MPI 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. However, minimize the use of kerosene or any such organic solvents to clean up water-based paints.

.2 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.

.3 Sand existing surfaces with intact, smooth, high gloss coatings to provide adequate adhesion for new finishes.

.4 Where possible, prime 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.

.5 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.

.6 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, or vacuum cleaning.

.7 Touch up of shop primers with primer as specified in applicable section. Major touch-up including cleaning and painting of field connections, welds, rivets, nuts, washers, bolts, and damaged or defective paint and rusted areas, shall be by supplier of fabricated material.

.8 Do not apply paint until prepared surfaces have been accepted by Contract Administrator.

3.6 APPLICATION

.1 Method of application to be as approved by Contract Administrator. 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 a uniform layer using brush and/or roller of types suitable for application.

.2 Work paint into cracks, crevices and corners.

.3 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces shall be free of roller tracking and heavy stipple.

.4 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.

.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 properly 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 a uniform layer, with overlapping at edges of spray pattern.

.4 Brush out immediately all runs and sags.

.5 Use brushes 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 and only when specifically authorized by Contract Administrator.

.5 Apply coats of paint as a 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 tops of cupboards, cabinets and projecting ledges, both above and below sight lines as specified for surrounding surfaces.

.9 Finish closets and alcoves as specified for adjoining rooms.

.10 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

3.7 MECHANICAL/ELECTRICAL EQUIPMENT

.1 In finished areas: paint exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment with colour and finish to match adjacent surfaces, except as noted otherwise.

.2 In boiler room, mechanical and electrical rooms: paint exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment.

.3 In 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 disconnect switches for fire alarm system and exit light systems in red enamel.

.9 Paint all fire protection piping red.

.10 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.

.11 Do not paint interior transformers and substation equipment.

3.8 FIELD QUALITY CONTROL

.1 Field inspection of interior painting operations to be carried out by Contract Administrator.

.2 Advise Contract Administrator when each applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.

.3 Co-operate with Contract Administrator and provide access to all areas of the work.

.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.

3.9 RESTORATION

.1 Clean and re-install all 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 Contract Administrator Avoid scuffing newly applied paint.

.5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Contract Administrator.

END OF SECTION