SECTION 09 54 23 – Beam and Baffle Ceiling System - Fabricated

1. GENERAL
   * + 1. RELATED DOCUMENTS
          1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
       2. SUMMARY
          1. Section Includes:

Perforated and non-perforated metal ceiling baffles and beams

Acoustical infill

Suspension systems

Accessories: provide other necessary items including devices for attachment overhead construction, secondary members, splines, splices, connecting clips, and other devices required for a complete installation.

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.

* + - * 1. Related Sections:

Sections 05 40 00 – Cold-Formed Metal Framing

Sections 09 50 00 – Acoustical Ceilings

Sections 09 90 00 – Paintings and Coatings

Division 23 – Heating, Ventilating and Air Conditioning

Division 26 – Electrical

* + - * 1. Alternatives

Prior Approval: Unless otherwise provided for in the Contract documents, proposed product substitutions may be submitted no later than TEN (10) working days prior to the date established for receipt of bids. Acceptability of a proposed substitution is contingent upon the Architect's review of the proposal for acceptability and approved products will be set forth by the Addenda. If included in a Bid are substitute products that have not been approved by Addenda, the specified products shall be provided without additional compensation.

Submittals that do not provide adequate data for the product evaluation will not be considered. The proposed substitution must meet all requirements of this section, including but not necessarily limited to, the following: Single source materials suppliers (if specified in Section 1.5); Underwriters' Laboratories Classified Acoustical performance; Component design, size, composition, color, and finish; Suspension system component profiles and sizes; Compliance with the referenced standards.

* + - 1. REFERENCES
         1. American Society for Testing and Materials (ASTM)

E 84 – "Standard Test Method for Surface Burning Characteristics of Building Materials"

E 488 – "Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements"

B 209 – "Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate"

C 423 – "Sound Absorption and Sound Absorption Coefficients by Reverberation Room Method"

E 580 – "Standard Practice for Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Moderate Seismic Restraint"

C 635 – "Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings"

C 636 – "Recommended Practice for Installation of Metal Ceiling Suspensions Systems for Acoustical and Lay-in Panels"

A 641 – "Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire"

A 653 – "Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip process"

E 1264 – "Classification for Acoustical Ceiling Products"

E 1477 – "Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by use of Integrating-Sphere Reflectometers"

D 1044 – "Practice for Abrasion Resistance"

D 1002 – "Practice for Adhesion Resistance"

System Description:

Wall to Wall Configurations

* + - 1. SUBMITTALS
         1. Product Data: Manufacturer's published literature, including specifications.
         2. 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.
         3. Shop Drawings: Layout and details of acoustical ceilings show locations of items that are to be coordinated with or supported by the ceilings.
         4. 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.

6" long metal beam.

6" long samples of each suspension component.

* + - 1. INFORMATIONAL SUBMITTALS

Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

Lighting fixtures.

Air outlets and inlets.

Speakers.

Sprinklers.

Field quality-control reports.

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* + - 1. INFORMATIONAL SUBMITTALS.
         1. Embodied Carbon Submittals:

Completed Environmental Product Declaration Reporting Form for each principal product type in this Section.

For products with completed Environmental Product Declaration Reporting Forms claiming availability of an applicable EPD, provide the Product-Specific or Industry-Wide Type III Environmental Product Declaration (EPD) in compliance with ISO 14025.

The Contractor is advised that the submission of the embodied carbon EPD materials to the USGBC is not required.

* + - 1. QUALITY ASSURANCE
         1. Manufacturer/Installer Qualifications:

Provide metal ceiling system components produced by a single manufacturer with experience in actual production of specified products and with resources to provide consistent quality in appearance and physical properties, without delaying the work.

Provide suspension system components produced by a single manufacturer to provide compatible components for a complete metal ceiling system installation.

Perform installations using a firm with installers having no less than 3 years of successful experience on projects of similar size and requirements.

* + - * 1. Regulatory Requirements:

Fire Rating Performance Characteristics: Install system to provide a flame spread of 0 - 25, complying with certified testing to ASTM E 84.

Structural Criteria: Install and certify system to comply with structural and wind load requirements of governing codes.

Installation Standard for Suspension System: Comply with ASTM C 636.

Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

Build mockup of typical ceiling area as shown on Drawings.

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

* + - * 1. Pre-installation Conference: Conduct a conference, prior to start of installation, to review system requirements, shop drawings, and all coordination needs.
      1. DELIVERY, STORAGE AND HANDLING
         1. Deliver system components in manufacturer's original unopened packages, clearly labeled.
         2. Store components in fully enclosed dry space. Carefully place on skids, to prevent damage from moisture and other construction activities.
         3. Handle components to prevent damage to surfaces and edges, and to prevent distortion and other physical damage.
      2. PROJECT CONDITIONS
         1. Begin system installations only after spaces are enclosed and weather-tight, and after all wet work and overhead work have been completed.
         2. Prior to starting installations, allow materials to reach ambient room temperature and humidity intended to be maintained for occupancy.
      3. WARRANTY
         1. Provide specified manufacturer's warranty against defects in workmanship, discoloration, or other defect considered undesirable by the Architect or Employer.
         2. This warranty shall remain in effect for a minimum period of one (1) year from date of initial acceptance.
      4. MAINTENANCE & EXTRA MATERIALS
         1. Maintenance Instructions: Provide manufacturer's standard maintenance and cleaning instructions for finishes provided.
         2. 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.

Acoustical Metal Ceiling Beams: Full-size units equal to two percent (2%) of amount installed.

Ceiling Suspension System Components: Quantity of each grid and exposed component equal to two percent (2%) of amount installed.

* + - 1. LEED
         1. Maxxit Metal Ceilings qualify for the following credits:

Category - Material & Resources

MR Credit 2.1, 2.2 - Construction Waste Management Divert 50% or 75% from disposal

MR Credit 4.1, 4.2 - Recycled Content

MR Credit 5.1, 5.2 - Regional Materials (dependent on location)

LEED NC - 10% Extracted, Processed & Manufactured Regionally

LEED CI - 20% Manufactured Regionally

Category - Indoor Environmental Quality

EQ Credit 4.1 to 4.6 - Low-Emitting Materials

Category - Innovation and Design Process

ID Credit - Acoustic Performance

1. PRODUCTS
   * + 1. MANUFACTURER
          1. Fabricated Beam and Baffle ceiling system manufactured by Maxxit Ceilings & Walls:   
             1000 Martin Grove Rd, Toronto, ON M9W 4V8. Phone 905-206-9349.
          2. Substitutions not permitted.
       2. SYSTEM MATERIALS
          1. Fabricated Beam & Baffle ceiling system for interior installations providing 15”/16” HD grid Unistrut and Hang Wire suspension systems. Material thickness per manufacturer's recommendations.
          2. Baffle & Beam Profiles – Aluminum sheet, mechanically formed
          3. Dimensions

Standard:

1-1/2” x (4”-6”-8”-10”)

2” x (4”-6”-8”-10”)

Up to 12’ long

Custom:

Baffles & Beams

Lengths up to 12’ long

Depths up to 15”

Widths up to 24”

Spacing between beams determined by design

* + - * 1. Ceiling Beams & Baffles

Ceiling Beams and Baffles Type – Fabricated

Color: ‘Standard’, ‘Color Matched’

Size: Beam - Width, Depth, Length

Perforation Option: Standard, Custom

Noise Reduction Coefficient (NRC):

Flame Spread: ASTM E 1264; Class A (HPVA).

Recycle Content: Post-Consumer – 24.3% Pre-Consumer – 51.8%

Acceptable Product: Fabricated Baffles & Beams manufactured by Maxxit

* + - * 1. Suspension:

Beams and Baffles can be suspended from both Unistrut and Heavy Duty 15/16” Grid

HD grid features a 15/16˝ face width and surface painted cap that is widely used in interior designs today. Contains G30 galvanized steel with load carrying capacity of heavy duty and intermediate duty per ASTM C635.

1-5/8" x 1-5/8" Unistrut P1000 Channel with 3/8" return flanges designed to interlock with Panel Hanger Bracket, 20' long. Factory-applied black polyester painted finish. Material: 12 Ga. galvanized steel, GR 33

Threaded Rod: .375" diameter galvanized steel threaded rod

EZ access Unistrut connector positively locks baffle in place and releases it to allow baffles to slide for easy plenum access. Connector slides into both baffle channel and Unistrut support channel to hang and secure baffles.

Finish: (Black)(White)(Other:\_\_\_\_\_\_\_\_\_\_\_\_\_\_)

Scissor clip connector positively locks baffle in place and releases it to allow baffles to slide for easy plenum access. Connector slides into both baffle channel and clips around Heavy Duty 15/16” Grid to hang and secure baffles.

* + - * 1. Perforations available on painted finish options only:

Non-Perforated

Perforation Patterns: .032” to .56” diameter standard

* + - * 1. Baffle & Beam Finish:

Paint; color to be selected by architect

Applied Polyester

Powder Coat

Decorated Wood-Look Powder Coat

Vinyl Film

Wood Veneer (non-perforated only)

Stainless Steel

* + - 1. ACCESSORY MATERIALS
         1. End Caps: End caps to match beam finish
         2. Hanger Brackets: Splice/hanger bracket connector
         3. Acoustic material options include: Polyester Felt, Non-woven black fabric, Non-woven black fabric w/ 1" thick glass fiber, 1 1/2 pcf density, poly wrapped, 1" thick glass fiber, 1 1/2 pcf density poly wrapped.

Apparent NRC Rating: .60 - 1.00 range - material dependent

1. EXECUTION
   * + 1. EXAMINATION
          1. Examine substrates and structural framing to which acoustical metal beams 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.
          2. Proceed with installation only after unsatisfactory conditions have been corrected.
       2. PREPARATION
          1. Coordination: Furnish layouts for cast-in-place anchors, clips, and other ceiling anchors whose installation is specified in other Sections.
          2. Survey substrate for wall attachment to assure squareness and proper elevation for baffle & beam installation.
       3. INSTALLATION
          1. General: Install metal baffle & beam ceilings, per manufacturers shop drawings provided, per manufacturer's written instructions and to comply with publications referenced below.

ClSCA "Ceiling Systems Handbook"

Standard for Ceiling Suspension System Installations - ASTM C 636

Standard for Ceiling Suspension Systems Requiring Seismic Restraint - ASTM E 580

IBC (International Building Code) Standard for Seismic Zone for local area

* + - * 1. Suspend ceiling hangers from building's approved structural substrates 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, counter-splaying, or other equally effective means.

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.

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.

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.

Level Unistrut or grid to 1/8" in 10' from specified elevation(s), square and true.

Adjust suspension system runners so they are square (within .5 degree from 90 degrees) and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

* + - 1. ADJUST AND CLEAN
         1. Adjust components to provide uniform tolerances.
         2. Replace all ceiling components that are scratched, dented or otherwise damaged.
         3. Clean exposed surfaces with non-solvent, non-abrasive commercial type cleaner.
      2. CLEANING

Clean exposed surfaces of suspended decorative grids, including trim and edge moldings, after removing strippable, temporary protective covering if any. Comply with manufacturer's written instructions for stripping of temporary protective covering, cleaning, and touchup of minor finish damage. Remove and replace grid components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage, including dented and deformed grids.

END OF SECTION 09 54 23