

Section 09 54 23 – Beam and Baffle Metal Ceiling System

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. LEED Data: www.ecomedes.com
2. Perforated and non-perforated metal ceiling panels
3. Acoustical backing
4. Suspension systems
5. Accessories; provide other necessary items including devices for attachment overhead construction, secondary members, splines, splices, connecting clips, wall connectors, wall angles, and other devices required for a complete installation.
6. Supplemental support framing: Provide fully engineered secondary framing as required to meet code, conforming to layout shown in drawings, to support direct-hung metal ceilings suspension system.

- B. Related Sections / Work:

1. Sections 05 40 00 – Cold-Formed Metal Framing
2. Sections 09 20 00 – Plaster and Gypsum Board
3. Sections 09 50 00 – Acoustical Ceilings
4. Sections 09 90 00 – Paintings and Coatings
5. Division 23 – Heating, Ventilating and Air Conditioning
6. Division 26 – Electrical

- C. This Section covers the general requirements only for Acoustical Metal Ceilings as shown on the drawings. The supplying and installation of additional accessory features and other items not specifically mentioned herein, but which are necessary to make a complete installation, shall also be included or clarified accordingly.

- D. Qualification Data:

1. Test Reports: Certified reports from independent agency substantiating structural compliance to governing requirements.

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2. Certificates:
 - a. Data substantiating manufacturer and installer qualifications.
 - b. Certified data attesting fire rated materials comply with specifications.
3. Manufacturer's Instructions: Detailed installation instructions and maintenance data.

1.3 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 1. E 84 – "Standard Test Method for Surface Burning Characteristics of Building Materials"
 2. E 488 – "Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements"
 3. B 209 – "Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate"
 4. C 423 – "Sound Absorption and Sound Absorption Coefficients by Reverberation Room Method"
 5. E 580 – "Standard Practice for Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Moderate Seismic Restraint"
 6. C 635 – "Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings"
 7. C 636 – "Recommended Practice for Installation of Metal Ceiling Suspensions Systems for Acoustical and Lay-in Panels"
 8. A 641 – "Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire"
 9. A 653 – "Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip process"
 10. E 1264 – "Classification for Acoustical Ceiling Products"
 11. E 1477 – "Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by use of Integrating-Sphere Reflectometers"
 12. D 1044 – "Practice for Abrasion Resistance"
 13. D 1002 – "Practice for Adhesion Resistance"
- B. LEED-CI 2009: Applicable LEED Environmental Categories and Credits and performance requirements as indicated in LEED for Commercial Interiors 2009:
 1. Material and Resources (MR)
 - a. MRc4 – Recycled Content

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- b. MRc5 – Regional Materials
- c. MRc7 – Certified Wood
- 2. Indoor Environmental Quality (IEQ)
 - a. IEQc4.1 – Low-Emitting Materials – Adhesives & Sealants
 - b. IEQc4.2 – Low-Emitting Materials – Paints & Coatings
 - c. IEQc4.4 – Low-Emitting Materials – Composite Wood & Agrifiber
 - d. IEQpc24 – Acoustics
- C. LEED v4 ID+C: Applicable LEED v.4 Environmental Categories and Credits and performance requirements as indicated in LEED v4 for Interior Design + Coordination:
 - 1. MR Credit: Building Product Disclosure & Optimization – EPD
 - 2. EQ Credit: Low-Emitting Materials
 - 3. EQ Credit: Indoor Air Quality Assessment
 - 4. EQ Credit: Acoustic Performance

1.4 SUBMITTALS

- A. Product Data: Manufacturer's published literature, including specifications.
- B. LEED Submittal Data: Manufacturer's product data for each product specified in this section per www.ecomedes.com.
- C. Product Certification: Manufacturer's certifications that products comply with specified requirements and governing codes including product data, laboratory test reports and research reports showing compliance with specified standards.
- D. Shop Drawings: Submit shop drawings for reflected ceiling plans (RCP's), drawn to scale, and indicating penetrations and ceiling mounted items. Show the following details:
 - 1. Reflected Ceiling Plan(s): Indicating metal ceiling layout, ceiling mounted items and penetrations.
 - 2. Suspension System, Carrier and Component Layout.
 - 3. Details of system assembly and connections to building components.
- E. Samples for Verification: Full-size units (or as specified below) of each type of ceiling assembly indicated; in sets for each color, texture, and pattern specified, showing the full range of variations expected in these characteristics. Submit samples for each type specified.

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1. 11" square metal panel units.
2. 11" long samples of each exposed molding or trim.
3. 11" long samples of each suspension component.

1.5 QUALITY ASSURANCE

A. Manufacturer/Installer Qualifications:

1. Provide metal ceiling system components produced by a single manufacturer with a minimum 5 years' experience in actual production of specified products and with resources to provide consistent quality in appearance and physical properties, without delaying the work.
2. Provide suspension system components produced by a single manufacturer to provide compatible components for a complete metal ceiling system installation.
3. Perform installations using a firm with installers having no less than 3 years of successful experience on projects of similar size and requirements.

B. Regulatory Requirements:

1. Fire Rating Performance Characteristics: Install system to provide a flame spread of 0 - 25, complying with certified testing to ASTM E 84.
2. Structural Criteria: Install and certify system to comply with structural requirements of governing codes.
3. Installation Standard for Suspension System: Comply with ASTM C 636.

C. Mock-Up: Prior to beginning installation erect a mock-up section, where directed, using all system components.

D. Pre-installation Conference: Conduct a conference, prior to start of installation, to review system requirements, shop drawings, and all coordination needs.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver system components in manufacturer's original unopened packages, clearly labeled.
- B. Store components in fully enclosed dry space. Carefully place on skids, to prevent damage from moisture and other construction activities.
- C. Handle components to prevent damage to surfaces and edges, and to prevent distortion and other physical damage.

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1.7 PROJECT CONDITIONS

- A. Begin system installations only after spaces are enclosed and weather-tight, and after all wet work and overhead work have been completed.
- B. Prior to starting installations, allow materials to reach ambient room temperature and humidity intended to be maintained for occupancy.

1.8 WARRANTY

- A. Provide specified manufacturer's warranty against defects in workmanship, discoloration, or other defect considered undesirable by the Architect or Employer.
- B. This warranty shall remain in effect for a minimum period of one (1) year from date of initial acceptance.

1.9 MAINTENANCE & EXTRA MATERIALS

- A. Maintenance Instructions: Provide manufacturer's standard maintenance and cleaning instructions for finishes provided.
- B. Extra Materials: Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with labels describing contents. Only typical system components are included with attic stock.
 - 1. Acoustical Metal Ceiling Pan Units: Full-size units equal to two percent (2%) of amount installed.
 - 2. Ceiling Suspension System Components: Quantity of each grid and exposed component equal to two percent (2%) of amount installed.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. Provide Tavola™ Tall Beam and Baffle ceiling system manufactured by CertainTeed Architectural; 5015 Oakbrook Parkway, Suite 100, Norcross, GA 30093. Tel: (800) 366-4327; www.CertainTeed.com/Architectural
- B. Substitutions not permitted

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2.2 SYSTEM MATERIALS

- A. Tavola™ Tall Beam and Baffle ceiling system for interior installations providing single beam access with use of scissor clips. Material thickness per manufacturer's recommendations.

1. Tavola™ Tall Dimensions:

- a. 1" Width by (7") (8") (9") (10") (11") (12") (13") (14") (15") Height
- b. 1-1/2" Width by (7") (8") (9") (10") (11") (12") (13") (14") (15") Height
- c. 2" Width by (7") (8") (9") (10") (11") (12") (13") (14") (15") Height

2. Contact manufacturer for other dimensions.

3. On Center Beam Spacing (min. 6"): **(Standard 6") (Other: _____")**

4. Beam Length (max. 12'0"): _____' _____"

B. Suspension:

1. Grid: CertainTeed 15/16" EZ Stab Classic, Heavy-Duty.
2. Hanger Bracket Assembly: Scissor-clip beam attachment

Perforations available on painted finish options only:

3. Non-Perforated
4. Perforation Pattern **(#106) (#115) (#119)** on **(vertical sides of beam only)**

C. Panel Finish:

1. Paint; color to be selected by architect
 - a. Applied Polyester
 - b. Powder Coat
 - c. Decorated Wood-Look Powder Coat
2. Film

2.3 ACCESSORY MATERIALS

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- A. Panel End Caps: End caps to match beam finish
- B. Hanger Brackets: Splice/hanger bracket connectors
- C. Acoustic Material: ***(Non-woven black fabric)(Non-woven black fabric with 1" thick glass fiber, 1-1/2 pcf density, polywrapped)(1" thick glass fiber, 1-1/2 pcf density, polywrapped)***
 - 1. Apparent NRC Rating: ***(.60)(.90)(.95)(1.00)***

PART 3- EXECUTION

3.1 EXAMINATION

- A. Examine substrates and structural framing to which acoustical metal panels attach or abut, with installer present, for compliance with requirements specified in this and other Sections that affect installation and anchorage, and other conditions affecting performance of metal panel ceilings.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Coordination: Furnish layouts for cast-in-place anchors, clips, and other ceiling anchors whose installation is specified in other Sections.
- B. Measure each ceiling area and establish layout of acoustical metal pan units to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width units at borders, and comply with layout shown on reflected ceiling plans.
- C. Survey substrate for wall attachment to assure squareness and proper elevation for wall panel installation.

3.3 INSTALLATION

- A. General: Install acoustical metal pan ceilings, per manufacturers shop drawings provided, per manufacturer's written instructions and to comply with publications referenced below.
 - 1. CISCA "Ceiling Systems Handbook"
 - 2. Standard for Ceiling Suspension System Installations - ASTM C 636
 - 3. Standard for Ceiling Suspension Systems Requiring Seismic Restraint - ASTM E 580
 - 4. IBC (International Building Code) Standard for Seismic Zone for local area
- B. Suspend ceiling hangers from building's approved structural substrates and as follows:

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1. 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.
 2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, counter-splaying, or other equally effective means.
 3. Where width of ducts and other construction within ceiling plenum produce hanger spacings that interfere with location of hangers at spacing required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Utilize supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
 4. Where used secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure; that are appropriate for substrate; and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
 5. Space hangers not more than 48" on-center, along each member supported directly from hangers, unless otherwise indicated; and provide hangers not more than 12" from ends of each member. Supply supporting calculations from licensed Structural Engineer verifying hanger spacing meets all requirements, when spacing exceeds those recommended.
 6. Level grid to 1/8" in 10' from specified elevation(s), square and true.
 7. Adjust suspension system runners so they are square (within .5 degrees from 90 degrees) and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- C. Secure bracing wires to ceiling suspension members and to supports acceptable to Architect/Engineer and/or inspector. Suspend bracing from building's structural members and/or structural deck, as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs (unless directed otherwise).
- D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical metal pan. Method of edge trim attachment and design of edge trims to be approved by Architect.
1. Screw attach moldings to substrate at intervals not more than 18" on-center and not more than 6" from ends, leveling with ceiling suspension system to a tolerance of 1/8" in 10'. Miter corners accurately and connect securely.
 2. Do not use exposed fasteners, including pop rivets, on moldings and trim without prior written approval, or unless detailed otherwise.
- E. Scribe and cut acoustical metal panel units for accurate fit at penetrations by other work through ceilings. Stiffen edges of cut units as required to eliminate evidence of buckling or variations in flatness exceeding referenced standards for stretcher-leveled metal sheet.

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- F. Install acoustical metal panel units in coordination with suspension system.
 - 1. Align joints in adjacent courses to form uniform, straight joints parallel to room axis in both directions, unless otherwise indicated. Install directionally patterned or textured panels in directions indicated on approved shop drawings. Panel- joints shall flow smoothly and in a straight line within 1/8" in 10'. Intersections shall be continuous.
 - 2. Fit adjoining units to form flush, tight joints. Scribe and cut units for accurate fit at borders and around construction penetrating ceiling.
 - 3. Remove protective film from panels only when space is completely clean and free of airborne particles. Use white cotton gloves for final installation of panels into grid system.

3.4 ADJUST AND CLEAN

- A. Adjust components to provide uniform tolerances.
- B. Replace all ceiling panels that are scratched, dented or otherwise damaged.
- C. Clean exposed surfaces with non-solvent, non-abrasive commercial type cleaner.

End of Section