WG-XTR CLEANROOM GASKET SEAL GRID SYSTEM (Patented[1])

SECTION 13 21 13

PART 1 – GENERAL

1.01 SECTION INCLUDES:

A. This section includes WG-XTR Cleanroom Gasket Seal Grid Ceiling System product data.
B. Work of this Section includes the installation of the Cleanroom Ceiling Grid System, including but not necessarily limited to the following:
    1. Aluminum Ceiling Grid: As specified in this Section.
    2. Blank Ceiling Panels: As specified in this Section.
    3. Gasket: As specified in this Section.
    4. Threaded Rod and Turnbuckle: As specified in this Section.
    5. Sealing of all penetrations, including sprinklers, electrical conduit, etc.

1.02 RELATED DOCUMENTS/SECTIONS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions.
B. Division 1 Specification sections apply to the work of this Section.
C. Finish Schedule or Finish Legend applies to work of this Section.
D. Work related to this Section includes the following:
    1. Intermediate steel framing: As specified in **Division 5**.
    2. Air filter systems and equipment: As specified in **Division 15**.
    3. Lay-in and/or surface mounted light fixtures: As specified in **Division 16**.

1.03 REFERENCES:

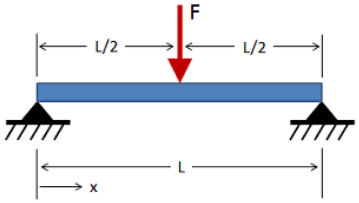
A. GENERAL
    1. Comply with applicable requirements of the following, except where more stringent requirements are indicated by building codes.
B. International Standards Association (ISO)
    1. ISO 14644-1 Cleanrooms and Associated Controlled Environments
C. American Architectural Manufacturers Association (AAMA)
    1. AAMA 2604 – Specification for Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels
D. International Conference of Building Officials (ICBO)
    1. ICBO No. 1461
E. Uniform Building Code (UBC)
    1. UBC standard No. 47-18
F. American Society for Testing and Materials (ASTM)
    1. ASTM F1145-05 Standard Specification for Turnbuckles, Swaged, Welded, Forged
    2. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials

3. ASTM E580 Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions.

G. National Association of Architectural Metal Manufacturers (NAAMM)
   1. Metal Finishes Manual for Architectural and Metal Products
H. ASCE 7 Minimum Design Loads and Associated Criteria for Building and Other Structures

1.04 DESIGN/PERFORMANCE REQUIREMENTS:

A. The assembled completed Ceiling System shall be compatible with the cleanliness level requirements per ISO 14644-1.
B. All materials are Class A rated per ASTM E84.
C. Structural:
   a. Maximum Static Loads at midpoint are calculated using the following formula for a Simply Supported, Center Load for the tee profile only.



i.

ii. $$\delta_{max} = \frac{FL^3}{48EI} \qquad @\, x = L/2$$

   b. Using the formula above, the tee profile shall be capable of a maximum static point load at midpoint between 4' suspension tee hangers of 1,240 lbs at L/360 (0.133") deflection.
   c. Capable of a maximum static point load of 2,200 lbs with load directly in line with Turnbuckle connection to building structure.
   d. Turnbuckle connection shall be capable of maximum point load connection to building structure of 2,200 lbs.
D. The system shall provide flexibility to relocate sprinkler drops as required by changing facility requirements.
E. The system shall provide flexibility to install additional suspension hangers without dismantling the ceiling system.

1.05 SUBMITTALS:

A. Submission must be made within ten (10) working days of the General Contract Award to avoid project delay.
B. Product Data:
   1. Submit Manufacturer's technical data and brochures for each type of specified system required.
   2. Product Specifications
   3. Shop Drawings shall show dimensions, sizes, thickness, alloys, tempers, finishes, joining, attachments, and relationship of adjoining work.
   4. Installation Instructions

C. Samples:
    1. Submit three (3) samples consisting of 12'' pieces of each type of Cleanroom Grid System and finish as specified, including Perimeter Molding and accessories.
D. Sustainability:
    1. Materials and Resources
        a. Building Life-Cycle Impact Reduction
            i. LCAs for aluminum are available.
                a) Aluminum - http://www.gordon-inc.com/literature/pdf/cisca_background_report_aluminum_2020-04-24.pdf
        b. Building Product Disclosure and Optimization - Environmental Product Declarations
            i. Industry-average EPDs for aluminum are available.
                a) Aluminum - http://www.gordon-inc.com/literature/pdf/101.1_cisca_industry_wide_epd_aluminum_specialty_products.pdf
        c. Building Product Disclosure and Optimization - Sourcing of Raw Materials
            i. Gordon's mission is to locate recycled materials that are not only of high recycled content, but extracted, produced, or extruded in the U.S.A.
        d. Building Product Disclosure and Optimization - Material Ingredients
            i. Full disclosure of material recycled content is available.
        e. Construction and Demolition Waste Management
            i. Most products shipped from our plant are engineered to fit and reduce field cutting during installation.
                a) Fewer indoor air quality problems
                b) Less scrap and debris – cleaner work environment
                c) Less noise pollution caused by field cutting of materials.
                d) Maintain comfort and well-being of workers and occupants.
    2. Indoor Environmental Quality
        1. Low-Emitting Materials
            i. Gordon's State-of-the-art Powder Coating line produces the highest quality powder coated surfaces while also contributing to our sustainability drive.
                a) No heavy Metals used in pre-treatment.
                b) Processed water is fully compliant for introducing into waste stream.
                c) Extremely efficient use of powder coating through reclamation system reducing powder wastage.
                d) Factory finished products shipped from our plant eliminates field painting.

1. Prevents odorous and irritating air contaminants.
2. Introduces no hazardous waste.
3. Contributes no VOCs.
4. Maintains comfort and well-being of workers and occupants.

2. Interior Lighting
    i. Gordon's AAMA 2604 powder coating finishes can provide the proper light reflectance to improve illumination in the space and reduce lumen output requirements.

3. Innovation
    a. Innovation
        i. Gordon is a strategic partner with the design community and continuously finds ways to design products that can aid in improving environmental performance.
    b. LEED Accredited Professional
        i. Gordon has LEED Accredited Professionals on staff to assist with your sustainability requirements.
4. Detailed explanation of LEED Credits and Gordon, Inc.'s Contribution can be located at http://www.gordon-inc.com/company/sustainability/.

E. Certification:
1. Submit certification from Manufacturer of Suspension System attesting that products comply with specified requirements, including finish, as specified.

F. Qualification Data:
1. Firms specified in "Quality Assurance" Article must demonstrate their capabilities and experience by including lists of completed projects with project names and addresses, names and addresses of Architects and owners, and other information specified.

1.06 QUALITY ASSURANCE:

A. Source Limitations:
1. All components of the WG-XTR Cleanroom Gasket Seal Grid Ceiling System shall be provided by a single Manufacturer to ensure responsibility and quality control.

B. Manufacturer Qualifications:
1. Manufacturer must have manufacturing and delivery capacity required for the project and shall have successfully completed at least ten (10) projects within the past five (5) years, utilizing systems, materials, and techniques as herein specified.
2. Manufacturer must own and operate its own manufacturing facilities for all metal components. "Stick Built" or "Kit of Parts Systems" consisting of components from a variety of Manufacturers/Fabricators will not be considered or accepted.
3. Manufacturer must own and operate its own painting and finishing facility to assure single source responsibility and quality control.

C. Installer Qualifications:
1. Installers shall have a minimum of five (5) years of experience installing systems of similar type and scope as those specified in this section.

1.07 PRODUCT DELIVERY, STORAGE AND HANDLING:

A. All materials shall be protected during fabrication, shipment, and installation to prevent damage to the finished work from other trades.
B. To avoid lasting deformation of the WG-XTR Cleanroom Gasket Seal Grid Ceiling System components when exposed to temperature and humidity extremes, store this material at or near room temperature. Allow a minimum of 48 hours for the product to adjust to internal room temperature and humidity conditions before installing the WG-XTR Cleanroom Gasket Seal Grid Ceiling System
C. Store WG-XTR Cleanroom Gasket Seal Grid Ceiling System inside a well-ventilated area, away from uncured concrete and masonry, and protected from the weather, moisture, soiling, abrasion, extreme temperatures, and humidity.
D. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommend by Manufacturer for optimum results. Do not install products under environmental conditions outside Manufacturer's recommendations.
E. Exercise care in loading, unloading, storing, and installing units to preclude bending, warping, twisting and other surface damage.

1.08 WARRANTY:

A. Standard Warranty:
    1. Furnish Manufacturer's Standard Warranty of one (1) year for workmanship and for finish against defects in materials and/or workmanship.
B. Extended Workmanship Warranty:
    1. Furnish Manufacturer's Standard Workmanship Warranty (must be requested at time of quotation) may be extended up to a maximum of twenty (20) years from date of material shipment, when installed in accordance with Manufacturer's recommendations.
C. Extended Finish Warranty:
    1. Furnish Manufacturer's Standard Finish Warranty (must be requested at time of quotation) may be extended up to a maximum of twenty (20) years from date of material shipment, when installed in accordance with Manufacturer's recommendations.

1.09 SUBSTITUTIONS

A. No substitutions are permitted for the WG-XTR Cleanroom Gasket Seal Grid Ceiling System.

PART 2 - PRODUCTS

2.01 MANUFACTURERS:

A. Acceptable System: WG-XTR Cleanroom Gasket Seal Grid Ceiling System shall be manufactured by Gordon, Inc. For all inquiries contact:

Gordon, Inc.
5023 Hazel Jones Road
Bossier City, LA 71111

2.02 MATERIALS

A. Provide metals free from surface blemishes where exposed to view in finished WG-XTR Cleanroom Gasket Seal Grid Ceiling System. Surfaces exhibiting pitting, seam marks, roller marks, stains, discolorations, or other imperfections on finished WG-XTR Cleanroom Gasket Seal Grid Ceiling System are not acceptable. All metal shall be of the highest commercial grade available.

B. Materials:
   1. Aluminum extrusions: 6063-T6 temper alloy.
   2. Gasket: ¼" thick x 5/8" wide black, low off-gassing microcellular urethane.
   3. Connectors: Zamak 3 zinc
   4. 3/8-16 to ½-13 Threaded Starter Rod and ½" Turnbuckles – ASTM rated left hand/right hand, zinc plated

2.03 FABRICATION:

A. Ceiling Support Materials and Systems:
   1. WG-XTR Cleanroom Gasket Seal Grid Ceiling System:
      a. WG-XTR Gasket Seal Grid – The Grid System shall be manufactured of extruded aluminum alloy 6063-T6 with Gordon's state of the art AAMA-2604 antimicrobial powder coat, as specified. Grid profiles shall be nominal 4' long with connection inserts on each end for attaching to central 4way hubs. Grid profiles shall have a continuous integral screw boss within the web for attachment of connectors at perimeters and continuous bosses to facilitate Snap-On hangers for ease of future rod support installation. Cross Tees to have square cut ends to create a fully non-progressive installation. Grid profile has continuous slots in the reinforced flange to receive AMHS suspension clips.
      b. Gasket – The gasket tape shall be ¼'' thick x 5/8'' wide black, low off-gassing microcellular urethane. The gaskets shall be factory-applied, with precision cut ends, extended on Grid Members to ensure an airtight seal at all intersections.
   2. Suspension System:
      a. 5/16-18 Grade 5 hex drive bolts are used to fasten the extruded aluminum Grid Members to the central 4way hub. A threaded central hanger connector shall be used at all grid intersections where sprinkler penetrations are not present and to suspend the Grid System via ½-13 threaded rods.
      b. If sprinkler penetration through the connector is present, two threaded, snap-on hangers are used in lieu of the Central hanger.
      c. ½-13 to 3/8-16 Threaded Starter Rod and ½" Turnbuckle – ASTM rated left hand/right hand, 8'' long, zinc plated, ½-13 to 3/8-16 Threaded Rod and ½" zinc plated steel Turnbuckle (8" body) spaced at 48'' centers or as required.

3. AMHS Suspension Clips:
    a. Automated Material Handling Devices shall be supported from the WG-XTR Grid with Gordon's AMHS Suspension Clips that attach to the Grid within the continuous slots of the reinforced flange.
    b. AMHS Clips can be relocated anywhere in the cleanroom, with no drilling required.

2.04 FINISHES:

A. Comply with the National Association of Architectural Metal Manufacturers (NAAMM) "Metal Finishes Manual for Architectural and Metal Products" for recommendations relative to applying and designating finishes.
B. All material shall be in a Factory applied Powder Coating to match Standard Colors or Custom Color and gloss as required.
    1. Factory finish with a 5-stage pretreatment with dried-in-place conversion coating followed by:
        ii. AAMA 2604, super durable compliant powder coating, with Antimicrobial Properties, which provide up to 99.9999% anti-microbial efficacy.

PART 3 - EXECUTION

3.01 EXAMINATION:

A. Examination of Surfaces: Installer must examine conditions under which work is to be performed and must notify Contractor in writing of unsatisfactory conditions.
B. Verify that field measurements and block-out dimensions are as shown on Shop Drawings.

3.02 PREPARATION:

A. Clean surfaces thoroughly prior to installation.
B. Prepare surfaces using the methods recommended by the Manufacturer to achieve the best result for the project conditions.

3.03 INSTALLATION:

A. General: Coordinate all work with other trades to be performed in or on Ceiling System including light fixtures, HVAC equipment, sprinkler systems, and wall partition systems.
B. Install WG-XTR Cleanroom Gasket Seal Grid Ceiling System in accordance with Manufacturer's written Installation Instructions and Details.
C. Space Enclosure: Do not install any work until space is enclosed and weatherproofed, wet-work in space is completed and nominally dry, work above ceilings is complete, and temperature and humidity shall be continuously maintained at values near those of final occupancy.
D. Ceiling System shall be level overall within 0.10'' and shall be level within 0.062'' in any 10'-0'' direction.

3.04 CLEANING:

A. Follow Manufacturer's cleaning instructions for specified finish.

3.05 PROTECTION:

A. Procedures: Care should be taken during the remainder of construction to protect WG-XTR Cleanroom Gasket Seal Grid Ceiling System from damage.

END OF SECTION