



Section 26 05 26.xx (Formerly 16065) – SIGNAL REFERENCE GRID SYSTEM SPECIFICATION

1.01 Summary

- a. Provide a complete grounding system that reduces or eliminates high frequency transients by achieving a common ground reference for all equipment within a contiguous area. It consists of a signal reference grid, low-impedance bonding straps, transient suppression plates and bare copper bonding conductors.
- b. The signal reference grid system shall be installed by a firm actively engaged in the installation of high frequency ground systems.
- c. The work covered under this section of the specification consists of furnishing labor, materials and services required for the completion of a functional signal reference grid system approved by the architect and engineer

1.02 References: The completed signal reference grid system shall comply with the latest issue of the following standards and form a part of this specification.

- a. IEEE Std.1100, IEEE Recommended Practice for Powering and Grounding Electronic Equipment.
- b. NFPA 70, National Electric Code

1.03 Submittals

- a. Layout drawing(s) showing the configuration of the signal reference grid shall be submitted to the architect and engineer for approval prior to installation.
- b. Catalog pages or technical data sheets for all products used to as part of the signal reference grid System shall be submitted to the architect and engineer for approval prior to installation.

1.04 Delivery, Storage and Handling

- a. Store products in manufacturer's unopened packaging until ready for installation.

Part 2 – PRODUCTS

2.01 Standard

- a. All materials used in the installation shall be new and shall comply in weight, size and composition as required by manufacturer and shall be labeled or listed by Underwriters Laboratories Inc. for use in electrical grounding. The system furnished under this specification shall be the standard product of a manufacturer regularly engaged in the production of high frequency grounding equipment.

2.02 Acceptable Manufacturers

- a. Harger Lightning & Grounding
301 Ziegler Drive, Grayslake, IL 60030
(847) 548-8700 • 800-842-7437 • Fax (847) 548-8755
E-mail: hargersales@harger.com • Web-site: www.harger.com



2.03 Materials

- a. The signal reference grid (SBG) shall be made from soft copper flat strip, 2 inches wide by 26 gage, and factory-made using MIG welds on two-foot centers.
- b. SBG rolls shall be between 4 feet to 16 feet wide.
- c. All field made connections to the signal reference grid (SBG), raised floor pedestals, building columns, pipes and other metal items shall be made using the Ultraweld® Exothermic Welding Process.
- d. The SBG sections shall be rolled on tubes with the outside of the roll protected for shipment.
- e. SBG rolls shall be labeled on the ends for easy identification.

Part 3 – EXECUTION

3.01 General Installation

- a. The installation shall be installed by a qualified, licensed electrical contractor.

3.02 SBG Installation

- a. SBG sections shall be welded together using Ultraweld Mold SBG2016K with US32 Weld Metal and MH1 Handle Clamp. For low smoke-no flame requirements when using the UltraShot process, use one of the kits found on page 276 for converting standard molds into low smoke-no flame molds. To join sections together, overlap the outside strip of one section over the outside strip of the adjacent section and weld together every two feet.
- b. The SBG should be installed 6 inches to 18 inches from the outside walls to avoid interference with pedestals. SBG does not have to be exactly centered between pedestals.
- c. Whenever an obstruction is encountered, it is acceptable to cut the SBG to go around the obstruction and splice connecting pieces of the SBG to suit.
- d. SBG squares should not line up between adjacent sections in a room or between rooms. Offset squares, first in one direction, then the other. This prevents welds from lying on top of one another and minimizes interference to pedestals.
- e. The SBG does not have to be bonded to the floor in most circumstances. If any section does not lie flat, pedestal mastic or other convenient means can be used to bond to the floor. Pedestal mastic should be used to hold the SBG to the floor near high-speed air inlets. The mastic should not contain sulfur.
- f. Do not use mastic until all SBG mats have been installed and all Ultraweld connections between mats and all low impedance riser and pedestal connections have been made.
- g. If a section of SBG is damaged, then repair with Mold SRG2016K with US32 Weld Metal and MH-1 Handle Clamp. For low smoke-no flame requirements when using the UltraShot process, use one of the kits found on page 276 for converting standard molds into low smoke-no flame molds. It is permissible to splice sections of copper strip to lengthen SBG conductors so they clear preexisting objects on floor.



- h. Use Low Impedance Riser (LIR) to connect each equipment enclosure to the SBG. Ultraweld Mold SRG2016K with US32 Weld Metal and MH-1 Handle Clamp is used for this connection. For low smoke-no flame requirements when using the UltraShot process, use one of the kits found on page 276 for converting standard molds into low smoke-no flame molds.
- i. LIR to be 26 gage x 2" x 72 copper strip, Part No. LIR72. Do not connect LIR risers to SBG strips closest to outside walls. If possible, connect LIR no closer than the second SBG row away from outside walls of room.
- j. Exceptions can be made regarding HVAC equipment if these are already positioned near walls. Cut LIR as short as possible in all cases.
- k. Always install two LIRs per equipment cabinet with one LIR being 20% to 40% longer than the next and connect to the equipment on opposite sides.

3.03 Bonding Pedestals

- a. Connect every sixth pedestal in each direction to the SBG using #6 AWG 7 strand copper cable.
- b. #6 AWG 7 strand copper is connected to the SBG with Mold BCF61.5016B using US25 Weld Metal and MH-1 Handle Clamp.
- c. For the 1" round pedestals, use Mold VH61RDMX, MH-4 Handle Clamp, and US25 Weld Metal.
- d. For the 7/8" square pedestals, use Mold VHO6.8SQMX, MH-4 Handle Clamp and US25 Weld Metal.
- e. For the 1" square pedestals, use Mold VHO61SQMX, MH-4 Handle Clamp and US25 Weld Metal. The cable should take the shortest path between the pedestal and the Signal Reference Grid. The length of the wire should not exceed 2 feet.
- f. For low smoke-no flame requirements when using the UltraShot process, use one of the kits found on page 276 for converting standard molds into low smoke-no flame molds.

3.04 Bonding Building Steel

- a. All columns within and at perimeter of the computer room shall be bonded to the SBG using #6 AWG 7 strand copper cable with Mold VA6B, MH-1 Handle Clamp and US45 Weld Metal.
- b. #6 AWG 7 strand copper is connected to the SBG with Mold BCF61.5016B using US25 Weld Metal and MH-1 Handle Clamp. The cable should take the shortest path between the building steel and the Signal Reference Grid.
- c. For low smoke-no flame requirements when using the UltraShot process, use one of the kits found on page 276 for converting standard molds into low smoke-no flame molds

3.05 Bonding Other Steel Members

- a. All conduits, water pipes, ducts, etc. entering the computer room shall be bonded to the SBG (at each end of the room if these are horizontal) columns within and at perimeter of the computer room shall be bonded to the SBG using #6 AWG 7 strand copper cable with Mold VA6B, MH-1 Handle Clamp and US45 Weld Metal.
- b. Use #6 AWG 7 strand copper cable.



- c. Use Harger Lightning & Grounding CPC Series of pipe clamps for attaching the #6 wire to conduit, water pipes, and other round conductive members.
- d. The #6 AWG 7 strand copper cable is connected to the SBG with Mold BCF61.5016B using US25 Weld Metal and MH-1 Handle Clamp.
- e. For low smoke-no flame requirements when using the UltraShot process, use one of the kits found on page 276 for converting standard molds into low smoke-no flame molds.

3.06 Coordination

- a. Coordinate the installation of the high frequency signal reference grid grounding system with other trades to avoid damage of installed materials.

END OF SECTION 26 05 26.xx