

1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 09 51 23 - Acoustical Tile Ceilings.
- .3 Division 23 - Trim for recessed mechanical fixtures.
- .4 Section 26 50 00 - Lighting.

1.2 REFERENCES

- .1 American Society for Testing and Materials (ASTM International)
 - .1 ASTM C635-00, Specifications for the Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings.
 - .2 ASTM C636-96, Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.

1.3 DESIGN REQUIREMENTS

- .1 Maximum deflection: 1/360th of span to ASTM C635 deflection test.

1.4 SAMPLES

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit one representative model of each type ceiling suspension system.
- .3 Ceiling system to show basic construction and assembly, treatment at walls, recessed fixtures, splicing, interlocking, finishes, acoustical unit installation.

1.5 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit reflected ceiling plans for special grid patterns as indicated.
- .3 Indicate lay-out, and acoustical unit support at ceiling fixture.

1.6 REGULATORY REQUIREMENTS

- .1 Fire-resistance rated suspension system: certified by a Canadian Certification Organization accredited by Standards Council of Canada.

1.7 EXTRA MATERIAL

- .1 Provide extra materials of acoustic units in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Provide minimum 2% of each type of grid and molding or one carton of proportionally assorted components, whichever is greater, required for project for maintenance use. Store where directed.
- .3 Provide extra suspension system materials in unopened clearly marked cartons of 12 pieces each of 1220mm long tees and 610mm long tees.
- .4 Maintenance material to be of same production run as installed material.

1.8 WASTE MANAGEMENT AND DISPOSAL

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Dispose of waste material in appropriate on-site bins for recycling in accordance with site Waste Management Program.

2 Products

2.1 MATERIALS

- .1 Intermediate duty system to ASTM C635 with 24mm wide tee.
- .2 Basic materials for suspension system: commercial quality cold rolled steel.
- .3 Suspension system:
 - .1 Fire-rated two directional exposed tee bar grid. Use in the following areas:
 - .1 Where ACT is indicated under "Ceiling Material" on the Finish Schedule.
 - .2 Size:
 - .1 610mm x 610mm
 - .2 610mm x 1220mm
 - .3 Imperial measure grid.
- .4 Fire-resistance rated suspension system: certified for use in 1 hour, Certification Organizations Design No. floor/ceiling and roof/ceiling assembly, Certified two directional exposed tee bar grid.
- .5 Exposed tee bar grid components: shop painted satin sheen. Components die cut. Main tee with double web, rectangular bulb and 24 mm rolled cap on exposed face. Cross tee with rectangular bulb; web extended to form positive interlock with main tee webs; lower flange extended and offset to provide flush intersection.
 - .1 Exposed cap generally: factory painted satin sheen white.
 Acceptable Material:
 - .1 Armstrong - Prelude 7300 series and XL 8300 Series fire rated.
 - .2 CGC Interior - Donn DXL - Fire Rated.
- .6 Perimeter trim:
 - .1 Acceptable material:
 - .1 Armstrong - 7800 Series
 - .2 CGC-Compasso.
- .7 Metal Ceiling Transition Piece:
 - .1 Aluminum perimeter trim channel. Color as selected by Consultant from manufacturer STD Color Range.
 Acceptable Material:
 - .1 Armstrong - Axiom Perimeter Trim.
 - .2 CGC - Compasso
- .8 Hanger wire: galvanized soft annealed steel wire.
 - .1 3.6 mm diameter for access tile ceilings.
 - .2 to ULC design requirements for fire rated assemblies.
 - .3 2.6 mm diameter for other ceilings.
- .9 Hanger inserts: purpose made.
- .10 Carrying channels: 38 x 1.5 mm channel, of 1.5 mm thick painted steel.
- .11 Accessories: splices, clips, wire ties, retainers and wall molding flush, to complement suspension system components, as recommended by system manufacturer and as required by ULC Design No. for fire-rated assemblies.

3 Execution

3.1 INSTALLATION

- .1 Installation: in accordance with ASTM C636 except where specified otherwise.
- .2 Install suspension system to manufacturer's instructions and Certification Organizations tested design requirements.
- .3 Do not erect ceiling suspension system until work above ceiling has been inspected by Consultant.
- .4 Secure hangers to overhead structure using attachment methods as indicated.
- .5 Install hangers spaced at maximum 1200 mm centers and within 150 mm from ends of main tees.

- .6 Lay out center line of ceiling both ways, to provide balanced borders at room perimeter.
- .7 Ensure suspension system is co-ordinated with location of related components.
- .8 Install wall molding to provide correct ceiling height.
- .9 Completed suspension system to support super-imposed loads, such as lighting fixtures and speakers.
- .10 Support at light fixtures with additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.
- .11 Interlock cross member to main runner to provide rigid assembly.
- .12 Frame at openings for light fixtures, air diffusers, speakers and at changes in ceiling heights.
- .13 Install access splines to provide 10 percent ceiling access.
- .14 Finished ceiling system to be square with adjoining walls and level within 1:1000.
- .15 Expansion joints.
 - .1 Erect two main runners parallel, 25 mm apart, on building expansion joint line. Lay in strip of acoustic tile/board, painted black, 25% narrower than space between 2 'T' bars.
 - .2 Supply and install "Z" shaped metal trim pieces at each side of expansion joint. Design to accommodate plus or minus 25 mm movement and maintain visual closure. Finish metal components to match adjacent exposed metal trim. Provide backing plates behind butt joints.

3.2 CLEANING

- .1 Touch up scratches, abrasions, voids and other defects in painted surfaces.

End of Section

1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 78 00 - Closeout Procedures
- .3 Section 09 22 27 - Metal Acoustical Ceiling Suspension Assemblies.

1.2 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM C423-02a, Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
 - .2 ASTM E1264-98, Standard Classification for Acoustical Ceiling Products.
 - .3 ASTM E1477-98a(2003), Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers.
 - .4 ASTM C635 Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
 - .5 ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.
 - .6 ASTM E1264 Standard Classification for Acoustical Ceiling Products.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-51.34-M86, Vapor Barrier, Polyethylene Sheet, for Use in Building Construction and Amendment No. 1 1988.
 - .2 CAN/CGSB-92.1-M89, Sound Absorptive Prefabricated Acoustical Units.
- .3 Underwriter's Laboratories of Canada (ULC)
 - .1 CAN/ULC-S102-2003, Surface Burning Characteristics of Building Materials and Assemblies.
- .4 Ceilings and Interior Systems Construction Association (CISCA):
 - .1 CISCA Code of Practices.

1.3 SUBMITTALS

- .1 Make all submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Shop Drawings:
 - .1 Shop drawings shall be prepared and sealed by a Structural Engineer registered in the Province of Prince Edward Island.
 - .2 Submit suspension, linear wood panel grille, and acoustic panel systems layouts - include hangers, supports, carriers, and panel sizes and locations. Indicate insert and hanger spacing and fastening details, location of mechanical and electrical components, splicing method, and details of changes in level and junctions with dissimilar materials.
 - .3 Submit conditions at abutting, intersecting, and penetrating construction.
 - .4 Submit dimensioned locations of lighting fixtures, diffusers, sprinkler heads, P.A. system speakers, and other items that pierce the ceiling plane.
- .3 Product Data:
 - .1 Submit manufacturer's technical literature and installation instructions describing components, materials and finishes.
- .4 Samples:
 - .1 Minimum 150mm x 150mm samples of specified acoustical panel. Submit duplicate full size samples of each type acoustical units. Submit one full-size sample of each type of tile panel to be used.
- .5 Certificates:
 - .1 Submit written certification stating that suspended ceiling systems are designed for adequate support of electrical fixtures as required by the current bulletin of the Electrical Safety Authority.

1.4 DESIGN REQUIREMENTS

- .1 Performance Requirements:
 - .1 Provide acoustical ceiling assembly designed and tested to provide surface burning characteristics (ASTM E84) as follows:
 - .1 Flamespread: 0.
 - .2 Smoke Development: 0.
 - .2 Provide acoustical ceiling system which has been manufactured, fabricated and installed to provide Noise Reduction Coefficient (NRC) rating.
- .2 Design all systems for adequate support of electrical fixtures as required by the current bulletin of the Electrical Safety Authority. Systems are not designed to carry the weight of electrical equipment.
- .3 Suspension Systems:
 - .1 Maximum deflection: 1/360th of span to ASTM C635 deflection test.
 - .2 Design ceilings to resist safely and effectively all loads and effects of loads in accordance with part 4.0 of the National Building Code.
 - .3 Design ceiling suspension systems in accordance with ASTM C636, ASTM C754 and manufacturer's printed directions.
 - .4 Design suspension system for seismic considerations under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the Province of Prince Edward Island.
 - .5 Design hanger anchor and entire suspension system static loading not to exceed 25% of their ultimate capacity including lighting fixture dead loads.
 - .6 Design suspension system to support weight of mechanical and electrical items such as air handling boots and lighting fixtures, and with adequate support to allow rotation/relocation of light fixtures. Acoustic panel system is not designed to carry the weight of mechanical and electrical equipment.
 - .7 Design sub framing as necessary to accommodate, to circumvent, and to avoid conflicts and interferences where ducts or equipment prevent regular spacing of hangers.

1.5 REGULATORY REQUIREMENTS

- .1 Fire resistance: NFPA Class A fire retardant treated wood required by code, to conform to ASTM E84.

1.6 ENVIRONMENTAL REQUIREMENTS

- .1 The building shall be enclosed, the air conditioning system shall be operating with proper filters in place, and the proper temperature and humidity conditions shall be established before, during, and following installation. Building areas to receive ceilings shall be free of construction dust and debris.
- .2 Do not install the Work of this Section until:
 - .1 Mechanical and Electrical Work above the ceiling is complete.
 - .2 Maintain uniform humidity of 20-40% before and during installation.
 - .3 Ventilation is adequate to remove excess moisture.
 - .4 Uniform Temperature 13-21 degrees C.
- .3 Permit wet work to dry before commencement of installation.
- .4 Store materials in work area 48 hours prior to installation.
- .5 Areas are closed and protected against weather and maintained at no less than 10 degrees C.

1.7 DELIVERY, STORAGE, AND HANDLING

- .1 Transport, handle and store material in manner to prevent warp, twist, and damage to panel edges and surfaces in accordance with Manufacturer's recommendations.
- .2 Any bent, twisted, warped, or otherwise damaged tee grid suspension components, panels, and or trim shall not be used under any circumstances. Replace such damaged items with new straight,

- undamaged and acceptable material at no cost to Owner.
- .3 Store material in warm, dry place away from water and the elements. Protect against undue loading stresses and shock.
- .4 All packaged material shall be delivered in original manufacturer's wrappers and containers with labels and seals intact. Cartons for all fire rated materials shall bear U.L label.

1.8 EXTRA MATERIALS

- .1 Provide extra materials of acoustic units in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Provide extra suspension system materials in unopened clearly marked cartons of 12 pieces each of 1220mm long tees and 610mm long tees.
- .3 Provide acoustical units amounting to 2% of gross ceiling area for each pattern and type specified to nearest full carton, minimum two cartons.
- .4 Extra materials to be from same production run as installed materials.
- .5 Clearly identify each type of acoustic unit, including color and texture.
- .6 Deliver to site, upon completion of the Work of this Section.
- .7 Store where directed by Consultant

1.9 WARRANTY

- .1 Acoustical Panel: Submit a written warranty executed by the manufacturer, agreeing to repair or replacement of acoustical panels that falls within the Warranty period. Failure include, but are not limited to:
 - .1 Acoustical Panels: Sagging or warping
 - .2 Grid System: Rusting and manufacturers defects
- .2 Warranty period for acoustical panels is one (1) year from date of Substantial Completion.
- .3 The warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

1.10 WASTE MANAGEMENT AND DISPOSAL

- .1 Collect and separate for disposal waste material in appropriate on-site bins in accordance with Waste Management Plan (WMP).

2 Products

2.1 ACOUSTICAL CEILING PANELS

- .1 Acoustic units for suspended ceiling system: to CAN/CGSB-92.1.
 - .1 Class A.
 - .2 Textures: Fine Fissured.
 - .3 Flame spread rating of 25 or less in accordance with CAN/ULC-S102.
 - .4 Smoke developed 25 or less in accordance with CAN/ULC-S102.
 - .5 Noise Reduction Coefficient (NRC) designation of .55.
 - .6 Light Reflectance (LR) range of .85 to ASTM E1477.
 - .7 Edge type square, lay-in
 - .8 Color white.
 - .9 Size 24" x 48" x 5/8" thick.
 - .10 Shape flat.
 - .11 Fire-resistance rated, certified for use in 1 hour floor/ceiling and roof/ceiling assembly.
 - .12 Acceptable Material:
 - .1 Armstrong - Fine Fissured Ceramaguard (Unperforated) #605
- .2 Acoustic units for suspended ceiling system: to CAN/CGSB-92.1.M77.
 - .1 Class A

- .2 Flame spread rating of 25 or less in accordance with CAN/ULC-S102.
- .3 Smoke developed 25 or less in accordance with ASTM E1264.
- .4 Noise Reduction Coefficient (NRC) designation of .40.
- .5 Light Reflectance (LR) range of .90 to ASTM E1477.
- .6 Ceiling plenum sound transmission range 35 - 39.
- .7 Edge type square.
- .8 Color white.
- .9 Size 610 x 1220 x 19 mm thick, to be imperial measure.
- .10 Shape flat.
- .11 Fire rated.
- .12 Standard of Acceptance:
 - .1 Armstrong - Fine Fissured Ceramaguard (Unperforated) #605
- .3 Adhesive: low VOC type recommended by acoustic unit manufacturer.
- .4 Staples, nails and screws: to CSA B111 non-corrosive finish as recommended by acoustic unit manufacturer.
- .5 Fibrous acoustical media: To match existing.
- .6 Spacers: As per manufacturer's specs.
- .7 Polyethylene: to CAN/CGSB-51.34, 0.15 mm thick.
- .8 Hold down clips: purpose made clips to secure tile to suspension system, approved for use in fire-rated systems.

2.2 ACCESSORIES

- .1 Acousti-Tough Keep Clips:
 - .1 Material: Steel.
 - .2 Manufacturer Designation: {ARC-100 for 25.4 mm panels} [ARC-200 for 38 mm and 51 mm panels]
- .2 Tectum Painted Head Drywall Screws:
 - .1 Material: Steel.
 - .2 Length: [41 mm] [57 mm] [76 mm]
 - .3 Color: [Natural] [White].
- .3 Tectum Touch-Up Paint:
 - .1 Color: [Natural] [White].

3 Execution

3.1 INTERFACE WITH OTHER WORK

- .1 Co-ordinate ceiling work to accommodate components of other sections, such as light fixtures, diffusers, speakers, sprinkler heads, to be built into acoustical ceiling components.

3.2 EXAMINATION

- .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.

3.3 MANUFACTURER'S INSTRUCTIONS

- .1 Comply with the instructions and recommendations of the ceiling system manufacturer.
- .2 Install materials in accordance with governing regulations, fire resistance rating requirements and industry standards applicable to work.
 - .1 Comply with Cisca Code of Practices.

3.4 INSTALLATION

- .1 General: Do not begin installation until materials sufficient to complete an entire room are received and prepared for installation.
- .2 Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less-than-half width units at borders.
- .3 Symmetrically locate grid layout in each space. Coordinate work with other trades so that lighting fixtures, grilles and other ceiling fixtures work with grid layout.
- .4 Do not use universal splices or other splices that would obstruct passage of recessed lighting fixtures through grid openings or limit fixture relocation upon flanges of ceiling grids.
- .5 Support suspension system from structure above, not from ductwork, metal deck, equipment or piping.
- .6 Space hangers not more than 152 mm from ends and not more than 1219 mm on centers on runners.
- .7 Install wall moldings at the perimeter of each acoustical ceiling area and at locations where edge of units would otherwise be exposed.
 - .1 Secure moldings to supporting construction by fastening with screw anchors into the substrate, through holes drilled in vertical leg. Space holes not more than 76 mm from each end and not more than 406 mm on center along each molding.
 - .2 Level moldings with ceiling suspension system, to a level tolerance of 3 mm in 3660 mm.
 - .3 Miter corners of moldings accurately to provide hairline joints, securely connected to prevent dislocation. Cope exposed flanges of intersecting suspension system members, so that flange faces will be flush.
 - .4 Furnish additional tees for supporting grilles, diffusers and light fixtures. Refer to reflected ceiling, HVAC and electrical plans for locations.
 - .5 Provide reveal edge at walls, other abutting vertical surfaces.
- .8 Field paint cut edges to match surface color and sheen.
- .9 Arrange acoustical units and orient directionally patterned units, if any, in manner shown on reflected ceiling plans.

3.5 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.

3.6 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 Owner.

End of Section

1 General

1.1 RELATED SECTIONS

- .1 Section 09 65 16 - Resilient Sheet Flooring

1.2 DESCRIPTION OF WORK

- .1 The work of this Section comprises the furnishing of all equipment, labour and materials necessary for the supply and installation of the following, including all accessories, as specified in this Section and indicated on the Finish Schedule and Drawings:
 - .1 Sheet vinyl flooring in all locations where sheet vinyl (RSF) is indicated as the floor material on the Finish Schedule.
 - .2 Anti-static dissipative in all rooms where (A-RSF) is indicated as the floor material on the Finish Schedule.
 - .3 Resilient base in all rooms where resilient flooring (RSF & VCT) is indicated as the floor material and resilient base (RBR) is indicated as the base on the Finish Schedule.
 - .4 Preparation of both new and existing sub-floors to receive sheet vinyl, including filling of saw-cut control joints.
- .2 The substrate for the RSF will be:
 - .1 Existing concrete floor slabs on steel floor decking

1.3 REFERENCES

- .1 American Society for Testing and Materials (ASTM International)
 - .1 ASTM F1303-99, Specification for Sheet Vinyl Floor Covering with Backing.
- .2 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-ISO 14040-97, Environmental Management - Life Cycle Assessment - Principles and Framework (Adopted ISO 14040:1997, first edition).

1.4 SAMPLES

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit duplicate 300 x 300 mm sample pieces of sheet material, 300 mm long base,.

1.5 CLOSEOUT SUBMITTALS

- .1 Provide maintenance data for resilient flooring for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.6 QUALIFICATIONS OF APPLICATOR

- .1 Applicator must be approved by the sheet flooring manufacturer for the application of the manufacturer's products used on this project and have had previous experience with the installation of this particular product and the heat welding of seams.

1.7 ENVIRONMENTAL REQUIREMENTS

- .1 Maintain air temperature and structural base temperature at flooring installation area above 20° for 48 hours before, during and 48 hours after installation.

1.8 MOCK-UP

- .1 Installer shall prepare a mock-up for each type of resilient flooring installation which shall be inspected by the consult and the flooring manufacturer's representative, and if accepted shall serve as the standard for quality for the remainder of the flooring installation.
- .2 Provided mock-ups as follows:
 - .1 Sheet vinyl flooring (RSF)

- .2 Wood patterned sheet vinyl flooring (W-RSF)
- .3 If acceptable to all parties the mock-ups will remain as the finished flooring.
- .4 If the mock-up is not acceptable and in the opinion of the Consultant is beyond reasonable remedial repair the Contractor will, at no cost to the Owner, remove the mock-up, clean the concrete floor and bring another installer on site to provide another mock-up for inspection.

1.9 EXTRA MATERIALS

- .1 Provide extra materials of resilient sheet flooring and adhesives in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Provide 2% of each color, pattern and type flooring material required for project for maintenance use.
- .3 Extra materials to be in one piece and from same production run as installed materials.
- .4 Clearly identify each roll of sheet flooring and each container of adhesive.

1.10 WARRANTY

- .1 In addition to the general standard one (1) year guarantee and running currently with it, the flooring installer shall provide a separate five (5) year warranty, stating that during that period the flooring material as installed:
 - .1 Will be free from manufacturing defects.
 - .2 Will not wear true with the color and pattern.
 - .3 Will not de-adhere from the concrete floor slab and/or "bubble".
 - .4 The joints will not become un-sealed
- .2 In the event that during this period any or all of the above problems should occur, the manufacturer will provide at no cost to the Owner all labor and materials necessary to rectify the problem the satisfaction of the Owner.

1.11 WASTE MANAGEMENT AND DISPOSAL

- .1 Dispose of waste material in appropriate on-site bins in accordance with site Waste Management Plan.

2 Products

2.1 MATERIALS, SHEET VINYL

- .1 Sheet Vinyl:
 - .1 To CSA A-126.6 and ASTM F-1303-90 (RSF)
 - .2 Wearing surface: TYPE II, 2.0mm thickness.
 - .3 Grade: 1
 - .4 Fire test data
 - .1 Flame spread: 100
 - .2 Smoke developed: 280 or less
 - .5 Backing: none
 - .6 Pattern: travertine marble
 - .7 Texture: smooth
 - .8 Overall goodness: 2.0mm (includes wear layer)
 - .9 Size: 2m roll
 - .10 Warranty: five (5) years
 - .11 Color: maximum two (2) colors selected by Consultant from manufacturer's standard range
 - .12 Acceptable Material
 - .1 Armstrong - Medintech
- .2 Resilient Base:
 - .1 Top set, coved 3.2 mm thick rubber, 100 mm high including premolded end stops and external corners.

- .2 Maximum two (2) colors selected by Consultant from manufacturer's standard range.
- .3 Acceptable Materials:
 - .1 Flextile
 - .2 Johnsonite
 - .3 Amtico "Marathon Classic"
- .3 Primers and adhesives:
 - .1 Primers and adhesives: as recommended by resilient flooring manufacturer for specific installation, except products with VOC's not permitted.
- .4 Sub-floor filler and leveler: while premix latex requiring water only to produce cementitious paste.
- .5 Edge strips: extruded vinyl, color to be selected by Consultant.
- .6 Sealer: Owner will advise name of product
- .7 Wax: Owner will advise name of product

2.2 MATERIALS, BASE

- .1 Resilient Base:
 - .1 Top set, coved 3.2 mm thick rubber, 100 mm high including premolded end stops and external corners.
 - .2 Maximum two (2) colors selected by Consultant from manufacturer's standard range.
 - .3 Acceptable Materials:
 - .1 Flextile
 - .2 Johnsonite
 - .3 Amtico "Marathon Classic"
- .2 Primers and adhesives:
 - .1 Primers and adhesives: as recommended by resilient flooring manufacturer for specific installation, except products with VOC's not permitted.
- .3 Sub-floor filler and leveler: while premix latex requiring water only to produce cementitious paste.
- .4 Edge strips: extruded vinyl, color to be selected by Consultant.
- .5 Sealer: Owner will advise name of product
- .6 Wax: Owner will advise name of product

3 Execution

3.1 SITE VERIFICATION OF CONDITIONS

- .1 Ensure concrete floors are clean and dry by using test methods recommended by flooring manufacturer.

3.2 PREPARATION

- .1 Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler.
- .2 Clean floor and apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler cured and dry.
- .3 Prime to resilient flooring manufacturer's printed instructions.

3.3 APPLICATION: FLOORING

- .1 Provide a high ventilation rate, with maximum outside air, during installation, and for 48 to 72 hours after installation. If possible, vent directly to the outside. Do not let contaminated air recirculate through a district or whole building air distribution system. Maintain extra ventilation for at least one month following building occupation.
- .2 Apply low VOC adhesive uniformly using recommended trowel. Do not spread more adhesive than can be covered by flooring before initial set takes place.
- .3 Lay flooring with seams parallel to building lines to produce a minimum number of seams. Border widths minimum 1/3 width of full material. No exposed seams in open floor.

- .4 Run sheets in direction of traffic. according to manufacturer's printed instructions.
- .5 Heat weld seams of linoleum sheet flooring in accordance with manufacturer's printed instructions.
- .6 As installation progresses, and after installation roll flooring with 45 kg minimum roller to ensure full adhesion.
- .7 Cut flooring neatly around fixed objects.
- .8 Install feature strips and floor markings where indicated. Fit joints tightly.
- .9 Install flooring in pan type floor access covers. Maintain floor pattern.
- .10 Continue flooring over areas which will be under built-in furniture.
- .11 Continue flooring through areas to receive movable type partitions without interrupting floor pattern.
- .12 Terminate flooring at centerline of door in openings where adjacent floor finish or color is dissimilar.
- .13 Install edge strips at unprotected or exposed edges where flooring terminates.

3.4 APPLICATION: BASE

- .1 Install flash cove base where specified by turning flooring up walls to form coved self bases. Install a fillet at intersection of wall and floor to support cove. Finish with cap strip.
- .2 Lay out base to keep number of joints at minimum.
- .3 Clean substrate and prime with one coat of adhesive.
- .4 Apply adhesive to back of base.
- .5 Set base against wall and floor surfaces tightly by using 3 kg hand roller.
- .6 Install straight and level to variation of 1:1000.
- .7 Scribe and fit to door frames and other obstructions.
- .8 Cope internal corners. Use premolded corner units for right angle external corners. Use formed straight base material for external corners of other angles.
- .9 Use toeless type base where floor finish will be carpet, coved type elsewhere.
- .10 Install toeless type base before installation of carpet on floors.
- .11 Heat weld base in accordance with manufacturer's printed instructions.

3.5 CLEANING AND WAXING

- .1 Remove excess adhesive from floor, base and wall surfaces without damage.
- .2 Clean, seal and wax floor and base surface to flooring manufacturer's printed instructions and as directed by the Owner using only the products requested by the Owner.

3.6 PROTECTION

- .1 Protect new floors from time of final set of adhesive until final waxing.
- .2 Prohibit traffic on floor for 48 hours after installation.
- .3 Use only water-based coating for linoleum.

End of Section

1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 35 43 - Environmental Procedures.
- .3 Section 01 61 00 - Common Project Requirements.
- .4 Section 01 77 00 - Closeout Procedures.
- .5 Section 05 50 00 - Metal Fabrications.
- .6 Section 08 11 13 - Hollow Metal Doors and Frames.

1.2 REFERENCES

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

1.3 QUALITY ASSURANCE

- .1 Qualifications:
 - .1 Contractor: minimum of five years proven satisfactory experience.
- .2 Standard of Acceptance:
 - .1 Walls: No defects visible from a distance of 1000 mm at 900 to surface.
 - .2 Soffits: No defects visible from floor at 450 to surface when viewed using final lighting source.
 - .3 Final coat to exhibit uniformity of color and uniformity of sheen across full surface area.

1.4 HEALTH AND SAFETY

- .1 Occupational Health and Safety in accordance with Section 01 35 29 - Health and Safety Requirements.

1.5 ENVIRONMENTAL PERFORMANCE REQUIREMENTS

- .1 Environment Choice Program:
 - .1 Provide paint products certified to meet the requirements of the Environmental Choice Program, Department of the Environment.
 - .2 Submit CSA Certification Reports that products proposed for use are certified under the Environmental Choice Program.

1.6 INSPECTION REQUIREMENTS

- .1 Interior surfaces requiring painting shall be inspected by Consultant who shall notify this Contractor in writing of defects or problems, prior to commencing painting work, or after prime coat shows defects in substrate.

1.7 QUALITY CONTROL

- .1 Provide mock up in accordance with Section 01 45 00 - Testing and Quality Control.
- .2 When requested by Consultant, prepare and paint designated surface, area, room or item (in each color scheme) to requirements specified herein, with specified paint or coating showing selected colors, 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.

1.8 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Samples:
 - .1 Submit full range color sample chips to indicate where color availability is restricted.
 - .2 Submit duplicate 200 mm sample panels of each paint with specified paint or coating in colors, gloss/sheen and textures required.
- .3 Manufacturer's Instructions:
 - .1 Submit manufacturer's installation and instructions.
- .4 Closeout Submittals: submit maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals include following:
 - .1 Product name, type and use.
 - .2 Manufacturer's product number.
 - .3 Color numbers and associated locations.

1.9 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Project 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 Color number in accordance with established color 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 7°C to 25°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 Consultant. After completion of operations, return areas to clean condition to approval of Consultant.
- .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.

1.10 FIRE SAFETY REQUIREMENTS

- .1 Provide one - 3kg Type ABC 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.

1.11 SITE CONDITIONS

- .1 Ventilate enclosed spaces.
- .2 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.

1.12 EXTRA MATERIAL

- .1 Submit maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Submit one - one liter can of each type and color of primer. Identify color and paint type in relation to established color schedule and finish system.
- .3 Deliver and store where directed.

1.13 SCHEDULING OF THE WORK

- .1 Submit work schedule for various stages of painting to Consultant for approval. Submit schedule minimum of 48 hours in advance of proposed operations.
- .2 Obtain written authorization from Consultant for changes in work schedule.
- .3 Schedule painting operations to prevent disruption of occupants in and about the building.

1.14 WASTE MANAGEMENT AND DISPOSAL

- .1 Remove from site and dispose of packaging materials to appropriate recycling facilities.
- .2 Collect and separate for disposal waste material in appropriate on-site bins for recycling in accordance with Waste Management Plan.
- .3 Separate for reuse and place in designated containers steel waste in accordance with Waste Management Plan.
- .4 Handle and dispose of hazardous materials in accordance with CEPA, regulations.
- .5 Unused paint materials must be disposed of at official hazardous material collections site.

2 Products

2.1 MATERIALS

- .1 Provide paint materials for paint systems from single manufacturer.
- .2 Conform to latest MPI requirements for painting work including preparation and priming.
- .3 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, etc.) in accordance with MPI Architectural Painting Specification Manual "Approved Product" listing.
- .4 Linseed oil, shellac, and turpentine: highest quality product from approved manufacturer listed in MPI Architectural Painting Specification Manual, compatible with other coating materials as required.
- .5 Provide paint products meeting MPI "Environmentally Friendly", E2 ratings based on VOC (EPA Method 24) content levels.
- .6 Interior: (epoxy) Standard of Acceptance
 - .1 PPG Aquapox WB
 - .2 Devco - Truguard 4406 series.
- .7 Interior Latex: Color T.B.D by Owner
 - .1 Colour Your World "Velvet Pastel" 5250 Line.
 - .2 CIL - 9490 Series.

- .3 Glidden - 5800 Series.
- .4 PPG - 6 Series
- .8 Primers
 - .1 Latex or alkyd as recommended by paint manufacturer except where specifically indicated otherwise.

2.2 COLOURS

- .1 Paint color to be Benjamin Moore # 0C-130 or Benjamin Moore # 2123-30. Confirm color with client prior to purchase..
- .2 Second coat in three coat system to be tinted slightly lighter color than top coat to show visible difference between coats.

2.3 MIXING AND TINTING

- .1 Perform color tinting operations prior to delivery of paint to site in strict accordance with manufacturer's written instructions.
- .2 Paste, powder or catalyzed paint mixes shall be mixed.
- .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 Consultant.
- .5 Re-mix paint prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and color and gloss uniformity.

2.4 GLOSS/SHEEN RATINGS

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

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

2.5 INTERIOR PAINTING SYSTEMS

- .1 Concrete masonry units: smooth face block:
 - .1 INT 4.2A - Latex gloss level 3-egg shell finish (over latex sealer).
 - .2 INT 4.2B - Latex gloss level 5-semi-gloss smooth texture type aggregate coating.
 - .3 INT 4.2C - Alkyd gloss level 5-semi-gloss finish.
 - .4 INT 4.2D - High performance architectural latex gloss level 5-semi-gloss finish.
 - .5 INT 4.2E - Institutional low odor/low VOC gloss level 5-semi-gloss.
 - .6 INT 4.2F - Epoxy (tile-like) finish for dry environments.
 - .7 INT 4.2G - Epoxy (tile-like) finish for wet environments.
 - .8 INT 4.2H - Multicolor finish.
 - .9 INT 4.2L - Water repellent non-paintable finish do not use on light weight block.
 - .10 INT 4.2M - Water repellent paintable finish do not use on light weight block.
 - .11 INT 4.2N - Alkyd gloss level 5-semi-gloss finish (over latex sealer).
- .2 Galvanized metal: doors, frames, railings, misc. steel, pipes, overhead decking, and ducts.
 - .1 INT 5.3A - Latex gloss level 5-semi-gloss finish.
 - .2 INT 5.3B - Waterborne light industrial gloss level 5-semi-gloss coating.

- .3 INT 5.3C - Alkyd gloss level 5-semi-gloss finish (over cementitious primer).
- .4 INT 5.3D - Epoxy finish (over epoxy primer).
- .5 INT 5.3E - Epoxy finish (over vinyl wash primer and epoxy primer).
- .6 INT 5.3F - Alkyd dry wall finish for use in low contact/low traffic areas only.
- .7 INT 5.3G - Aluminum paint finish.
- .8 INT 5.3J - Latex gloss level finish (over waterborne primer).
- .9 INT 5.3K - Waterborne light industrial gloss level 5-semi-gloss coating (over waterborne primer).
- .10 INT 5.3L - Alkyd gloss level 5-semi-gloss finish (over non-cementitious primer).
- .11 INT 5.3M - High performance architectural latex gloss level 5-semi-gloss finish.
- .12 INT 5.3N - Institutional low odor/low VOC gloss level 5-semi-gloss finish.
- .3 Plaster and gypsum board: gypsum wallboard, drywall, "sheet rock type material", and textured finishes:
 - .1 INT 9.2A - Latex gloss level 3-eggshell finish (over latex sealer).
 - .2 INT 9.2B - High performance architectural latex gloss level finish.
 - .3 INT 9.2C - Alkyd gloss level 3-eggshell finish (over latex sealer).
 - .4 INT 9.2E - Epoxy (tile-like) finish.
 - .5 INT 9.2F - Waterborne epoxy (tile-like) finish.
 - .6 INT 9.2G - Multicolor finish.
 - .7 INT 9.2H - Clear fire retardant coating (ULC rated).
 - .8 INT 9.2K - Latex gloss level 3-eggshell finish (over alkyd primer) for plaster surfaces only.
 - .9 INT 9.2M - Institutional low odor/low VOC gloss level 3-eggshell finish.

2.6 SPECIAL FINISHES

- .1 ____.

3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 GENERAL

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

3.3 EXAMINATION

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

3.4 PREPARATION

- .1 Protection:
 - .1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking.
 - .2 Protect items that are permanently attached such as Fire Labels on doors and frames.
 - .3 Protect factory finished products and equipment.
- .2 Surface Preparation:
 - .1 Remove electrical cover plates, light fixtures, surface hardware on doors, bath accessories and other surface mounted equipment, fittings and fastenings prior to undertaking painting

- operations. Identify and store items in secure location and re-installed after painting is completed.
- .2 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.
- .3 Place "WET PAINT" signs in occupied areas as painting operations progress.
- .3 Clean and prepare surfaces in accordance with MPI Architectural Painting Specification Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:
 - .1 Remove dust, dirt, and other surface debris by vacuuming, wiping with dry, clean cloths or compressed air.

3.5 APPLICATION

- .1 Method of application to be as approved by Consultant.
- .2 Brush and Roller Application:
 - .1 Apply paint in uniform layer using brush and/or roller type suitable for application.
 - .2 Work paint into cracks, crevices and corners.
 - .3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.
 - .4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces free of roller tracking and heavy stipple.
 - .5 Remove runs, sags and brush marks from finished work and repaint.
- .3 Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access.
- .4 Apply coats of paint continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
- .5 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- .6 Sand and dust between coats to remove visible defects.
- .7 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as tops of interior cupboards and cabinets and projecting ledges.
- .8 Finish inside of cupboards and cabinets as specified for outside 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.

3.6 MECHANICAL/ELECTRICAL EQUIPMENT

- .1 N/A

3.7 RESTORATION

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

End of Section