

## Finishes

### Acoustical Ceiling Suspension (09 12 00)

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#### Part 1 – General

- This section defines exposed suspension systems for ceilings.

#### Part 2 – Product

- Metal Suspension System Standard: Provide manufacturer's standard direct-hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635.
- Finishes and Colors: Comply with NAAMM Metal Finishes Manual for Architectural and Metal Products
- Provide manufacturer's standard factory-applied finish for type of system indicated.
- Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated.
- Anchors in Concrete: Anchors of type and material indicated below, with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to five times that imposed by ceiling construction, as determined by testing per ASTM E488 or ASTM E1512 as applicable, conducted by a qualified testing and inspecting agency. Post installed expansion anchors, post installed adhesive anchors.
- Corrosion Protection: Carbon-steel components zinc plated to comply with ASTM B633, Class Fe/Zn 5 (0.005 mm) for Class SC 1 service condition.
- Wire Hangers, Braces, and Ties:
- Provide wires complying with the following requirements:
  - Zinc-Coated Carbon-Steel Wire: ASTM A 641/A 641 M, Class 1 zinc coating, soft temper.
  - Size: Select wire diameter so its stress at three times hanger design load (ASTM C 635, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 0.135-inch- (3.5-mm-) diameter wire.
  - Hanger Rods or Flat Hangers: Mild steel, zinc coated or protected with rust-inhibitive paint.
  - Angle Hangers: Angles with legs not less than 7/8 inch (22 mm) wide; formed with 0.04-inch- (1-mm-) thick, galvanized steel sheet complying with ASTM A 653/A 653M, G90 (Z275) coating designation; with bolted connections and 5/16-inch- (8-mm-) diameter bolts.
  - Hold-Down Clips: Where indicated, provide manufacturer's standard hold-down clips spaced 24 inches (610 mm) o.c. on all cross tees.
  - Impact Clips: Where indicated, provide manufacturer's standard impact-clip system designed to absorb impact forces against acoustical panels.
  - Wide-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet, pre-painted, hot-dip galvanized according to ASTM A 653/A 653M, not less than G30 (Z90) coating designation, with prefinished 15/16-inch- (24-mm-) wide metal caps on flanges.
  - Structural Classification: Heavy-duty system
  - End Condition of Cross Runners: Override (stepped) type
  - Face Design: Flat, flush; 15/16" wide
  - Cap Material: Steel Cap Finish: Painted white

#### METAL EDGE MOLDINGS AND TRIM

- Manufacturers: Provide ceiling panel and suspension system's recommended trim pieces for each ceiling panel system specified.
- Roll-Formed Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturers' standard moldings for edges and penetrations that fit acoustical panel edge details and suspension systems indicated; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension system runners.

- Lay-in panels with reveal edge details: Provide stepped edge molding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member.
- Circular penetrations of ceiling: Provide edge moldings fabricated to diameter required to fit penetration exactly.

### **ACOUSTICAL SEALANT**

- Acoustical Sealant for Exposed and Concealed Joints: Manufacturers standard non-sag, paintable, non-staining latex sealant complying with ASTM C 834 and effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E90.

### **PART 3 - EXECUTION**

- General: Install acoustical panel ceilings to comply with ASTM C 636 and seismic requirements indicated, per manufacturer's written instructions and C1SCNs Ceiling Systems Handbook.

#### Suspend ceiling hangers from building's structural members and as follows:

- Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
- Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means, where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
- Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
- Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns.
- Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
- Secure flat angle channel and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both structure to which hangers are attached and type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
- Space hangers not more than 48" (1200 mm) o.c. along each member supported directly from hangers, unless otherwise indicated; provide hangers not more than 6" from ends of each member.
- Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns.
- Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs.
- Fasten bracing wires into concrete with cast-in-place or post-installed anchors.
- Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
- Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
- Screw attach moldings to substrate at intervals not more than 16" (400 mm) o.c. and not more than 3" (75 mm) from ends, leveling with ceiling suspension system to a tolerance of 1/8" in 12' (3.2 mm in 3.66 m). Miter corners accurately and connect securely.
- Do not use exposed fasteners, including pop rivets, on moldings and trim.
- Install suspension system runners so they are square and securely interlocked with one another.
- Remove and replace dented, bent, or kinked members.
- Install all acoustical ceiling types' level, smooth, without deflections and with even edges between panels.