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Division 9

09120 Ceiling Suspension for Acoustical Ceilings

Part 1 - General

1.01 System Description

- .1 Suspended ceiling system comprised of T-Bar main runners and cross tees forming an interlocking two directional grid system in modules for installation of Acoustical Tile and Lay-In Panels, Air Diffusers and Light Fixtures.

1.02 Work Included

- .1 Provide labor, materials, services and equipment necessary to complete the ceiling suspension system.

1.03 Related Work

- .1 [Section [09___] Acoustical Suspension.]
- .2 [Section [09___] Acoustical Ceilings.]
- .3 [Section [09___] Plaster and Gypsum Board Ceilings.]
- .4 [Section [09___] Acoustical Tile and Lay-In Panels.]
- .5 [Section [09___] Drywall Partitions.]
- .6 [Section [15___] Air Handling Units.]
- .7 [Section [16___] Lighting Fixtures.]
- .8 [Section [____] [_____].]

1.04 References

- .1 National Building Code of Canada.
- .2 [Ontario] [____] Building Code.
- .3 Other national or local code requirements as applicable.
- .4 ASTM C635-97 Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
- .5 ASTM C636-96 Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
- .6 ASTM E 119-98 – Standard Test Methods for Fire Tests of Building Construction and Materials.
- .7 [CAN/ULC-S101-M89 Standard Methods of Fire Endurance Tests of Building Construction and Materials]

- .8 CSA S-136-94 Cold Formed Steel Structural Members
- .9 [ULC Fire Resistance Ratings] [UL Fire Resistance Directory].
- .10 CISCA Ceiling Systems Installation Handbook.
- .11 ASTM A366/A366M-97 - Standard Specification for Steel, Sheet, Carbon, Cold-Rolled, Commercial Quality.

1.05 Quality Assurance

- .1 Installer shall have not less than three years experience installing ceiling suspension systems.

1.06 Design Criteria

- .1 Conform to the requirements of ASTM A635 and ASTM A636.
Conform to the requirements of specified fire rated assemblies [_____].
- .2 For projects where the suspended ceiling is designed as a structural system, the ceiling design shall be checked for both strength and serviceability limit states based on the requirements of the [National Building Code of Canada and CSA S136] [Ontario Building Code and S136] [Other National or Local Codes as applicable].
- .3 The serviceability limit state shall be checked for a deflection limit of L/360.
Provide appropriate member selections and hanger locations for non-fire rated ceilings where the ceiling carries significant fixture weights (and/or air handling system weights) that are not hung independently.

1.07 Project Conditions

- .1 Prior to installation, building shall be enclosed with all windows and exterior doors in place and glazed, roof watertight, permanent heating and cooling equipment shall be in operation and all plaster, concrete and terrazzo work shall have been completed and dry.
- .2 Interior temperature shall range from 60° F (16° C) to 85° F (29° C). Relative humidity of not more than 70%

1.08 Delivery, Storage and Handling

- .1 Deliver materials in unopened packages. Label packages with manufacturer's name, item number and description.
- .2 Store materials in a dry location that will prevent damage.
- .3 Handle materials to prevent warping, twisting and damage of any kind.

1.09 Coordination With Other Trades

- .1 Coordinate with other work supported by or penetrating ceiling, including mechanical/electrical work and partitions.
- .2 Mechanical Ductwork and Electrical work above the ceiling suspension system shall be complete before installation of suspension system.

1.10 Samples

- .1 Submit samples to the requirements of Section [01____].
- .2 Submit one sample representing [each type of] ceiling suspension system including a main tee, cross tee, hanger wire, hanger wire insert and accessories.
- .3 Submit manufacturers printed color selector for representation of manufacturers color range.

1.11 Drawings

- .1 Submit [shop drawings to the requirements of Section [01____] [manufacturers standard product details]. For projects where the suspended ceiling is designed as a structural system (see 1.06), submit drawings showing the maximum allowable fixture weight and locations; member size, thickness, material type and locations; splice locations and hanger locations.
- .2 [Drawings to be certified by a professional engineer].

1.12 Certificate of Compliance

- .1 Provide a certificate of compliance stating that the as-built suspension ceiling system, including materials and installation, conforms with the requirements of this specification and the drawings submitted under Section 1.10a.

1.13 Mock-up

- .1 Supply and install mock-up to the requirements of Section [01____].

1.14 Maintenance Materials

- .1 Supply maintenance materials to the requirements of Section [01____].
- .2 Supply [_%] of ceiling suspension system components. Clearly identify products. Store where directed.

Part 2 - Products**2.01 System Description**

- .1 Acoustical ceiling suspension system[s] conforming to ASTM A635 supplied by Bailey Metal Products, One Caldari Road, Concord Ontario L4K 3Z9 (905) 738-6738 (1-800-668-2154 Canada) (1-800-419-5719 USA) shall be the base bid. Alternative manufacturers may bid providing that the specifications and details are met and approval to bid given by the [Engineer] [Architect] [Consultant]. Applications for approval must be submitted 7 days prior to bid closing.

2.02 Materials

- .1 Web (Body) material: Hot Dipped Galvanized (HDG) steel to ASTM A366].
- .2 Cap material: [commercial quality cold rolled steel] [aluminum] with finish on exposed surface.
- .3 Finish on exposed cap surface:
 - .1 Standard Painted finishes:[Standard Tile White][Black][Platinum][Parchment][Haze][Manilla] [Sandstone][Taupe] polyester or baked enamel finish. Gloss level to be 20% +/- 5%.
 - .2 Custom painted colour to closely match sample:[_____] polyester or baked enamel finish. Gloss level to be 20% +/- 5%.
 - .3 Metallic finishes: [Chrome][Brass].
- .4 Suspension system[s]:
 - .1 Non-rated 15/16" exposed two directional suspension system,
 - .1 [Lance-Lock System 900 BEH - 15/16" intermediate duty system].
 - .2 [Lance-Lock 900HD BEHHD- 15/16" heavy duty system].
 - .3 [Lance-Lock 700 BEH - 15/16" environmental intermediate duty system].
 - .4 [Lance-Lock 700HD BEHHD- 15/16" environmental heavy duty system].
 - .5 [Lance-Lock 400 BEH - 15/16" all aluminum high humidity system].
 - .6 Module size to be [24"x24"] [600mm x 600mm] [24"x48"] [600mm x 1200mm] [30" x 30"] [750mm x 750mm] [36"x36"] [900mmx 900mm] [20"x60"] [500mm x 1500mm] [24" x 60"] [600mm x 1500mm] [____x_____].
 - .2 Fire-rated 15/16" exposed two directional suspension system certified for use in UL Design No. [____],
 - .1 [Lance-Lock 1800 BEF - 15/16" fire-rated intermediate duty].
 - .2 [Lance-Lock 1400 BEF - 15/16" fire-rated environmental intermediate duty].
 - .3 Module size to be [24"x24"] [600mm x 600mm] [24"x48"] [600mm x 1200mm].
 - .3 Non-rated 9/16 exposed two directional suspension system,
 - .1 [Shadowline 800 BSL - 9/16" standard intermediate duty.
 - .2 [Shadowline 600 BSL - 9/16" environmental intermediate duty.
 - .3 Module size to be [24"x24"] [600mm x 600mm] [24"x48"] [600mm x 1200mm] [30" x 30"] [750mm x 750mm] [20"x60"] [500mm x 1500mm][____x_____].
 - .4 Non-rated 15/16" Concealed suspension system - 500.
- .5 Main runner: 1-1/2" (38mm) high inverted tee section of double web and cap design. Integral and reversible splice detail located at each end. Convenience holes located in the rectangular top bulb on 2 1/4" centers. [and include fire expansion notch for fire-rated main runners]. Main runner length to be:
 - .1 [144"][3600mm] with cross tee and hanger holes [3"][75mm] from each end and [6"][150mm] on centre.
 - .2 [120"][3000mm] with cross tee and hanger holes [5"][125mm] from each end and [10"][250mm] on centre.
 - .3 [_____] with cross tee and hanger holes [_____].

- .6 Cross tee: 1-1/2" (38mm) high inverted tee section of double web and cap design. End detail to be stepped override design to resist twisting and provide an aesthetic hairline joint. End detail to include integral locking device for straight-in insertion and removal. Cross tee length to be:
 - .1 [60"][1500mm] with cross tee and hanger holes at mid point and [10"][300mm] to either side.
 - .2 [48"][1200mm] with cross tee and hanger holes at mid point and [12"][300mm] to either side.
 - .3 [24"][600mm] with cross tee and hanger holes at mid point.
 - .4 [36"][900mm]. [_____] with cross tee and hanger holes [_____].
- .7 Perimeter Treatments:
 - .1 Wall Angle BM5-120 3/4" x 15/16" x 120" long with finish on exposed surface.
 - .2 Wall Angle BM15-144 15/16" x 15/16" x 144" long with finish on exposed surface.
 - .3 Environmental Wall Angle BM5X-120 15/16" x 3/4" x 144" long with finish on exposed surface.
 - .4 Wall Angle BSL5-144 15/16" x 9/16" x 144" long with finish on exposed surface.
 - .5 Environmental Angle BSL5X-144 15/16" x 9/16" x 144" long with finish on exposed surface.
 - .6 Step Angle BMR10-120 3/4" x 3/4" x 1/2" x 3/4" x 120" long with finish on exposed surface.
 - .7 F Mould BCMF. 15/16" x [1/2"][5/8"][3/4"] x 120" long with finish on exposed surface.
 - .8 Channel C[8][10][25].[1/2"][5/8"][1-9/16"] x 1/2" x 1" x 120" long with finish on exposed surface.
 - .9 Flexible wall angle BCMX32. 15/16" x 3/4" x 96". Flexible vinyl covering over steel core.
 - .10 Column ring BCR. [_____] inside diameter.
 - .11 Reveal column ring RCR [_____] inside diameter.
- .8 Accessories:
 - .1 Hanger wire. No. 12 gauge (2.7mm) galvanized, soft annealed, mild steel wire [144"][60"][48"][36"] with a yield load not less than 3 times the specified (unfactored or working) design load.
 - .2 Renovation clip BA203 for off module and field-cut 90 degree tee connections.
 - .3 Flat metal strips [1" x 120"][Coil 1" x _____][_____ x _____]. Finish [to match suspension finish][_____].
 - .4 Special formed metal sections per detail [_____].

Part 3 - Execution

3.01 Examination

- .1 Inspect site and verify that there are no conditions that will adversely affect suspension system installation.
- .2 Installer to confirm site dimensions prior to installation.
- .3 Verify that work installed above areas to receive suspension system are completed and will not affect installation.
- .4 Do not begin installation until unsatisfactory conditions have been corrected.
- .5 Starting installation confirms acceptance of conditions in areas to receive suspension system.

3.02 Installation

- .1 Install ceiling suspension system in accordance with ASTM C636, the approved drawings. (See Section 1.06 and 1.11), the requirements of this specification and any applicable national or local code requirements.
- .2 Install fire-rated ceiling suspension systems in accordance with [ULI] [ULC] design no. [_____] requirements.
- .3 Suspend main runners [48"][1200mm][60"][1500mm] [_____] apart, directly from existing structure with a minimum of No. 12 gage (2.7mm) galvanized, soft annealed, mild steel hanger wire spaced at a maximum of [24"][600mm] [30"][750mm] [36"][900mm][48"][1200mm] along the main runner and 6"(150mm) of splices and fire expansion notches. Use closer spacing where required structurally (see Section 1.05b and 1.10).5 Install cross tees perpendicular to main runners on [20"][500mm][24"][600mm][30"][750mm][36"][900mm] [48"][1200mm][60"][1500mm] centers to form [_____ x _____] modules.
- .4 Ensure that all main runner and cross tee ends are fully interlocked for proper engagement.
- .5 Install perimeter treatment at vertical surfaces (refer to 2.02.7).
- .6 Install supplemental hangers as required when the total dead load caused by fixtures or other apparatus exceeds the strength or deflection capability of the suspension system.
- .7 All hanger wire to be tightly wrapped with a minimum of three full turns.
- .8 Follow good safety practices during handling and installation. The installer is solely responsible for all personal safety issues during the installation.
- .9 Protect work above suspension system during installation.

3.03 Cleaning

- .1 Clean work in accordance with section (01____).
- .2 Clean painted surfaces with non-solvent based cleaner or mild soap solution.
- .3 Clean metallic surfaces with a lint free cloth and mild non-abrasive cleaner.

End of section.