Design Standard
Boxes

Purpose:

This design standard has the purpose of creating a consistent application for the installation of electrical boxes throughout the South San Francisco Unified School District thereby achieving a standard of quality for maintenance, reliability, and operation throughout all renovation and new building projects.

Design Standard:

Design and specify the provision of electrical boxes and fittings for a complete installation. This includes but is not limited to outlet boxes, junction boxes, pull boxes, bushings, locknuts, and other necessary components.

- Locate boxes and conduit bodies so as to ensure accessibility of electrical wiring.
- Avoid using round boxes where conduit must enter through side of box, which would result in a difficult and insecure connection with a locknut or bushing on the rounded surface.
- Secure boxes rigidly to the substrate upon which they are being mounted, or solidly embed boxes in concrete or masonry.
- Provide weatherproof outlets for locations exposed to weather or moisture.
- Provide knockout closures to cap unused knockout holes where blanks have been removed.
- Mount center of outlet boxes, unless otherwise required by ADA, the following distances above the floor:
  i) Control Switches: 48 inches.
  ii) Receptacles: 18 inches.
  iii) Telecom Outlets: 18 inches.
  iv) Other Outlets: As indicated in other sections of specifications or as detailed on drawings.
- Coordinate electrical device locations (switches, receptacles, and the like) with architectural elevations to prevent mounting devices in mirrors, back splashes, behind cabinets, and the like.

All outlet boxes to meet the following requirements based on Code requirements and industry standard of care:

- Luminaire Outlet: 4 square or 4-11 box, 1-1/2 inches deep with 3/8-inch luminaire stud if required. Provide raised covers on bracket outlets and on ceiling outlets.
- Device Outlet: Installation of one or two devices at common location, minimum 4 inches square, minimum 1-1/2 inches deep. Single- or two-gang flush device raised covers.
- Multiple Devices: Three or more devices at common location. Install one-piece gang boxes with one-piece device cover. Install one device per gang.

- Masonry Boxes: Outlets in concrete.
- Construction: Provide galvanized steel interior outlet wiring boxes, of the type, shape and size, including depth of box, to suit each respective location and installation; constructed with stamped knockouts in back and sides, and with threaded holes with screws for securing box covers or wiring devices.
- Accessories: Provide outlet box accessories for each installation, including mounting brackets, wallboard hangers, extension rings, luminaire studs, cable clamps and metal straps for supporting outlet boxes, compatible with outlet boxes being used and meeting requirements of individual wiring situations.
- For weatherproof outlet boxes, provide corrosion-resistant cast metal weatherproof outlet wiring boxes, of the type, shape and size, including depth of box, with threaded conduit ends, cast metal face plate with spring-hinged waterproof cap suitably configured for each application, including face plate gasket, blank plugs and corrosion proof fasteners. Weatherproof boxes to be constructed to have smooth sides, gray finish.
- For junction and pull boxes, provide ANSI 49 gray enamel painted sheet steel junction and pull boxes, with screw-on covers; of the type shape and size, to suit each respective location and installation; with welded seams and equipped with steel nuts, bolts, screws and washers.
  i) Install junction boxes above accessible ceilings for drops into walls for receptacle outlets from overhead.
  ii) Install junction boxes and pull boxes to facilitate the installation of conductors and limiting the accumulated angular sum of bends between boxes, cabinets and appliances to 270 degrees.
- For conduit fittings, provide corrosion-resistant punched-steel box knockout closures, conduit locknuts and plastic conduit bushings of the type and size to suit each respective use and installation.

All floor boxes and poke-thrus to meet the following requirements based on Code requirements and industry standard of care (device numbers noted are Wiremold. Provide equivalent as noted under approved manufacturers):

- Multi-Gang Box, Slab on Grade: Wiremold RFB4-CI series cast iron housing with S36CCTC series, steel flanged activation for use with matching carpet or tile insert. Rubber gasket protects interior from water and debris. Provide with two duplex receptacles and blank inserts for two future data outlets.
- Multi-Gang Box, Slab above Grade: Wiremold RFB4 series steel housing with S36CCTC series, steel flanged activation for use with matching carpet or tile insert. Rubber gasket protects interior from water and debris. Provide with two duplex receptacles and blank inserts for two future data outlets.
- Multi-Gang Box, Concrete Finish Floor: Same as above, except use Wiremold S36BBTC series, steel flanged activation.
- Single Gang Box, Slab on Grade: Wiremold 880CM (cast-iron) series with 817 series flange suitable for both carpet and tile floors, and 828GFI cover plate insert.

- Single Gang Box, Slab above Grade: Wiremold 880S (stamped steel) series with 817 series flange suitable for both carpet and tile floors, and 828GFI cover plate insert.
- Poke-Thrus: Fire rated for 4 hour, dual service, flush brass cover and service fitting prewired specification grade receptacle, voice/data jacks, Hubbell PT7 Series, or approved.
- Provide floor boxes sized minimum 3-7 /16 inches deep with 1-inch factory knockouts.
- Brass or Aluminum finish for flanges will be determined per specific installation and as directed by the architect.

Approved Manufacturers:

- Outlet Boxes:
  i) Thomas & Betts/ Bowers
  ii) Hubbell
- Weatherproof Outlet Boxes and Box Extension Adapters:
  i) Hubbel/ Bell
  ii) Thomas & Betts/ Red Dot
  iii) Carlon
- Junction and Pull Boxes:
  i) Circle AW
  ii) Cooper/ B-line/ Hoffman
- Conduit Fittings:
  i) Emerson/ O-Z Gedney
  ii) Thomas & Betts
- Floor Boxes:
  i) Wiremold/Walker
  ii) Hubbell
  iii) Thomas & Betts/ Steel City

Substitutes Allowed:

Yes, if performance and quality equivalency can be evidenced.

Associated Design Standards:

- 26 05 26 – Design Standard Grounding
- 26 05 34 – Design Standard Boxes

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