SECTION 095426 - SUSPENDED WOOD CEILINGS

Revise this Section by deleting and inserting text to meet Project-specific requirements.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

1. GENERAL
	* + 1. SUMMARY
				1. Section Includes:

Solid-wood, linear-panel ceilings.

Wood-veneer, linear-panel ceilings.

Solid-wood, linear-plank ceilings.

Wood-veneer, linear-plank ceilings.

Solid-wood, grille-panel ceilings.

Wood-veneer, grille-panel ceilings.

Solid-wood, open-cell panel ceilings.

Wood-veneer, open-cell panel ceilings.

Wood-veneer, flat-panel ceilings.

* + - 1. DEFINITIONS

Retain terms that remain after this Section has been edited for a project.

* + - * 1. NRC: Noise Reduction Coefficient.
			1. COORDINATION
				1. Coordinate layout and installation of wood ceilings and suspension systems with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.
			2. PREINSTALLATION MEETINGS

Retain "Preinstallation Conference" paragraph below if Work of this Section is extensive or complex enough to justify a conference.

* + - * 1. Preinstallation Conference: Conduct conference at Project site.

If needed, insert list of conference participants.

<**Insert participant requirements**>.

* + - 1. SUBMITTALS
				1. General: Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
				2. Manufacturer’s installation instructions shall be provided along with product data.
				3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals). Product Data: For each type of product.
				4. Sustainable Design Submittals:
				5. Shop Drawings: For suspended wood ceilings.

Include reflected ceiling plans, sections, and details, drawn to scale, showing the following:

Wood ceiling patterns and joints.

Ceiling suspension members.

Method of attaching hangers to building structure and locations of cast-in-place anchors, clips, and other ceiling attachment devices whose installation is specified in other Sections.

Ceiling-mounted items including, but not limited to, light fixtures, diffusers, grilles, speakers, sprinklers, and access panels.

Ceiling perimeter and penetrations through ceiling; trim and moldings.

Retain "Samples" paragraph below for single-stage Samples, with a subordinate list if applicable. Retain "Samples for Initial Selection" and "Samples for Verification" paragraphs for two-stage Samples.

* + - * 1. Samples: For each exposed product and for each type, color, and finish specified, 12 inches long by 12 inches wide or full width in size.
				2. Samples for Initial Selection: For units with factory-applied colors and finishes.

Include Samples of accessories involving color and finish selections.

* + - * 1. Samples for Verification: For the following products:

Wood Ceilings: 12-inch- long by 12-inch- wide or full-width Samples of each type, color, and finish.

Suspension-System Members: 12-inch- long Sample of each type.

Exposed Molding and Trim: 12-inch- long Samples of each type, color, and finish.

Retain "Veneer Edge Banding" subparagraph below if required for composite-wood products with wood-veneer faces.

Veneer Edge Banding: Applied to a cut end of a wood-ceiling Sample for each type, color, and finish.

Filler Strips: 12-inch- long Samples of each type, color, and finish.

Sound Absorbers: 12 inches long by full width.

Retain "Delegated Design Submittal" paragraph below if design services have been delegated to Contractor.

* + - * 1. Delegated Design Submittal: For design of[**seismic restraints and**] attachment devices.

Coordinate "Qualification Data" paragraph below with qualification requirements in "Quality Assurance" Article.

* + - * 1. Qualification Data: For testing agency.
				2. Product Test Reports: For each suspended wood ceiling, for tests performed by a qualified testing agency.

Retain "Evaluation Reports" paragraph below if required for specific products by authorities having jurisdiction. The ICC Evaluation Service publishes ICC-ES AC368 for suspended ceiling framing systems.

Design Consultant to review code references and verify that the referenced sections/tables are current. Note that code references shall be based on the current version of the Uniform Code.

* + - * 1. Evaluation Reports: For suspended-wood-ceiling framing systems.

Retain "Field quality-control reports" paragraph below if Contractor is responsible for field quality-control testing and inspecting.

Retain the paragraph below only when fastening to concrete decks.

* + - * 1. Field quality-control reports.
			1. CLOSEOUT SUBMITTALS
				1. Maintenance Data: For finishes to include in maintenance manuals.
			2. MAINTENANCE MATERIAL SUBMITTALS
				1. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

Revise "Suspended-Wood-Ceiling Components" subparagraph below to suit Project. If preferred, replace percentage with a specific number of units and pieces of each component and their lengths.

Suspended-Wood-Ceiling Components: Quantity of each wood-ceiling unit, suspension-system component, accessory, and exposed molding and trim equal to 2 percent of quantity installed.

* + - 1. QUALITY ASSURANCE

Retain "Testing Agency Qualifications" paragraph below if Contractor or manufacturer selects testing agency or if Contractor is required to provide services of a qualified testing agency in "Field Quality Control" Article.

* + - * 1. Testing Agency Qualifications: Accredited by National Voluntary Laboratory Accreditation Program for testing indicated.
				2. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and to set quality standards for materials and execution.

Indicate portions of suspended wood ceilings represented by mockups on Drawings or draw mockups as separate element.

Build mockup of each type of suspended wood ceiling as shown on Drawings.

Demonstrate treatment of exposed field cuts.

Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Director’s Representative specifically approves such deviations in writing.

Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

* + - 1. DELIVERY, STORAGE, AND HANDLING
				1. Deliver ceiling components and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they are protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

Store materials flat and level, raised from the floor.

* + - * 1. Handle ceiling components and accessories in a manner that prevents damage.
			1. PROJECT CONDITIONS

Retain this article for interior installations in conditioned spaces; delete if only exterior installations are specified. Revise to suit Project.

* + - * 1. Environmental Limitations: Do not install interior ceilings until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work above ceilings is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.

Store and acclimatize wood products in the spaces where they will be installed for a minimum of 72 hours immediately before ceiling installation.

1. PRODUCTS

Manufacturers and products listed in SpecAgent and MasterWorks Paragraph Builder are neither recommended nor endorsed by the AIA or Deltek. Before inserting names, verify that manufacturers and products listed there comply with requirements retained or revised in descriptions and are both available and suitable for the intended applications.

* + - 1. PERFORMANCE REQUIREMENTS

Retain "Delegated Design" paragraph below if Contractor is required to assume responsibility for designing ceiling support.

* + - * 1. Delegated Design: Engage a qualified professional engineer, licensed in the State of New York, to design [**seismic restraints and**]attachment devices.

If retaining "Structural Performance" paragraph below, verify the suitability of exterior ceiling installations with manufacturers, perform engineering analysis or delegate the responsibility to a qualified professional engineer, and evaluate product materials and finishes. Generally, only linear, solid-wood, panelized ceilings made from naturally durable woods are suitable for exterior installation.

* + - * 1. Structural Performance: Exterior suspended wood ceilings shall withstand exterior exposure, the effects of gravity loads, and the following loads and stresses without showing permanent deformation of ceiling system components or permanent damage to fasteners and anchors:

Typically, indicate specific wind loads determined by Project's structural engineer on Drawings. Model building codes set criteria for building components and claddings subject to wind loads. Verify requirements of authorities having jurisdiction.

Wind Load: Uniform pressure [**indicated on Drawings**], acting inward or outward.

Retain one option in "Seismic Criteria" paragraph below or revise to suit Project. Verify requirements of authorities having jurisdiction.

* + - * 1. Seismic Criteria: Provide suspended wood ceilings designed and installed to withstand the effects of earthquake motions in accordance with ASCE/SEI 7 and requirements of authorities having jurisdiction.

Retain "Recycled Content of Composite-Wood Products" paragraph below to specify recycled content if required. An alternative method of requiring recycled content is to retain requirement in Project's Division 01 sustainable design requirements Section that gives Contractor the option and responsibility to determine how recycled content requirements will be met.

* + - * 1. Recycled Content of Composite-Wood Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 50 percent.

Retain the article below for panelized horizontally oriented plank solid wood ceilings with planks evenly spaced with acoustic material or backing visible between planks. Solid wood is only available as class c finish.

* + - 1. SOLID-WOOD, LINEAR-PANEL CEILING <**Insert drawing designation**>

Copy this article and re-edit for each solid-wood, linear-panel ceiling product.

Insert drawing designation. Use these designations on Drawings to identify locations of each ceiling.

* + - * 1. Linear Ceiling Panels: Manufacturer's standard linear panels fabricated from kiln-dried solid-wood planks [**free of knots**] [**with up to 1/2-inch- diameter knots**] and without finger joints, cracks, checks, or warp. Planks run parallel to panel length.

[Products:](http://www.specagent.com/Lookup?ulid=14025) Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

[Armstrong World Industries, Inc](http://www.specagent.com/Lookup?uid=123457174013); [**Woodworks® Linear**][**Woodworks® Linear Exterior.**]

SI International; Linear Reveal.

Certainteed, A Saint-Gobain Company; Linear Planks.

Approved equivalent.

Coordinate requirements in "Plank Species" subparagraph below with installation requirements. Exterior installations must use naturally durable woods, like western hemlock, and must be installed in areas protected from weather by overhangs and the like.

Plank Species: [**Ash**] [**Poplar**] [**Red oak**] [**Western hemlock**].

Plank Cut: Manufacturer's standard.

Plank Width: [**3-1/4 inches**] [**5-1/4 inches**].

Plank Depth: 3/4 inch.

Plank Length: 96 inches.

Plank Edges: Square.

Reveal/Plank Spacing: [**Equal spacing**] [**3/4 inch**] between long edges of planks.

Backing Boards: Manufacturer's standard, 1/2-inch- thick solid-wood boards or HPVA HP-1 hardwood plywood.

Coordinate requirements in "Panel Module" subparagraph below with dimensions of panel components specified above.

Panel Module: 12 by 96 by 1-1/4 inches.

Retain one option in "Panel Attachment" subparagraph below or revise to suit Project. Generally, clip attachment is only compatible with interior panels using 3-1/4-inch-wide planks; verify requirements with manufacturers.

Panel Attachment: Provide [**manufacturer's standard metal spring clips**] [**black, zinc-aluminum coated steel sheet metal screws recommended in manufacturer's written installation instructions through factory pre-drilled holes in backing boards**] for attaching panels to grid suspension system, spaced to support ceiling and in accordance with manufacturer's written installation instructions.

Retain first or second option in "Factory Finish" subparagraph below if finish requirements are specified in other Sections. Intumescent finishes are unsuitable for exterior installation.

Factory Finish: [**As specified in Section 099300 "Staining and Transparent Finishing"**] [**As specified in Section 099646 "Intumescent Painting"**] [**Manufacturer's standard interior finish**] [**Manufacturer's standard exterior sealer and finish**] ; applied on every wood surface.

Retain applicable finish subparagraphs below if factory-finish requirements are specified in this Section.

Surface-Burning Characteristics: Provide manufacturer's standard finish system with the following characteristics when tested in accordance with ASTM E84:

"Flame-Spread Index" and "Smoke-Developed Index" subparagraphs below correspond with the IBC requirements for Class C fire-resistance rating.

Flame-Spread Index: 76-200.

Smoke-Developed Index: 450 or less.

Plank Finish: [**Clear**] [**White lacquer**] [**Tinted finish in color selected by Director’s Representative from manufacturer's standard**].

Retain "Plank Stain" subparagraph below if required. Some manufacturer's offer tinted finishes that do not require the use of a separate stain.

Plank Stain: [**As selected by Director’s Representative from manufacturer's standard range**] [**Match Director’s Representative's sample**].

Plank Gloss: [**Manufacturer's standard**] [**Satin**] [**Semigloss**] [**High gloss**].

Backing Board Gloss and Color: Flat black.

* + - * 1. Linear-Ceiling-Panel Accessories: Linear-ceiling-panel manufacturer's accessories required to provide a complete installation of ceiling in accordance with manufacturer's written installation instructions.

Retain "Acoustic Infill Panels" or "Acoustic Felt" subparagraph below, or both, for interior installations only.

Acoustic Infill Panels: Manufacturer's standard to provide NRC rating indicated, with flame-spread index of 25 or less and smoke-developed index of 50 or less as determined by testing in accordance with ASTM E84.

NRC: 0.75 when tested in accordance with ASTM C423.

Acoustic Felt: Manufacturer's standard Insert requirements, factory applied, black, backer with flame-spread index of 25 or less and smoke-developed index of 450 or less as determined by testing in accordance with ASTM E84.

End Caps: Manufacturer's standard units for exposed field-cut edges; solid wood finished to match planks.

Wood Trim: [**As indicated on the Drawings**] <**Insert requirements**>; manufacturers standard solid wood finished to match planks; with trim connectors recommended in writing by ceiling and suspension-system manufacturers.

* + - * 1. Grid Suspension System: ASTM C635; recommended in writing by ceiling and suspension-system manufacturers for applications indicated; main- and cross-runner system complete with suspension-system components required to support ceiling units and other ceiling-supported construction.

Retain one option in "Material" subparagraph below or revise to suit Project.

Material: [**ASTM A653, hot-dip galvanized, cold-rolled sheet steel, G60 coating designation**] [**ASTM A653, hot-dip galvanized, cold-rolled sheet steel, G60 coating designation with ASTM B209 aluminum cap**].

Structural Classification: Heavy-duty system.

Face Width: 15/16 inch.

Finish: Flat black.

Retain the article below for panelized horizontally oriented plank veneer wood ceilings with planks evenly spaced with acoustic material or backing visible between planks. Veneer wood is only available as class a finish.

* + - 1. WOOD-VENEER, LINEAR-PANEL CEILING <**Insert drawing designation**>

Copy this article and re-edit for each wood-veneer, linear-panel ceiling product.

Insert drawing designation. Use these designations on Drawings to identify locations of each ceiling.

* + - * 1. Linear Ceiling Panels: Manufacturer's standard linear panels fabricated from planks consisting of wood veneer adhered to backs and exposed surfaces of ANSI A208.2 medium density fiberboard or ANSI A208.1 particle board composite-wood cores. Planks run parallel to panel length.

[Products:](http://www.specagent.com/Lookup?ulid=14026) Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

[Armstrong World Industries, Inc](http://www.specagent.com/Lookup?uid=123457174015); Woodworks® Linear.

ASI Architectural; Linear Reveal.

Certainteed, A Saint-Gobain Company; Linear Planks.

Approved equivalent.

Surface-Burning Characteristics: Provide products with the following characteristics when tested in accordance with ASTM E84:

Retain "Surface-Burning Characteristics" subparagraph below if required. See "Fire-Test-Response Characteristics" Article in the Evaluations. If retaining, coordinate with other ceiling requirements specified.

"Flame-Spread Index" subparagraph below corresponds with the IBC requirements for Class A fire-resistance rating.

Flame-Spread Index: 25 or less.

Smoke-Developed Index: 450 Insert value or less.

Retain first option in "Veneer Face Grade" subparagraph below if specifying manufacturers' standard products. Second option is based on requirements in "Architectural Woodwork Standards," a joint publication of Architectural Woodwork Institute (AWI), Architectural Woodwork Manufacturers Association of Canada (AWMAC), and the Woodwork Institute (WI), for Custom Grade interior woodwork. See "Wood Species and Cut" Article in the Evaluations.

Veneer Face Grade: Grade A based on the Decorative Hardwoods Association's HPVA HP-1 definitions and characteristics.

Retain one option in "Veneer Species" subparagraph below or revise to suit Project. Standard veneers available from manufacturers vary. Bamboo is a rapidly renewable resource that is technically a grass; however, it is marketed as wood.

Veneer Species: [**Bamboo**] [**Beech**] [**Birch**] [**Cherry**] [**Maple**] [**Red oak**] [**Walnut**].

Veneer Cut: Manufacturer's standard.

Nominal Plank Width: [**4 inches**] [**6 inches**].

Plank Depth: 3/4 inch.

Plank Length: 96 inches.

Plank Edges: Square.

Reveal/Plank Spacing: [**Equal spaces**] [**3/4 inch**] [**1/4 inch**] between long edges of planks.

Backing Boards: Manufacturer's standard; 1/2 inch thick.

Coordinate requirements in "Panel Module" subparagraph below with dimensions of panel components specified above.

Panel Module: 24 by 96 by 1-1/4 inches.

Panel Attachment: Provide manufacturer's standard attachment hooks or clips for attaching panels to grid suspension system, spaced to support ceiling loads and in accordance with manufacturer's written installation instruction.

Veneer Adhesive: Manufacturer's standard that complies with "Performance Requirements" Article.

Retain first option in "Factory Finish" subparagraph if finish requirements are not specified in this Section.

Factory Finish: [**As specified in Section 099300 "Staining and Transparent Finishing"**] [**Manufacturer's standard finish**] ; applied on every wood surface.

Retain applicable finish subparagraphs below if factory-finish requirements are specified in this Section.

Plank Finish: [**Clear**] [**White lacquer**] [**Tinted finish in color selected by Director’s Representative from manufacturer's standard**].

Retain "Plank Stain" subparagraph below if required. Some manufacturers offer tinted finishes that do not require the use of a separate stain.

Plank Stain: [**As selected by Director’s Representative from manufacturer's standard range**] [**Match Director’s Representative's sample**].

Plank Gloss: [**Manufacturer's standard**] [**Satin**] [**Semigloss**] [**High gloss**].

Backing Board Gloss and Color: Flat black.

* + - * 1. Linear-Ceiling-Panel Accessories: Linear-ceiling-panel manufacturer's accessories required to provide a complete installation of ceiling in accordance with manufacturer's written installation instructions.

Safety Cables: 24 inches.

Panel Splice Plates: Manufacturer's standard.

Retain "Acoustic Infill Panels" or "Acoustic Felt" subparagraph below, or both, for interior installations only.

Acoustic Infill Panels: Manufacturer's standard to provide NRC rating indicated, with flame-spread index of 25 or less and smoke-developed index of 450 or less as determined by testing in accordance with ASTM E84.

NRC: 0.75 when tested in accordance with ASTM C423.

Acoustic Felt: Manufacturer's standard, factory applied, black, backer with flame-spread index of 25 or less and smoke-developed index of 450 or less as determined by testing in accordance with ASTM E84.

Veneer Edge Banding: Manufacturer's standard matching planks for treating cut edges; with pressure-sensitive adhesive backing.

Trim: [**As indicated on the Drawings**] <**Insert requirements**>; with trim connectors recommended in writing by ceiling and suspension-system manufacturers.

Material: [**Wood-veneer-wrapped aluminum, finished to match planks**] [**Wood-veneered composite wood, finished to match planks**] [**Aluminum, painted black**].

* + - * 1. Grid Suspension System: ASTM C635; recommended in writing by ceiling and suspension-system manufacturers for applications indicated; main- and cross-runner system complete with suspension-system components required to support ceiling units and other ceiling-supported construction.

Retain one option in "Material" subparagraph below or revise to suit Project.

Material: [**ASTM A653, hot-dip galvanized, cold-rolled sheet steel, G60 coating designation**] [**ASTM A653, hot-dip galvanized, cold-rolled sheet steel, G60 coating designation with ASTM B209 aluminum cap**].

Structural Classification: Heavy-duty system.

Face Width: 15/16 inch

Finish: Flat black.

Retain the article below for horizontal oriented plank solid wood ceilings (non-panelized) with planks evenly spaced with acoustic material or backing visible between planks or tongue & groove. Solid wood is only available as class c finish.

* + - 1. SOLID-WOOD, LINEAR-PLANK CEILING <**Insert drawing designation**>

Copy this article and re-edit for each solid-wood, linear-plank ceiling product.

Insert drawing designation. Use these designations on Drawings to identify locations of each ceiling.

* + - * 1. Linear Ceiling Planks: Manufacturer's standard kiln-dried, solid-wood planks [**free of knots**] [**with up to 1/2-inch- diameter knots**]; without finger joints, cracks, checks, or warp, and with square-cut ends.

[Products:](http://www.specagent.com/Lookup?ulid=14027) Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

Armstrong World Industries, Inc.; [**Woodworks® Linear**][**Woodworks® Linear Exterior**].

[ASI Architectural](http://www.specagent.com/Lookup?uid=123457174034); Linear T&G.

Certainteed, A Saint-Gobain Company.; Linear Planks.

Approved equivalent.

Wood Species: [**Birch**] [**Cherry**] [**Maple**] [**Red oak**].

Wood Cut: [**Manufacturer's standard**] [**Plain sawn (flat cut)**] [**Rift cut**].

Nominal Plank Width: [**4 inches**] [**6 inches**].

Plank Depth: [**5/8 inch**] [**3/4 inch**].

Plank Length: [**Random**] [**96 inches**].

Plank Long Edge: [**Tongue-and-groove, V-groove joint**] [**Tongue-and-groove, flat V-groove joint**] [**Tongue-and-groove, butt joint**] [**Radius**] [**Square**].

Retain "Reveal" and "Reveal Filler Strip" subparagraphs below for planks with radius or square long edges.

Reveal: [**3/8 inch**] [**1/2 inch**] [**3/4 inch**] between long edges of planks.

Reveal Filler Strip: [**Black PVC**] [**Black felt with flame-spread index of 25 or less and smoke-developed index of 450 or less as determined by testing in accordance with ASTM E84**].

Plank End Joints: [**Butt**] [**Doweled**].

Retain first or second option in "Factory Finish" subparagraph below if finish requirements are specified in other Sections.

Factory Finish: [**As specified in Section 099300 "Staining and Transparent Finishing"**] [**As specified in Section 099646 "Intumescent Painting"**][**Manufacturer's standard interior finish**] ; applied on every wood surface.

Retain applicable finish subparagraphs below if factory-finish requirements are specified in this Section.

Surface-Burning Characteristics: Provide manufacturer's standard finish system with the following characteristics when tested in accordance with ASTM E84:

Options in "Flame-Spread Index" and "Smoke-Developed Index" subparagraphs below correspond with the IBC requirements for Class C fire-resistance rating.

Flame-Spread Index: 76-250.

Smoke-Developed Index: 450 or less.

Type: [**Clear**] [**White lacquer**] [**Tinted finish in color selected by Director’s Representative from manufacturer's standard**].

Retain "Stain" subparagraph below if required. Some manufacturers offer tinted finishes that do not require the use of a separate stain.

Stain: [**As selected by Director’s Representative from manufacturer's standard range**] [**Match Director’s Representative's sample**].

Gloss: [**Manufacturer's standard**] [**Satin**] [**Semigloss**] [**High gloss**].

* + - * 1. Linear-Ceiling-Plank Accessories: Linear-ceiling-plank manufacturer's accessories required to provide a complete installation of ceiling in accordance with manufacturer's written installation instructions.

Attachment Clips: Manufacturer's standard metal clips for attaching planks to grid suspension system.

Acoustic Infill Panels: Manufacturer's standard to provide NRC rating indicated, with flame-spread index of 25 or less and smoke-developed index of 50 or less as determined by testing in accordance with ASTM E84.

NRC: 0.78 when tested in accordance with ASTM C423.

Solid-Wood Trim: [**As indicated on the Drawings**] <**Insert requirements**>; in wood species and finished to match panels; with trim connectors recommended in writing by ceiling and suspension-system manufacturers.

* + - * 1. Grid Suspension System: ASTM C635; recommended in writing by ceiling and suspension-system manufacturers for applications indicated; main- and cross-runner system complete with suspension-system components required to support ceiling units and other ceiling-supported construction.

Retain one option in "Material" subparagraph below or revise to suit Project.

Material: [**ASTM A653, hot-dip galvanized, cold-rolled sheet steel, G60 coating designation**] [**ASTM A653, hot-dip galvanized, cold-rolled sheet steel, G60 coating designation with ASTM B209 aluminum cap**].

Structural Classification: Heavy-duty system.

Face Width: 15/16 inch.

Finish: Flat black.

Retain the article below for horizontal oriented plank veneer wood ceilings (non-panelized) with planks evenly spaced with acoustic material or backing visible between planks or tongue & groove.veneer wood is only available as class a finish.

* + - 1. WOOD-VENEER, LINEAR-PLANK CEILING <**Insert drawing designation**>

Copy this article and re-edit for each wood-veneer, linear-plank ceiling product.

Insert drawing designation. Use these designations on Drawings to identify locations of each ceiling.

* + - * 1. Linear Ceiling Planks: Manufacturer's standard planks consisting of wood veneer adhered to backs and exposed surfaces of ANSI A208.2 medium density fiberboard or ANSI A208.1 particle board composite-wood cores; with square-cut ends.

[Products:](http://www.specagent.com/Lookup?ulid=14028) Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

[Armstrong World Industries, Inc](http://www.specagent.com/Lookup?uid=123457174018); Woodworks® Linear.

[ASI Architectural](http://www.specagent.com/Lookup?uid=123457174035); Linear T&G.

Certainteed, A Saint-Gobain Company; Linear Planks.

Approved equivalent.

Retain "Surface-Burning Characteristics" subparagraph below if required. See "Fire-Test-Response Characteristics" Article in the Evaluations. If retaining, coordinate with other ceiling requirements specified.

Surface-Burning Characteristics: Provide products with the following characteristics when tested in accordance with ASTM E84:

Option in "Flame-Spread Index" subparagraph below corresponds with the IBC requirements for Class A fire-resistance rating.

Flame-Spread Index: 25 or less.

Smoke-Developed Index: 450 or less.

Retain first option in "Veneer Face Grade" subparagraph below if specifying manufacturers' standard products. Second option is based on AWI/AWMAC/WI's "Architectural Woodwork Standards" requirements for Custom Grade interior woodwork. See "Wood Species and Cut" Article in the Evaluations.

Veneer Face Grade: Grade A based on the Decorative Hardwoods Association's HPVA HP-1 definitions and characteristics.

Retain one option in "Veneer Species" subparagraph below or revise to suit Project. Standard veneers available from manufacturers vary. Bamboo is a rapidly renewable resource that is technically a grass; however, it is marketed as wood.

Veneer Species: [**Bamboo**] [**Birch**] [**Cherry**] [**Maple**] [**Red oak**].

Veneer Cut: [**Manufacturer's standard**] [**Plain sliced (flat cut)**] [**Rift cut**].

Nominal Plank Width: [**4 inches**] [**6 inches**].

Plank Depth: [**5/8 inch**] [**3/4 inch**].

Plank Length: 96 inches.

Plank Long Edge: [**Square**] [**Square with tongues cut for inserting leveling splines or fillers**] [**Tongue-and-groove, butt joint**].

Retain "Reveal/Plank Spacing" and "Reveal Filler Strip" subparagraphs below for planks that do not meet in a butt joint.

Reveal/Plank Spacing: [**3/8 inch**] [**1/2 inch**] [**3/4 inch**] between long edges of planks.

Reveal Filler Strip: [**Black PVC**] [**Black felt**].

Plank End Joints: [**Butt**] [**Doweled**].

Veneer Adhesive: Manufacturer's standard that complies with requirements in "Performance Requirements" Article.

Retain first option in "Factory Finish" subparagraph if finish requirements are not specified in this Section.

Factory Finish: [**As specified in Section 099300 "Staining and Transparent Finishing"**] [**Manufacturer's standard finish**] ; applied on every wood surface.

Retain applicable finish subparagraphs below if factory-finish requirements are specified in this Section.

Type: [**Clear**] [**White lacquer**] [**Tinted finish in color selected by Director’s Representative from manufacturer's standard**].

Retain "Stain" subparagraph below if required. Some manufacturers offer tinted finishes that do not require the use of a separate stain.

Stain: [**As selected by Director’s Representative from manufacturer's standard range**] [**Match Director’s Representative's sample**].

Gloss: [**Manufacturer's standard**] [**Satin**] [**Semigloss**] [**High gloss**].

* + - * 1. Linear-Ceiling-Plank Accessories: Linear-ceiling-plank manufacturer's accessories required to provide a complete installation of ceiling in accordance with manufacturer's written installation instructions.

Attachment Clips: Manufacturer's standard metal clips for attaching planks to suspension system.

Plank Leveling Splines: Manufacturer's standard for aligning ends of planks.

Plank Splice Plates: Manufacturer's standard.

Acoustic Infill Panels: Manufacturer's standard to provide NRC rating indicated Insert requirements, with flame-spread index of 25 or less and smoke-developed index of 50 or less as determined by testing in accordance with ASTM E84.

NRC: 0.75 when tested in accordance with ASTM C423.

Veneer Edge Banding: Manufacturer's standard matching planks for treating cut edges; with pressure-sensitive adhesive backing.

Trim: [**As indicated on the Drawings**] <**Insert requirements**>; with trim connectors recommended in writing by ceiling and suspension-system manufacturers.

Material: [**Wood-veneer-wrapped aluminum, finished to match planks**] [**Wood-veneered composite wood, finished to match planks**] [**Solid wood finished to match planks**].

Retain "Grid Suspension System" or "Linear-Carrier Suspension System" paragraph below, or revise to suit Project if both are acceptable. Coordinate with manufacturers' requirements.

* + - * 1. Grid Suspension System: ASTM C635; recommended in writing by ceiling and suspension-system manufacturers for applications indicated; main- and cross-runner system complete with suspension-system components required to support ceiling units and other ceiling-supported construction.

Retain one option in "Material" subparagraph below or revise to suit Project.

Material: [**ASTM A653, hot-dip galvanized, cold-rolled sheet steel, G60 coating designation**] [**ASTM A653, hot-dip galvanized, cold-rolled sheet steel, G60 coating designation with ASTM B209 aluminum cap**].

Structural Classification: Heavy-duty system.

Face Width: 15/16 inch.

Finish: Flat black.

* + - * 1. Linear-Carrier Suspension System: ASTM C635 and recommended in writing by ceiling and suspension-system manufacturer for applications indicated; complete with factory-applied linear clips spaced to match plank modules, splice sections, stabilizer, and suspension-system components required to support ceiling units and other ceiling-supported construction.

Material: ASTM A653, hot-dipped galvanized, cold-rolled sheet steel, G60 coating designation.

Structural Classification: Heavy-duty system.

Carrier Splices: Same metal, profile, and finish as for carriers.

Stabilizer Channels, Tees, and Bars: Manufacturer's standard components for stabilizing main carriers.

Finish: Flat black.

Retain the article below for panels of vertical oriented solid wood rails ceilings with rails evenly spaced with acoustic material or backing visible between planks. Solid wood is only available as class c finish.

* + - 1. SOLID-WOOD, GRILLE-PANEL CEILING <**Insert drawing designation**>

Copy this article and re-edit for each solid-wood, grille-panel ceiling product.

Insert drawing designation. Use these designations on Drawings to identify locations of each ceiling.

* + - * 1. Wood Grille Panels: Manufacturer's standard kiln-dried, solid-wood rails [**free of knots**] [**with up to 1/2-inch- diameter knots**] and without finger joints, cracks, checks, and warp secured to wood panel backing that maintains equal rail spacing and prevents rail twisting and warping.

[Products:](http://www.specagent.com/Lookup?ulid=14029) Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

[Armstrong World Industries, Inc](http://www.specagent.com/Lookup?uid=123457174023); Woodworks® Grille.

[ASI Architectural](http://www.specagent.com/Lookup?uid=123457174036); Grille Panels.

Certainteed, A Saint-Gobain Company.; Grille Modules.

Approved equivalent.

Wood Species: [**Birch**] [**Cherry**] [**Maple**] [**Poplar**] [**Red oak**].

Wood Cut: [**Manufacturer's standard**] [**Plain sliced (flat cut)**] [**Rift cut**] .

Rail Dimensions: <**Insert dimensions**>.

Rail Spacing: [**1-1/2 inches**] [**2 inches**].

Rail Profile: [**Square**] [**Radius**] exposed, horizontal face.

Retain "Stabilizing Backer Strips" or "Dowels" subparagraph below, or both. Backer strips and dowels can be used in combination. Verify requirements with manufacturers.

Stabilizing Backer Strips: Manufacturer's standard [**flat**] [**notched**] type that attaches rails together; spaced at not more than [**12 inches**] o.c.

Material and Finish: [**Solid wood with manufacturer's standard black finish**] [**Solid wood of same species and with same finish as rails**] [**1/2-inch- thick hardwood plywood, complying with requirements in the Decorative Hardwoods Association's HPVA HP-1, with manufacturer's standard black finish**] applied on every surface.

Dowels: Manufacturer's standard dowels that attach rails together; spaced at not more than 12 inches o.c. and 5-1/2 inches from panel ends.

Material and Finish: [**Solid wood with manufacturer's standard black finish**] [**Solid wood of same species and with same finish as rails**].

Panel Module: [**24 by 24 inches**] [**12 by 48 inches**] [**12 by 72 inches**] [**12 by 96 inches**] [**12 by 120 inches**] <**Insert dimensions**>.

Panel Type: [**Lay-in**] [**Clip-attached**] [**Screw-attached**] installation on grid suspension system.

Retain "Attachment Clips" or "Attachment Screws" subparagraph below with first or second option, respectively, in "Panel Type" subparagraph above.

Attachment Clips: Panel manufacturer's standard black, corrosion-resistant, metal spring clips that allow downward access of panels.

Attachment Screws: Manufacturer's standard.

Retain first or second option in "Rail Factory Finish" subparagraph below if finish requirements are specified in other Sections.

Rail Factory Finish: [**As specified in Section 099300 "Staining and Transparent Finishing"**] [**As specified in Section 099646 "Intumescent Painting"**] [**Manufacturer's standard finish**]; applied on every wood surface.

Retain applicable finish subparagraphs below if factory-finish requirements are specified in this Section.

Surface-Burning Characteristics: Provide manufacturer's standard intumescent finish system with the following characteristics when tested in accordance with ASTM E84:

"Flame-Spread Index" and "Smoke-Developed Index" subparagraphs below correspond with the IBC requirements for Class C fire-resistance rating.

Flame-Spread Index: 76-250.

Smoke-Developed Index: 450 or less.

Type: [**Clear**] [**White lacquer**] [**Tinted finish in color selected by Director’s Representative from manufacturer's standard**].

Retain "Stain" subparagraph below if required. Some manufacturers offer tinted finishes that do not require the use of a separate stain.

Stain: [**As selected by Director’s Representative from manufacturer's standard range**] [**Match Director’s Representative's sample**].

Gloss: [**Manufacturer's standard**] [**Satin**] [**Semigloss**] [**High gloss**].

* + - * 1. Wood-Grille-Panel Accessories: Wood-grille-panel manufacturer's accessories required to provide a complete installation of ceiling in accordance with manufacturer's written installation instructions.

Acoustic Infill Panels: Manufacturer's standard to provide NRC rating indicated, with flame-spread index of 25 or less and smoke-developed index of 50 or less as determined by testing in accordance with ASTM E84.

NRC: 0.75 when tested in accordance with ASTM C423.

Acoustic Felt: Manufacturer's standard, factory applied, black, backer with flame-spread index of 25 or less and smoke-developed index of 450 or less as determined by testing in accordance with ASTM E84.

Wood Trim: [**As indicated on the Drawings**] <**Insert requirements**>; in wood species and finished to match rails; with trim connectors recommended in writing by ceiling and suspension-system manufacturers.

* + - * 1. Grid Suspension System: ASTM C635; recommended in writing by ceiling and suspension-system manufacturers for applications indicated; main- and cross-runner system complete with suspension-system components required to support ceiling units and other ceiling-supported construction.

Retain one option in "Material" subparagraph below or revise to suit Project.

Material: [**ASTM A653, hot-dip galvanized, cold-rolled sheet steel, G60 coating designation**] [**ASTM A653, hot-dip galvanized, cold-rolled sheet steel, G60 coating designation with ASTM B209 aluminum cap**].

Structural Classification: Heavy-duty system.

Face Width: [**15/16 inch**] [**9/16 inch**].

Finish: Flat black.

Retain the article below for panels of vertical oriented veneer wood rails ceilings with rails evenly spaced with acoustic material or backing visible between planks. Veneer wood is only available as class a finish.

* + - 1. WOOD-VENEER, GRILLE-PANEL CEILING <**Insert drawing designation**>

Copy this article and re-edit for each wood-veneer, grille-panel ceiling product.

Insert drawing designation. Use these designations on Drawings to identify locations of each ceiling.

* + - * 1. Wood Grille Panels: Manufacturer's standard grille panels fabricated from rails consisting of wood veneer adhered to backs and exposed surfaces of ANSI A208.2 medium density fiberboard or ANSI A208.1 particle board composite-wood cores.

[Products:](http://www.specagent.com/Lookup?ulid=14030) Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

Armstrong World Industries, Inc.; Woodworks® Grille.

[ASI Architectural](http://www.specagent.com/Lookup?uid=123457174037); Grille Panels.

Certainteed, A Saint-Gobain Company.; Grille Modules.

Approved equivalent.

Retain "Surface-Burning Characteristics" subparagraph below if required. See "Fire-Test-Response Characteristics" Article in the Evaluations. If retaining, coordinate with other ceiling requirements specified.

Surface-Burning Characteristics: Provide products with the following characteristics when tested in accordance with ASTM E84:

"Flame-Spread Index" subparagraph below corresponds with the IBC requirements for Class A fire-resistance rating.

Flame-Spread Index: 25 or less.

"Smoke-Developed Index" subparagraph below corresponds with the IBC requirements for Class A fire-resistance rating.

Smoke-Developed Index: 450 or less.

Retain first option in "Veneer Face Grade" subparagraph below if specifying manufacturers' standard products. Second option is based on AWI/AWMAC/WI's "Architectural Woodwork Standards" requirements for Custom Grade interior woodwork. See "Wood Species and Cut" Article in the Evaluations.

Veneer Face Grade: Grade A based on the Decorative Hardwoods Association's HPVA HP-1 definitions and characteristics.

Retain one option in "Veneer Species" subparagraph below or revise to suit Project. Standard veneers available from manufacturers vary.

Veneer Species: [**Beech**] [**Birch**] [**Cherry**] [**Maple**] [**Red oak**] [**Walnut**].

Veneer Cut: [**Manufacturer's standard**] [**Plain sliced (flat cut)**] [**Quarter sliced**] [**Rift cut**] [**Rotary cut**] .

Rail Dimensions: <**Insert dimensions**>.

Rail Spacing: [**1-1/2 inches**] [**2 inches**].

Rail Profile: [**Square**] [**Radius**] exposed, horizontal face.

Retain "Stabilizing Backer Strips" or "Dowels" subparagraph below, or both. Backer strips and dowels can be used in combination. Verify requirements with manufacturers.

Stabilizing Backer Strips: Manufacturer's standard [**flat**] [**notched**] type that attach rails together; spaced at not more than 12 inches o.c.

Material and Finish: [**1/2-inch- thick hardwood plywood, complying with requirements in the Decorative Hardwoods Association's HPVA HP-1, with manufacturer's standard black finish**] [**Material and finish matching rails**]; with finish applied to every surface.

Dowels: Manufacturer's standard dowels that attach rails together; spaced at not more than 12 inches o.c. and 5-1/2 inches from panel ends.

Material and Finish: [**Solid wood with manufacturer's standard black finish**] [**Solid wood of same species and with same finish as rails**].

Panel Module: [**24 by 24 inches**] [**12 by 48 inches**] [**12 by 72 inches**] [**12 by 96 inches**] [**12 by 120 inches**].

Panel Type: [**Lay-in**] [**Clip-attached**] [**Screw-attached**] installation on grid suspension system.

Retain "Attachment Clips" or "Attachment Screws" subparagraph below with first or second option, respectively, in "Panel Type" subparagraph above.

Attachment Clips: Panel manufacturer's standard black, corrosion-resistant, metal spring clips that allow downward access of panels.

Attachment Screws: Manufacturer's standard.

Retain first option in "Factory Finish" subparagraph if finish requirements are not specified in this Section.

Factory Finish: [**As specified in Section 099300 "Staining and Transparent Finishing"**] [**Manufacturer's standard finish**]; applied on every wood surface.

Retain applicable finish subparagraphs below if factory-finish requirements are specified in this Section.

Type: [**Clear**] [**White lacquer**].

Retain "Stain" subparagraph below if required.

Stain: [**As selected by Director’s Representative from manufacturer's standard range**] [**Match Director’s Representative's sample**].

Gloss: [**Manufacturer's standard**] [**Satin**] [**Semigloss**] [**High gloss**].

* + - * 1. Wood-Grille-Panel Accessories: Wood-grille-panel manufacturer's accessories required to provide a complete installation of ceiling in accordance with manufacturer's written installation instructions.

Acoustic Infill Panels: Manufacturer's standard to provide NRC rating indicated, with flame-spread index of 25 or less and smoke-developed index of 50 or less as determined by testing in accordance with ASTM E84.

NRC: 0.75 when tested in accordance with ASTM C423.

Acoustic Felt: Manufacturer's standard, factory applied, black, backer with flame-spread index of 25 or less and smoke-developed index of 450 or less as determined by testing in accordance with ASTM E84.

Veneer Edge Banding: Manufacturer's standard matching planks for treating cut edges; with pressure-sensitive adhesive backing.

Trim: [**As indicated on the Drawings**] <**Insert requirements**>; with trim connectors recommended in writing by ceiling and suspension-system manufacturers.

Material: [**Wood-veneer-wrapped aluminum, finished to match rails**] [**Wood-veneered composite matching rails**] [**Solid wood finished to match rails**].

* + - * 1. Grid Suspension System: ASTM C635; recommended in writing by ceiling and suspension-system manufacturers for applications indicated; main- and cross-runner system complete with suspension-system components required to support ceiling units and other ceiling-supported construction.

Retain one option in "Material" subparagraph below or revise to suit Project.

Material: [**ASTM A653, hot-dip galvanized, cold-rolled sheet steel, G60 coating designation**] [**ASTM A653, hot-dip galvanized, cold-rolled sheet steel, G60 coating designation with ASTM B209 aluminum cap**].

Structural Classification: Heavy-duty system.

Face Width: [**15/16 inch**] [**9/16 inch**].

Finish: Flat black.

Retain the article below for panels of vertical oriented solid wood rails ceilings in a grid pattern that is open or infilled. Solid wood is only available as class c finish.

* + - 1. SOLID-WOOD, OPEN-CELL PANEL CEILING <**Insert drawing designation**>

Copy this article and re-edit for each solid-wood, open-cell panel ceiling product.

Insert drawing designation. Use these designations on Drawings to identify locations of each ceiling.

* + - * 1. Modular Wood Louvers: Manufacturer's standard open-cell panels fabricated from kiln-dried, solid-wood louver blades [**free of knots**] [**with up to 1/2-inch- diameter knots**] and without finger joints, cracks, checks, and warp; designed for lay-in installation in ceiling suspension grid.

[Products:](http://www.specagent.com/Lookup?ulid=14031) Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

[Armstrong World Industries, Inc](http://www.specagent.com/Lookup?uid=123457174027); Woodworks® Open Cell.

[ASI Architectural](http://www.specagent.com/Lookup?uid=123457174038); Cube Ceilings.

Certainteed, A Saint-Gobain Company; Open Cell.

Approved equivalent.

Wood Species: [**Birch**] [**Cherry**] [**Maple**] [**Poplar**] [**Red oak**].

Wood Cut: [**Manufacturer's standard**] [**Plain sliced (flat cut)**] [**Rift cut**].

Blade Depth: [**Manufacturer's standard**] [**2 inches**] [**2-1/4 inches**].

Blade Thickness: [**Manufacturer's standard**] [**3/8 inch**] [**1/2 inch**] [**3/4 inch**].

Blade Pattern: Blades form cells [**as indicated on Drawings**] [**nominally 4 inches square**] [**nominally 6 inches square**] [**nominally 6 inches by 24 inches**] [**nominally 12 inches square**] [**nominally 12 inches by 24 inches**].

Retain and edit the next three paragraphs regarding panels if the open cells are grouped into panel section. Delete if open cells are continuous.

Panel Module: [**24 inches square**] [**24 by 48 inches**].

Panel Depth: [**Manufacturer's standard**] [**2 inches**] [**2-1/4 inches**].

Panel Edges: Manufacturer's standard for [**flush**] [**reveal**] installation.

Retain "Reveal Depth" subparagraph below with second option in "Panel Edges" subparagraph above.

Reveal Depth: Manufacturer's standard.

Retain first or second option in "Factory Finish" subparagraph below if finish requirements are specified in other Sections.

Factory Finish: [**As specified in Section 099300 "Staining and Transparent Finishing"**] [**As specified in Section 099646 "Intumescent Painting"**]; applied on every wood surface.

Retain applicable finish subparagraphs below if factory-finish requirements are specified in this Section.

Surface-Burning Characteristics: Provide manufacturer's standard finish system with the following characteristics when tested in accordance with ASTM E84:

"Flame-Spread Index" and "Smoke-Developed Index" subparagraphs below correspond with the IBC requirements for Class A fire-resistance rating.

Flame-Spread Index: 76-200 or less.

Smoke-Developed Index: 450 or less.

Type: [**Clear**] [**White lacquer**] [**Tinted finish in color selected by Director’s Representative from manufacturer's standard**].

Retain "Stain" subparagraph below if required. Some manufacturers offer tinted finishes that do not require the use of a separate stain.

Stain: [**As selected by Director’s Representative from manufacturer's standard range**] [**Match Director’s Representative's sample**].

Gloss: [**Manufacturer's standard**] [**Satin**] [**Semigloss**] [**High gloss**].

* + - * 1. Modular-Wood-Louver Accessories: Modular-wood-louver manufacturer's accessories required to provide a complete installation of ceiling in accordance with manufacturer's written installation instructions.

Hold-Down Clips: Manufacturer's standard.

Acoustic Infill Panels: Manufacturer's standard to provide NRC rating indicated, with flame-spread index of 25 or less and smoke-developed index of 50 or less as determined by testing in accordance with ASTM E84.

NRC: 0.75 when tested in accordance with ASTM C423.

Wood Trim: [**As indicated on the Drawings**] <**Insert requirements**>; in wood species and finished to match rails; with trim connectors recommended in writing by ceiling and suspension-system manufacturers.

Wood Veneer Strips: For adhering to face of grid suspension system in the field; manufacturer's standard in wood species and finish to match rails; with adhesive backing that complies with requirements in "Performance Requirements" Article.

Revise "Grid Suspension System" paragraph below if using an integral wood suspension system; integral wood suspension systems are available from limited manufacturers.

* + - * 1. Grid Suspension System: ASTM C635; recommended in writing by ceiling and suspension-system manufacturers for applications indicated; main- and cross-runner system complete with suspension-system components required to support ceiling units and other ceiling-supported construction.

Retain one option in "Material" subparagraph below or revise to suit Project.

Material: [**ASTM A653, hot-dip galvanized, cold-rolled sheet steel, G60 coating designation**] [**ASTM A653, hot-dip galvanized, cold-rolled sheet steel, G60 coating designation with ASTM B209 aluminum cap**].

Structural Classification: Heavy-duty system.

Face Width: [**15/16 inch**] [**9/16 inch**].

Finish: Flat black.

Retain the article below for panels of vertical oriented veneer wood rails ceilings in a grid pattern that is open or infilled. Veneer wood is available as class a finish.

* + - 1. WOOD-VENEER, OPEN-CELL PANEL CEILING <**Insert drawing designation**>

Copy this article and re-edit for each wood-veneer, open-cell panel ceiling product.

Insert drawing designation. Use these designations on Drawings to identify locations of each ceiling.

* + - * 1. Modular Wood Louvers: Manufacturer's standard open-cell panel fabricated from louver blades consisting of wood veneer adhered to backs and exposed surfaces of ANSI A208.2 medium density fiberboard or ANSI A208.1 particle board composite-wood cores; designed for lay-in installation in ceiling suspension grid.

[Products:](http://www.specagent.com/Lookup?ulid=14032) Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

Armstrong World Industries, Inc.; Woodworks® Open Cell.

ASI Architectural; Cube Ceilings.

Certainteed, A Saint-Gobain Company.; Open Cell.

Approved equivalent.

Retain "Surface-Burning Characteristics" subparagraph below if required. See "Fire-Test-Response Characteristics" Article in the Evaluations. If retaining, coordinate with other ceiling requirements specified.

Surface-Burning Characteristics: Provide products with the following characteristics when tested in accordance with ASTM E84:

"Flame-Spread Index" subparagraph below corresponds with the IBC requirements for Class A fire-resistance rating.

Flame-Spread Index: 25 or less.

"Smoke-Developed Index" subparagraph below corresponds with the IBC requirements for Class A fire-resistance rating.

Smoke-Developed Index: 450 or less.

Retain first option in "Veneer Face Grade" subparagraph below if specifying manufacturers' standard products. Second option is based on AWI/AWMAC/WI's "Architectural Woodwork Standards" requirements for Custom Grade interior woodwork. See "Wood Species and Cut" Article in the Evaluations.

Veneer Face Grade: [**Manufacturer's standard**] [**Grade A based on the Decorative Hardwoods Association's HPVA HP-1 definitions and characteristics**].

Retain one option in "Veneer Species" subparagraph below or revise to suit Project. Standard veneers available from manufacturers vary.

Veneer Species: [**Beech**] [**Birch**] [**Cherry**] [**Maple**] [**Red oak**] [**Walnut**].

Veneer Cut: [**Manufacturer's standard**] [**Plain sliced (flat cut)**] [**Quarter sliced**] [**Rift cut**] [**Rotary cut**].

Blade Depth: [**Manufacturer's standard**] [**2 inches**] [**2-1/4 inches**].

Blade Thickness: [**Manufacturer's standard**] [**3/8 inch**] [**1/2 inch**] [**3/4 inch**].

Blade Pattern: Blades form cells [**as indicated on Drawings**] [**nominally 4 inches square**] [**nominally 6 inches square**] [**nominally 6 inches by 24 inches**] [**nominally 12 inches square**] [**nominally 12 inches by 24 inches**].

Panel Module: [**24 inches square**] [**24 by 48 inches**].

Panel Depth: [**Manufacturer's standard**] [**2 inches**] [**2-1/4 inches**].

Panel Edges: Manufacturer's standard for [**flush**] [**reveal**] installation.

Retain "Reveal Depth" subparagraph below with second option in "Panel Edges" subparagraph above.

Reveal Depth: Manufacturer's standard.

Retain first option in "Factory Finish" subparagraph if finish requirements are not specified in this Section.

Factory Finish: [**As specified in Section 099300 "Staining and Transparent Finishing"**] [**Manufacturer's standard finish**]; applied on every wood surface.

Retain applicable finish subparagraphs below if factory-finish requirements are specified in this Section.

Type: [**Clear**] [**White lacquer**].

Retain "Stain" subparagraph below if required.

Stain: [**As selected by Director’s Representative from manufacturer's standard range**] [**Match Director’s Representative's sample**].

Gloss: [**Manufacturer's standard**] [**Satin**] [**Semigloss**] [**High gloss**].

* + - * 1. Modular-Wood-Louver Accessories: Modular-wood-louver manufacturer's accessories required to provide a complete installation of ceiling in accordance with manufacturer's written installation instructions.

Acoustic Infill Panels: Manufacturer's standard to provide NRC rating indicated, with flame-spread index of 25 or less and smoke-developed index of 50 or less as determined by testing in accordance with ASTM E84.

NRC: 0.75 when tested in accordance with ASTM C423.

Veneer Edge Banding: Manufacturer's standard matching planks for treating cut edges; with pressure-sensitive adhesive backing.

Trim: [**As indicated on the Drawings**] <**Insert requirements**>; with trim connectors recommended in writing by ceiling and suspension system manufacturers.

Material: [**Wood-veneer-wrapped aluminum, finished to match blades**] [**Wood-veneered composite matching blades**] [**Solid wood finished to match blades**].

* + - * 1. Grid Suspension System: ASTM C635; recommended in writing by ceiling and suspension-system manufacturers for applications indicated; main- and cross-runner system complete with suspension-system components required to support ceiling units and other ceiling-supported construction.

Retain one option in "Material" subparagraph below or revise to suit Project.

Material: [**ASTM A653, hot-dip galvanized, cold-rolled sheet steel, G60 coating designation**] [**ASTM A653, hot-dip galvanized, cold-rolled sheet steel, G60 coating designation with ASTM B209 aluminum cap**].

Structural Classification: Heavy-duty system.

Face Width: 15/16 inch.

Finish: Flat black.

* + - 1. WOOD-VENEER, FLAT-PANEL CEILING <**Insert drawing designation**>

Copy this article and re-edit for each wood-veneer, flat-panel ceiling product.

Insert drawing designation. Use these designations on Drawings to identify locations of each ceiling.

* + - * 1. Wood Panels: Manufacturer's standard panels consisting of wood veneer bonded to both faces of composite-wood core with exposed edges banded with the same veneer finish as the face.

[Products:](http://www.specagent.com/Lookup?ulid=14033) Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

[Armstrong World Industries, Inc](http://www.specagent.com/Lookup?uid=123457174030); Woodworks® Panel.

[ASI Architectural](http://www.specagent.com/Lookup?uid=123457174039); [**Audition**][**Fusion**][**Microperf**][**Coffer**].

Certainteed, A Saint-Gobain Company.; Panel Wood Ceilings.

Approved equivalent.

Retain "Surface-Burning Characteristics" subparagraph below if required. See "Fire-Test-Response Characteristics" Article in the Evaluations. If retaining, coordinate with other ceiling requirements specified.

Surface-Burning Characteristics: Provide products with the following characteristics when tested in accordance with ASTM E84:

"Flame-Spread Index" subparagraph below corresponds with the IBC requirements for Class A fire-resistance rating.

Flame-Spread Index: 25 or less.

in "Smoke-Developed Index" subparagraph below corresponds with the IBC requirements for Class A fire-resistance rating.

Smoke-Developed Index: 450 or less.

Retain first option in "Veneer Face Grade" subparagraph below if specifying manufacturers' standard products. Second option is based on AWI/AWMAC/WI's "Architectural Woodwork Standards" requirements for Custom Grade interior woodwork. See "Wood Species and Cut" Article in the Evaluations.

Veneer Face Grade: Grade A based on the Decorative Hardwoods Association's HPVA HP-1 definitions and characteristics.

Retain one option in "Veneer Species" subparagraph below or revise to suit Project. Standard veneers available from manufacturers vary. Bamboo is a rapidly renewable resource that is technically a grass; however, it is marketed as wood.

Veneer Species: [**Bamboo**] [**Beech**] [**Birch**] [**Cherry**] [**Maple**] [**Red oak**] [**Walnut**].

Veneer Cut: [**Manufacturer's standard**] [**Plain sliced (flat cut)**] [**Quarter sliced**] [**Rift cut**] [**Rotary cut**].

Retain "Panel Perforation Pattern" subparagraph below if required.

Panel Perforation Pattern: As indicated by manufacturers designation.

Retain "Panel NRC Rating" subparagraph below for perforated panels and coordinate with pattern indicated in "Panel Perforation Pattern" subparagraph above and material indicated in "Acoustical Backing" subparagraph below.

Panel NRC Rating: Not less than when tested in accordance with ASTM C423.

Acoustical Backing: Manufacturer's standard to provide NRC rating indicated for perforation pattern indicated, with flame-spread index of 25 or less and smoke-developed index of 450 or less as determined by testing in accordance with ASTM E84.

Retain "Panel Surface Pattern" subparagraph below if required.

Panel Surface Pattern: As indicated by manufacturers designation.

Panel Module: [**24 inches square**] [**24 by 48 inches**].

Panel Depth: [**Manufacturer's standard**] [**1/2 inch**] [**3/4 inch**].

Panel Edges: Manufacturer's standard for [**flush, lay-in**] [**reveal, lay-in**] [**concealed, lay-in**] grid installation.

Retain "Reveal Depth" and "Reveal Width" subparagraphs below for panels with reveal edges.

Reveal Depth: [**Manufacturer's standard**] [**3/4 inch**].

Reveal Width: [**Manufacturer's standard**] [**3/8 inch**] [**5/8 inch**] [**1 inch**].

Veneer Adhesive: Manufacturer's standard that complies with "Performance Requirements" Article.

Retain first option in "Factory Finish" subparagraph if finish requirements are not specified in this Section.

Factory Finish: [**As specified in Section 099300 "Staining and Transparent Finishing"**] [**Manufacturer's standard finish**]; applied on every wood surface.

Retain applicable finish subparagraphs below if factory-finish requirements are specified in this Section.

Type: [**Clear**] [**White lacquer**] [**Tinted finish in color selected by Director’s Representative from manufacturer's standard**].

Retain "Stain" subparagraph below if required. Some manufacturers offer tinted finishes that do not require the use of a separate stain.

Stain: [**As selected by Director’s Representative from manufacturer's standard range**] [**Match Director’s Representative's sample**].

Gloss: [**Manufacturer's standard**] [**Satin**] [**Semigloss**] [**High gloss**].

* + - * 1. Wood-Panel Accessories: Wood-panel manufacturer's accessories required to provide a complete installation of ceiling in accordance with manufacturer's written installation instructions.

Attachment Clips: Manufacturer's standard screw attached to back face of panels with square-cut edges to produce concealed-grid installation and allowing downward removal of ceiling panels.

Hold-Down Clips: Manufacturer's standard that maintain proper seating of kerfed panel edges.

Safety Clips: Manufacturer's standard to prevent panels from dropping when disengaged from the suspension system.

Safety Cables: Manufacturer's standard to prevent panels weighing 20 lb or more from falling to floor in event of grid failure.

Border Clips: Manufacturer's standard [**spring**] [**screw-attached**] <**Insert requirements**> type.

Grid-Stabilizer Clips: Manufacturer's standard for oversize panels.

Panel-Fixing Clip or Bracket: Manufacturer's standard that positively secures border and cut panels to the suspension system, so they cannot be removed from below.

Veneer Edge Banding: Manufacturer's standard matching panels for treating cut edges; with pressure-sensitive adhesive backing.

If retaining "Solid-Wood Grid Cover" or "Wood-Board Edge Trim" subparagraphs below, show details of wood trim installation requirements on Drawings.

Solid-Wood Grid Cover: In same species as panel veneer; factory finished to match panel faces; 3/4 inch thick and 2 inches wide and in manufacturer's standard profile.

Wood-Board Edge Trim: Manufacturer's standard with core, veneer, and finish matching panel, complete with splice plates, clips, and brackets required for a complete installation in accordance with manufacturer's written instructions.

Board Width: [**4 inches**] [**6 inches**] <**Insert dimension**>.

Board Depth: 3/4 inch.

* + - * 1. Grid Suspension System: ASTM C635; recommended in writing by ceiling and suspension-system manufacturers for applications indicated; main- and cross-runner system complete with suspension-system components required to support ceiling units and other ceiling-supported construction.

Retain one option in "Material" subparagraph below or revise to suit Project.

Material: [**ASTM A653, hot-dip galvanized, cold-rolled sheet steel, G60 coating designation**] [**ASTM A653, hot-dip galvanized, cold-rolled sheet steel, G60 coating designation with ASTM B209 aluminum cap**].

Structural Classification: system.

Face Width: [**15/16 inch**] [**9/16 inch**].

Finish: Flat black.

* + - 1. SUSPENSION-SYSTEM HANGERS, BRACES, AND TIES
				1. Attachment Devices: Size for 5 times the design load indicated in ASTM C635, Table 1, Direct Hung, unless otherwise indicated.

"Cast-in-Place and Postinstalled Anchors in Concrete" subparagraph below does not apply to power-actuated fasteners. Retain if this type of anchorage to concrete is required. Verify safety factor with Project's structural engineer. Revise testing methods below if required by authorities having jurisdiction.

Cast-in-Place and Postinstalled 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 5 times that imposed by ceiling construction as determined by testing in accordance with ASTM E488 or ASTM E1512, as applicable, conducted by a qualified testing and inspecting agency.

Retain one option in "Type" subparagraph below; verify suitability with Project's structural engineer.

Type: [**Cast-in-place**] [**Postinstalled expansion**] [**Postinstalled bonded**] anchors.

Corrosion Protection:

Retain one of first three subparagraphs below or, if more than one is required, indicate location of each on Drawings. Zinc plating of class indicated protects against corrosion from an indoor atmosphere subject to rare condensation and minimum wear or abrasion; revise thickness to suit more corrosive conditions or retain requirements for stainless steel or nickel-copper alloy, depending on conditions. If postinstalled expansion anchors are used to attach nickel-copper-alloy wire hangers and braces, consider retaining nickel-copper anchors after verifying availability with manufacturers.

Carbon-steel components zinc plated to comply with ASTM B633, Class Fe/Zn 5 (0.005 mm) for Class SC service condition (mild).

Stainless steel components complying with ASTM F593 and ASTM F594, Group 1 Alloy 304 or 316 for bolts; Alloy 304 or 316 for anchors.

Components fabricated from nickel-copper-alloy rods complying with ASTM B164 for UNS No. N04400 alloy.

Retain "Power-Actuated Fasteners in Concrete" subparagraph below if allowed. Verify safety factor with Project's structural engineer.

Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated, and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction as determined by testing in accordance with ASTM E1190 conducted by a qualified testing and inspecting agency.

* + - * 1. Wire Hangers, Braces, and Ties: Provide wire complying with the following requirements:

Retain "Zinc-Coated, Carbon-Steel Wire," "Stainless Steel Wire," or "Nickel-Copper-Alloy Wire" subparagraph below unless more than one type of wire is required. If more than one type of wire is required, indicate location of each on Drawings. Revise hangers to strap type if required by authorities having jurisdiction or by local union regulations.

Zinc-Coated, Carbon-Steel Wire: ASTM A641, Class 1 zinc coating, soft temper.

Stainless Steel Wire: ASTM A580, Type 304, nonmagnetic.

Nickel-Copper-Alloy Wire: ASTM B164 nickel-copper alloy UNS No. N04400.

Retain second option in "Size" subparagraph below if required by authorities having jurisdiction or if applicable for extra security and quality (including corrosion allowance). Because larger sizes are difficult to work with, their use could result in poor leveling tolerance.

Size: Select wire diameter so its stress at 3 times the hanger design load indicated in ASTM C635, Table 1, Direct Hung is less than yield stress of wire, but provide not less than 0.106-inch- diameter wire.

If retaining "Hanger Rods" or "Flat Hangers" paragraphs below, insert sizes here or indicate on Drawings.

* + - * 1. Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.
				2. Flat Hangers: Mild steel, zinc coated or protected with rust-inhibitive paint.

If retaining "Angle Hangers" paragraph below, insert specific sizes here or indicate on Drawings.

* + - * 1. Angle Hangers: Angles with legs not less than 7/8 inch wide; formed from 0.04-inch- thick, galvanized-steel sheet complying with ASTM A653, G90 coating designation; with bolted connections and 5/16-inch- diameter bolts.

Retain "Seismic Stabilizer Bars" paragraph below if required for grid suspension systems. Revise if stabilizer bars are needed to improve stability of the suspension system and unit alignment in nonseismic installations.

* + - * 1. Seismic Stabilizer Bars: Grid-suspension-system manufacturer's standard perimeter stabilizers designed to accommodate seismic forces.

Retain "Seismic Struts" paragraph below if required. Coordinate with manufacturer's requirements and authorities having jurisdiction. Insert descriptions of manufacturers' other, proprietary attachment accessories if required.

* + - * 1. Seismic Struts: Suspension-system manufacturer's standard compression struts designed to accommodate seismic forces.

Retain "Exterior Bracing" paragraph below for exterior installations to comply with lateral bracing requirements for wind load. Coordinate with other requirements of manufacturer.

* + - * 1. Exterior Bracing: Cold-rolled steel channels and angles, hot-dip galvanized to comply with ASTM A653, G60 coating designation; size and profile as required to withstand wind load.
1. EXECUTION
	* + 1. EXAMINATION
				1. Examine substrates, areas, and conditions, including structural framing and substrates to which suspended wood ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage, and with requirements for installation tolerances and other conditions affecting performance of suspended wood ceilings.
				2. Proceed with installation only after unsatisfactory conditions have been corrected.
			2. PREPARATION
				1. Measure each ceiling area and establish layout of suspended wood ceilings.

Balance border widths at opposite edges of each ceiling.

Avoid using less-than-half-width units.

* + - 1. INSTALLATION

Revise requirements in this article if suspension systems other than standard, metal grid, or carrier systems, such as integral wood suspension systems **for** solid-wood, open-cell ceilings, are required.

* + - * 1. Comply with ASTM C636 and seismic requirement indicated, in accordance with manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."
				2. 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.

Retain one of first two subparagraphs below unless both types of hangers are required and their locations are indicated on Drawings or by inserts.

Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns in 3 inches. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate to which hangers are attached and for type of hanger involved.

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 does not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.

Retain subparagraphs below that are applicable to construction.

Retain option in first subparagraph below if power-actuated fasteners are allowed.

Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts[**, power-actuated fasteners,**] or postinstalled mechanical or adhesive anchors that extend through forms into concrete.

When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.

Do not attach hangers to steel deck tabs.

Retain first subparagraph below unless attaching to the roof deck is permitted by the structural engineer and authorities having jurisdiction. Revise if structural members are spaced too far apart for hangers and another method is required. For alternatives that may need to be detailed on Drawings, consult structural engineer and see CISCA's guidelines.

Do not attach hangers to steel roof deck. Attach hangers to structural members.

Space hangers not more than 48 inches o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.

Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.

* + - * 1. Install edge moldings and trim at perimeter of ceiling area and where necessary to conceal edges and ends of wood units.

Retain first subparagraph below for metal edge moldings or revise to suit Project.

Screw-attach metal moldings to substrate at intervals of not more than 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet. Miter corners accurately and connect securely.

Retain subparagraph if exposed fasteners are not allowed; revise to suit Project.

Do not use exposed fasteners on moldings and trim.

* + - * 1. Grid Suspension Systems: Space main beams at 48 inches o.c.

Coordinate requirements for module size in first subparagraph below with wood-ceiling support requirements.

Install cross tees to form [**modules sized in accordance with manufacturer's written installation instructions**] [**24- by 48-inch modules**] [**24-inch square modules**].

Remove and replace dented, bent, or kinked members.

* + - * 1. Linear-Carrier Suspension Systems: Install carriers at no more than 24 inches o.c. aligned and securely interlocked with one another.

Install stabilizer channels, tees, and bars at regular intervals to stabilize carriers and at light fixtures, air-distribution equipment, access doors, and other equipment; spaced as standard with manufacturer for use indicated.

Remove and replace dented, bent, or kinked members.

* + - * 1. Install wood components and accessories in accordance with manufacturer's written instructions and to accommodate natural expansion and contraction of wood products resulting from fluctuations in humidity.
				2. Cut wood components for accurate fit at borders and at interruptions and penetrations by other work through ceilings.

Stiffen edges of cut wood components as required to eliminate variations in flatness.

Revise first paragraph below for specific edge treatments if required.

* + - * 1. Treat field-cut edges of wood components in accordance with manufacturer's written recommendations; finish exposed field cuts to match factory finish.

Solid-Wood Planks: Use solid-wood end caps to conceal exposed field-cut edges.

Edge banding of veneer planks cut at oblique angles might be difficult; consider using trim to conceal these end cuts or using solid-wood planks for these applications.

Wood-Veneer Units: Edge band exposed field-cut edges.

* + - * 1. Install wood components in coordination with suspension system and moldings and trim.

Indicate patterns on Drawings or insert requirements in subparagraph below to suit Project.

Install wood components in patterns indicated on Drawings.

Retain paragraph below if required for ceilings that do not allow access to the plenum above after ceilings are installed or revise to suit Project.

* + - * 1. Install field-constructed access panels in locations indicated on Drawings.
			1. FIELD QUALITY CONTROL

Retain this article if applicable. ASCE/SEI 7 requires special inspections for suspended ceiling systems in Seismic Design Categories D, E, and F; verify requirements of authorities having jurisdiction.

Retain first option in "Special Instructions" paragraph below if Director’s Representative

 engages special inspector. Consider retaining second option if authorities having jurisdiction allow Contractor to engage special inspector. If retaining second option, retain "Field quality-control reports" paragraph in "Informational Submittals" Article.

* + - * 1. Special Inspections: Director’s Representative will engage a qualified special inspector to perform the following special inspections:

Suspended ceiling system.

Hangers, anchors, and fasteners.

Retain the remaining four paragraphs only when fastening to concrete decks.

Retain "Testing Agency" paragraph below, with or without "Special Inspections" paragraph above, to identify who will perform tests and inspections. If retaining second option in "Testing Agency" paragraph, retain "Field quality-control reports" paragraph in "Informational Submittals" Article.

* + - * 1. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

Testing requirements in "Tests and Inspections" paragraph below are examples and apply only to ceilings with hangers attached to concrete by power-actuated fasteners and postinstalled anchors. Retain or revise to suit Project and requirements of authorities having jurisdiction.

* + - * 1. Tests and Inspections: Testing and inspecting of completed installations of ceiling hangers, anchors, and fasteners shall take place in successive stages, in test areas and using methods as follows. Do not proceed with installations of ceiling hangers for the next area until test results for previously completed installations show compliance with requirements.

Test Areas: Test installation of ceiling suspension systems on each floor when installation has reached 20 percent completion but before wood ceilings have been installed.

Verify loads in two subparagraphs below, which are based on Division of the State Architect in California's "Interpretation of Regulation IR 25-2.13," with structural engineer based on ceiling loads and seismic zone in which Project is located. CISCA's "Guidelines for Seismic Restraint of Direct-Hung Suspended Ceiling Assemblies - Seismic Zones 3 & 4" requires hanger-wire-attachment devices to be "capable of supporting 100 lbf."

Within each test area, testing agency will select one of every 10 power-actuated fasteners and postinstalled anchors used to attach hangers to concrete and will test them for 200 lbf of tension; it will also select one of every two postinstalled anchors used to attach bracing wires to concrete and will test them for 440 lbf of tension.

When testing discovers fasteners and anchors that do not comply with requirements, testing agency will test those anchors not previously tested until 20 pass consecutively and then will resume initial testing frequency.

* + - * 1. Ceiling hangers, anchors, and fasteners will be considered defective if they do not pass tests and inspections.
				2. Prepare test and inspection reports.
			1. CLEANING
				1. Clean exposed surfaces of ceilings, including trim and edge moldings. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage, including dented units.

END OF SECTION 095426