



# Bio-Grid Clean Room Ceiling System

## GUIDE SPECIFICATION

Section 09510, 23 37 13 or 158XX  
DIFFUSERS/REGISTERS/GRILLES/AIR CONTROL DEVICES

### 2.01 LAMINAR FLOW DIFFUSERS: (used for 233713 or 158xx )

- A. Diffuser to be non-aspirating, laminar flow type in accordance with ASHRAE Standard 170. Diffuser shall utilize baffles in the plenum design to deliver air to the space with zero aspiration at the face of the perforated plate.
- B. The internal balancing damper shall be adjustable by turning a screw from the face side of the diffuser. The diffuser plenum shall be constructed of an .063" aluminum plenum, and .040" aluminum top plate. No cracks or gaps in the sides of diffuser plenum will be allowed. Manufacturer shall provide four (4) .080" aluminum support lugs tack-welded to the side of diffuser plenum for independent suspension from above.

Perforated distribution plate shall be .040" aluminum. Perforations to be 13% open area for 35 or less CFM per square ft. of module. Plate shall be retained to the diffuser frame through use of captive, quarter-turn fasteners. Manufacturer shall provide vinyl-coated stainless steel cable safety retainers on two opposite sides to prevent accidental dropping of faceplate. The back side of faceplate shall be easily accessible for ease of cleaning. Manufacturer shall provide removable plug button in center of diffuser's faceplate to gain access to volume adjustment valve without removal of faceplate. Plug button to match color of diffuser finish.

- C. All exposed surfaces including border trim shall have finish of :

#### ***SPECIFIER TO SELECT FINISH, THEN DELETE OTHER CHOICE.***

- 1. White Polyester Powder coat with antimicrobial inhabitants equal to PPG TGIC to withstand typical cleaning solutions and normal scrubbing commonly used in hospital operating rooms.
  - 2. Clear (standard 204-R1(\$)) or optional 215-R1 (\$)) anodized aluminum.
- D. Acceptable model and manufacturer: Titus TLF-AA; Nailor 92 FLD-AA

### DIFFUSER OPTIONS: (used for 233713 or 158xx )

**TO SPECIFY A STAINLESS STEEL FACEPLATE (\$\$) IN LIEU OF ALUMINUM, REPLACE SECTION 2.01, PARAGRAPH C. WITH ONE OF THE FOLLOWING:**

For optional (\$\$) style stainless steel faceplate:

- E. Perforated distribution plate shall be 20 Ga. 304 stainless steel with No. 4 polished finish. Perforations to be 13% open area for 35 or less CFM per square ft. of module. Plate shall be retained to the diffuser frame through use of captive, quarter-turn fasteners. Manufacturer shall provide vinyl-coated stainless steel cable safety retainers on two opposite sides to prevent accidental dropping of faceplate. No diffusion component may be affixed to the back side of the faceplate frame. The back side of faceplate shall be easily accessible for ease of cleaning.

F. Special LED Laminar Flow diffuser

1. Laminar flow diffuser shall be Titus model TLF-AA-LED. Each unit shall have an integral internal distribution baffle. The face of the diffuser shall be constructed of .040 inch thick aluminum and shall be perforated with 3/32 inch diameter holes on ¼ inch centers. The free area of the face shall be no greater than 13%. The face shall be secured with ¼ turn fasteners for removal and sanitizing. Safety cables shall be provided.
2. LED light section either 48 or 24 inches in length (see schedule) The diffuser shall have an integral LED light fixture incorporating two (2) high out-put LED tubes. The fixtures are to be a separate piece from the diffuser and be capable of being fully removed. Diffusers not incorporating a completely separate listed fixture will not be acceptable. Each tube shall be 5000 K and 85 CRI 270 degree light output with filters. IES files shall be submitted prior to bidding to assure proper lighting levels. The tube lens shall be frosted. Each tube shall have a power consumption of 18 watts for a total of 36 for the fixture. The fixtures shall dual voltage as well as the tubes and are to be direct wired 277/1/60 or 120/1/60 with THNN connectors. Drivers will not be acceptable. Each light shall come with a 50,000 hour warranty. The fixture shall be made with air passages to allow air flow from the diffuser plenum to cool the tubes. The fixture itself shall be rated for damp locations and once installed into the diffuser the whole assembly shall be rated for wet locations. The lens of the fixture can be removed for bulb replacement without removing the whole fixture. The fixture itself shall be secured using ¼ turn fasteners. The lens shall be P12 Acrylic with gaskets. Safety cables shall be provided for the fixture. UL, ETL, or CSA tested and rated.

2.02 BLANK-OFF PANELS (Use for 09510, 233713 or 158xx)

- A. Diffuser manufacturer shall furnish solid face blank-off panels where indicated on the drawings and where columns may penetrate the ceiling or where interstitial access is required. Panel to have solid plate installed within extruded aluminum perimeter frame with mitered corners providing a seal between the room and interstitial space. The installing contractor shall cut all fill-in panel(s) for the surgical light column(s), medical gas column(s), and other ceiling mounted apparatus as required on the drawings after this equipment located.
- B. Panels shall be coated with a Polyester Powder Coat finish with Antimicrobial inhabitants equal to PPG TGIC
- C. Acceptable model and manufacturer: Bio-Grid Clean Room System. No substitutes.

2.03 HEAVY-DUTY CEILING GRID (Use for 09510, 233713 or 158xx)

- A. Provide extruded aluminum tee and angle frame assembly suspension system to support Diffusers, fill-in panels and light fixtures. The face of the tee shall be 1-1/2" x 1-7/16" high. Minimum wall thickness of the tees and angles shall be 0.125" with a minimum weight of 0.43 lbs. per linear ft. Verify exact locations of diffusers, lights, fill-in panels & framing with architectural reflected ceiling plans.
- B. The suspension system shall be pre-cut for field assembly utilizing "Quick Snap" connectors or Factory welded sections. The system shall be fully reconfigurable for future changes.
- C. All tees and angles shall be pre-punched on 6" centers for attachment to suspending hanger wires or 1/4" threaded rod attached on 2'-0" centers at minimum in two directions to structural support members. Systems shall be designed for minimum weight of 10 lbs. per square ft.
- D. Manufacturer shall furnish 1/8" thick closed cell antimicrobial polyethylene gasket tape by 3M to be field installed on the frame assembly to provide an airtight seal between diffuser/tee grid or blank-off panel/tee grid interface. Gasket tape shall be field installed by contractor after framing surfaced have been wiped clean, free from any construction dust.
- E. The ceiling framing system shall be finished to match laminar flow diffusers and blank-off panels.
- F. Grid shall be coated with a white Polyester Powder coat finish equal to PPG TGIC
- G. The entire Integrated Ceiling System shall be manufactured by Bio-Grid Clean Room Systems 1-888-469-4715 No substitutes.

PART 3 – EXECUTION (Use for 09510, 233713 or 158xx)

3.02 INSPECTION/EXAMINATION

- A. The installing contractor shall examine all openings, mechanical and electrical work, and adjoining and adjacent construction to receive Integrated Ceiling System prior to commencing this Work.
- B. The installing contractor shall field verify rough hard ceiling opening dimensions are as required in submittals and hard ceiling conditions to be plumb and level with square corners to receive Integrated Ceiling Systems.
- C. Openings not acceptable for Integrated Ceiling System installations shall be corrected by the appropriate contractor until conditions are satisfactory to installing contractor
- D. The General Contractor shall coordinate corrective/remedial work promptly.
- E. Proceeding with the installation of the Ceiling System indicates the installing contractor accepts the openings and conditions.

3.03 INSTALLATION (Use for 09510, 233713 or 158xx)

- A. Verify exact diffuser, blank panel and accessory locations as shown on the Contract Drawings.
- B. Provide balancing dampers on duct take-off to diffusers, and grilles and registers, despite whether dampers are specified as part of the diffuser, or grille and register assembly.
- C. Install 1/8-inch-thick closed cell polyethylene gasket tape on the top side of all horizontal ceiling grid surfaces as shown in manufacturer's submittal.
- D. Assemble framing sections in accordance with manufacturer's installation instructions. Self-tapping sheet metal screws shall be utilized for mechanical fastening of "Quick Connectors"
- E. Provide inserts, power-driven type anchors, hangers or other Architect / Engineer approved hanger anchoring and suspension system devices and methods.
- F. Install suspended ceiling hangers plumb and free from contact with insulation or other objects within ceiling plenum not part of supporting structural or ceiling suspension systems. Splay hangers only where required to avoid obstructions and offset resulting horizontal forces by bracing, counter splaying, or other Architect / Engineer approved methods.
- G. Where width of ducts, cable trays and other construction within ceiling plenums causes hanger spacing to interfere with the location of hangers required to support suspension system members, install supplemental suspension members and hangers in the form of trapeze or equivalent Architect / Engineer approved devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.
- H. Secure wire hangers to structure by looping and wire-tying, either directly to structures or to inserts, eye screws, or other devices and fasteners appropriate for the substrates.
- I. Coordinate insert and hanger location with other Work.
- J. Hanger wires for framing shall be installed a maximum 2'-0" on center in both directions and a maximum 6 inches framing ends.
- K. Hangers shall not penetrate ductwork, ductwork insulation or piping insulation. Integrated Ceiling System shall not be suspended from ductwork, conduit, pipes or plumbing equipment. Hangers shall not interfere with heating and ventilating equipment and their maintenance.
- L. The Electrical Contractor will utilize the Integrated Ceiling System for lay-in type lighting fixtures. The Electrical Contractor shall provide any separate primary support or secondary frame members required to anchor and support lighting fixtures and equipment and to supplement and strengthen the standard suspension system in conformance with N.E.C. requirements. Provide openings for flush down- lighting fixtures located within blank-off panels as shown on Electrical Drawings and reflected ceiling plans.