

This section includes a ceiling suspension system of PVC grid and accessories. Systems are usually non-fire rated; fire rated systems are available but sometimes rely on a differing metal grid assembly and other materials or elements above the ceiling to achieve an assembly rating. This section includes proprietary and descriptive type specifications. Edit to avoid conflicting requirements. Acoustic Panel specified in another section.

Part 1 General

1.1 SECTION INCLUDES

- A. Suspended PVC grid ceiling assembly, attachment devices, suspension devices, and matching perimeter PVC trim.
- B. Grid Style: [Exposed bottom runner.] [Semi-concealed bottom runner, recessed.] [Semi-Concealed bottom runner, recessed, beveled.]

1.2 RELATED SECTIONS

List sections that specify installation of products directly associated with this section; indicate specific items. In above ceiling mechanical and electrical work, the placement of anchors can be a problem if not addressed before installation of ceiling suspension assembly. Coordination between the work of mechanical and electrical sections and the text of this article requires special consideration.

- A. Section [_____-_____]: Placement of special anchors or inserts for supporting ceiling suspension system.
- B. Section 07 92 00 - Sealants: Acoustic sealant for perimeter moldings.
- C. Section [08 31 00 - Access Doors:] [_____-_____:] Access panels within ceiling area.
- D. Section 09 51 00 - Acoustic Ceiling Panels - Suspended: Acoustic ceiling panels required with this ceiling assembly.
- E. Section [_____-_____]: [Acoustic] partition system with head rails [attached to] [within] ceiling suspension assembly.
- F. Section [21 13 00] [_____] - Sprinkler Systems: Sprinkler heads in ceiling system.
- G. Section [23 37 00] [_____] - Air Outlets and Inlets: Air diffusion devices in ceiling system.
- H. Section [26 51 00] [_____] - Interior Luminaires: Light fixtures in ceiling system.
- I. Section [27 51 00] [_____] - Public Address and Music System: Speakers in ceiling system.
- J. Section [28 31 00] [_____] - Fire Alarm Systems: Fire alarm components in ceiling system.

1.3 REFERENCES

List reference standards that are included within the text of this section. Edit the following as required for project conditions.

- A. ASTM C665 - Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
- B. ASTM D638 - Standard Test Method for Tensile Properties of Plastics.
- C. ASTM D696 - Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between -30°C and 30°C with a Vitreous Silica Dilatometer.
- D. ASTM D790 - Standard Test Methods for Flexural Properties of Un-reinforced and Reinforced Plastics and Electrical Insulating Materials.
- E. ASTM D792 - Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
- F. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- G. ASTM E580 - Practice for Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Seismic Restraint.
- H. CISCA (Ceilings & Interior Systems Contractors Association):
 - 1. Ceiling Systems Handbook.
 - 2. Acoustic Ceilings: Use and Practice.
- I. ISO 4611 - Plastics - Determination of the Effects of Exposure to Damp Heat, Water Spray and Salt Mist.
- J. ISO 12944-2 - Paints and Varnishes - Corrosion Protection of Steel Structures by Protective Paint Systems, Part Two: Classification of Environments.
- K. UL - Fire Resistance Directory.
- L. USFDA (United States Food and Drug Administration)

1.4 SYSTEM DESCRIPTION

Use this article carefully; restrict statements to describe the combined result (PVC grid and ceiling panels) of the components used to assemble the system. A fire rated ceiling assembly includes all elements above the plane of ceiling including the floor or roof construction above and can include a specially constructed gypsum box or acoustic panel surrounding light fixtures and protecting mechanical work. If a UL assembly design number is a requirement of the assembly or construction, include the assembly number in the following paragraph; also include that assembly number in the other affected sections. Coordinate with the Regulatory Requirements article below.

- A. Installed Assembly: Conform to code requirements as applicable for [ceiling and floor above] [ceiling and roof above] [_____] assembly.
- B. Suspension System: Rigidly secure acoustic ceiling system including integral mechanical and electrical components and other imposed loads with maximum deflection of [1:360.] [1:240.] [____.]

Include the following paragraph where seismic requirements apply to the project. Zone numbers may differ between applicable codes, edit or correct as required. Lateral sway bracing may be required for the suspension assembly.

- C. Seismic Criteria:
 - 1. Zone [0.] [1.] [2.] [3.] [3 - Essential.] [4.] [4 - Essential.]
 - 2. Refer to applicable code at the place of building for specific seismic requirements.

1.5 SUBMITTALS FOR REVIEW

Do not request submittals if drawings sufficiently describe the products of this section or if proprietary specifying techniques are used. Include a requirement for shop drawings only when special project conditions exist or when reflected ceiling plans are not provided on the working drawings.

- A. Section 01 33 00: Submission procedures.
- B. Shop Drawings: Indicate grid layout and related dimensioning, junctions with other work, interrelation of mechanical and electrical items related to system and [_____].
- C. Product Data: Provide data on PVC grid system components and accessories.

Include the following paragraph for submission of physical samples for selection of finish, colour, surface texture, etc.

- D. Suspension Member Samples: Submit [two] [____] samples each, [200] [____] mm ([8] [____] inches) long, of suspension system [main runner,] [cross runner,] [perimeter molding,] and [_____].

1.6 SUBMITTALS FOR INFORMATION

The following submittals are informational; responsive action by the Consultant is not required.

- A. Section 01 33 00: Submission procedures.
- B. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention, and [_____].

1.7 QUALITY ASSURANCE

- A. Conform to CISCA requirements.
- B. Grid Installer: Company specializing in installing the Products specified in this section, authorized or certified in writing by the product manufacturer.

1.8 REGULATORY REQUIREMENTS

Use this article when a special code, regulation, or constructed assembly applies to the project; delete this article if none apply. Coordinate Regulatory Requirements with the UL assembly ratings indicated in the System Description article above.

- A. Conform to applicable code for fire rated assembly.

1.9 PROJECT CONDITIONS

- A. Section 01 32 13: Work scheduling.
- B. Sequence work to ensure ceilings are not installed:
 - 1. until building is enclosed,
 - 2. sufficient heat is provided,
 - 3. dust generating activities have terminated, and
 - 4. overhead work is completed, tested, and approved.

1.10 DELIVERY, STORAGE AND HANDLING

- A. Section 01 66 00: Storage and Handling.
- B. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Store cartons laid flat, protected from exposure to sun, high temperatures and humidity conditions as recommended by the manufacturer.

1.11 EXTRA MATERIALS

- A. Section 01 78 46: Extra materials.
- B. Provide the following to the Owner:
 - 1. [____] m ([____] feet) of extra suspension main and cross runners.
 - 2. a quantity of [5] [____] percent of all trim and accessories provided for the Work.

1.12 WARRANTY

- A. Submit manufacturer's warranty document. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.
- B. Provide manufacturer's Twenty Five (25) year warranty.

Part 2 Products

2.1 SUSPENSION SYSTEM MATERIALS

In the following paragraph, list the manufacturers acceptable for this project. Edit the subsequent descriptive specifications to identify project requirements and to eliminate any conflict with specified manufacturer's products.

- A. Manufacturers:
 - 1. HG-GRID, by Acoustic Ceiling Products (ACP), PO Box 1581, Appleton, WI, 54912-1581; Phone: Toll Free @ 800-434-3750; Fax: Toll Free @ 800-434-3751; e-mail to: support@acpideas.com; Web site: www.acpideas.com.
 - 2. Substitutions: [Refer to Section 01 62 00.] [Not permitted.]
- B. Grid Material:

1. Material: Virgin Grade Poly Vinyl Chloride (PVC).
 2. Laminated Components: ABS (acrylonitrile butadiene styrene terpolymer) plastic, laminated with hot stamping foil.
- C. Grid Components:
1. Grid Style:
 - a. [24 mm (15/16 inch), Model 310, 2440 mm (96 inches) Light Duty Main.] 5 lbs per lineal ft.
 - b. [24 mm (15/16 inches), Model 312, 2440 mm (96 inches) Intermediate Duty Main.] 12 lbs per lineal ft.
 - c. [24 mm (15/16 inches), Model 320, 610 mm (24 inches) Tee.]
 - d. [24mm (15/16 inches), Model 250, 2440 mm (96 inches) Angle Molding.]
 2. Grid Nominal Size: [610 x 610 mm (24 x 24 inches.)] [610 x 1220 mm (24 x 48 inches.)]
 3. Seismic Requirements: Seismic Zone specified above.
 4. USFDA - Approval of resin used in ACP CeilingMAX surface mounted grid assembly for food processing applications.
 5. Profile: PVC material,
 - a. Bottom Flange: Vertical web, hollow top bulb, 51 mm (2 inches) high.
 - b. Main Runner Slots: 300 mm (12 inches) on center.
 - c. Cross Tee Slots: 300 mm (12 inches) on center, starting 300 mm (12 inches) from ends.
 6. Bottom of Runner Face Width: 24 mm (15/16 inch).
- D. Grid Supports:
1. Supplementary Support Channels:
 - a. Galvanized steel,
 - b. size and type to suit application [and seismic requirements], and
 - c. conform to ceiling system flatness requirement specified.
 2. Support Hangers:
 - a. Galvanized carbon steel wire; soft temper, pre-stretched,
 - b. yield strength at least three times design load,
 - c. minimum 0.106 mm (12 gage) diameter to suit application [and seismic requirements,] and ceiling system flatness requirements specified.
- E. Grid Accessories: [Perimeter moldings,] [hold down clips,] [main connectors,] [FRP clips,] [and] [_____] required for suspended grid system.
- Grid Finish: Unpainted: White, (00) Metallic: Satin Black (07), Brushed Aluminum (08), Argent Silver (09), Argent Bronze (28) Copper Fantasy (11), Bermuda Bronze (17), Moonstone Copper (18) Cracked Copper (19), Muted Gold (20), Cross Hatch

Silver (21), Polished Copper (25) Smoked Pewter (27), Oil Rubbed Bronze (26),
Argent Copper (10), Galvanized Steel (30), Brushed Nickel (29)

- F. [Custom color.]

2.2 ACCESSORIES

The following paragraph is for constructing fire-resistant boxes over light fixtures in fire rated ceilings, when so required.

- A. Gypsum Board: Fire rated type; [15] [____] mm ([5/8] [____] inch) thick, ends and edges square, paper faced.
- B. Tools: [Site-cutting tools,] [and] [_____] for installing grid assembly

Part 3 Execution

3.1 EXAMINATION

- A. Section 01 71 00: Verification of existing conditions before starting work.
- B. Verify that layout of hangers will not interfere with other work.

Select and edit one or both of the following two Installation articles for lay-in or concealed grid, which ever applies.

3.2 INSTALLATION - LAY-IN GRID SUSPENSION SYSTEM

- A. Install suspension assembly to manufacturer's instructions and as supplemented in this section.

The following paragraph is required for ceiling systems that may be subject to seismic loads.

- B. [Install assembly in accordance with ASTM E580 for seismic requirements.]
- C. Install assembly capable of supporting imposed loads to a deflection of [1/360] [1/240] [_____] maximum.

Include the first paragraph below if a reflected ceiling plan is not included with the drawings; or the subsequent paragraph if a reflected ceiling plan is included.

- D. Lay out assembly to a balanced grid design with edge units no less than 50 percent of acoustic unit size.
- E. Locate assembly on room axis according to reflected ceiling plan.
- F. Install grid assembly after major above ceiling work is complete. Coordinate the location of hangers with other work.

Certain metal deck types are fabricated to accommodate ceiling hanger tabs. If support tabs are not so provided, include the following paragraph.

- G. Provide hanger clips during steel deck erection. Provide additional hangers and inserts as required.
- H. Hang suspension assembly independent of walls, columns, ducts, pipes and conduit.

- I. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- J. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers [and related carrying channels] to span the extra distance.
- K. Support:
 - 1. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection specified.
 - 2. Support fixture loads by supplementary hangers and anchors, completely independent of grid members, located within [150] [____] mm ([6] [____] inches) of each corner.
- L. Do not eccentrically load grid assembly, or produce rotation of runners.
- M. Perimeter Molding:
 - 1. Install edge molding at intersection of ceiling and vertical surfaces [into bed of acoustic sealant - refer to Section [07 92 00] [____]] [with continuous gasket - refer to Section [07 92 00] [____]].
 - 2. Use longest practical lengths.
 - 3. [Miter] [Overlap] [and rivet] corners.
 - 4. Provide at junctions with other interruptions.

The following paragraph describes the need for ceiling grid expansion joints where a ceiling passes under and across the vertical plane of a building expansion joint. Most expansion joints require two (2) parallel tees usually spaced to the same measurements as the building expansion joint - usually 1 or 2 inches. Each tee is supported over its length to each respective side of the building structural member.

- N. Form expansion joints [as detailed.] [with two (2) parallel tees spaced [25] [50] ([1] [2] inches) apart, supported from each respective structure above.]

UL requirements for fire rated ceilings may necessitate constructing gypsum board boxes over ceiling light fixtures to ensure continuity of fire resistance at the suspension system level. Refer to the details of the assembly requirements.

- O. Fabricate and install light fixture boxes:
 - 1. constructed of [gypsum board,] [acoustic panel,]
 - 2. above all light fixtures in areas where fire-rated ceilings are required,
 - 3. to UL assembly requirements, and
 - 4. light fixture ventilation requirements.

3.3 ERECTION TOLERANCES

- A. Section 01 73 00: Tolerances.

Coordinate this article with the suspension system members selected and the performance statements indicated.

- B. Maximum Variation from Flat and Level Surface: [3] [____] mm in 3 m ([1/8] [____] inch in 10 feet).
- C. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: [2] [____] degrees.

3.4 SCHEDULE

Provide a schedule when various ceiling locations, ceiling assembly types, acoustic unit designs, or other variables require listing for clarity. The following are examples to illustrate a scheduled item:

- A. Public Areas: 600 x 1200 mm (24 x 48 inches) interlocking exposed suspension grid, Copper color.
- B. Dining Areas: 600 x 600 mm (24 x 24 inches) interlocking concealed suspension grid, White color.

END OF SECTION