

PART 1 - GENERAL

1.1 WORK INCLUDED .1 Supply and install all hangers, supports and inserts for the installation shown on the drawings and specified herein, as necessary to fasten electrical equipment securely to the building structure.

1.2 RELATED WORK .1 Section 26 05 00 - Common Work Results for Electrical.

PART 2 - PRODUCTS

2.1 FRAMING AND SUPPORT SYSTEM .1 Materials:
.1 Intermediate duty supporting structures shall employ channel type supports together with connecting components and fasteners for a complete system.
.2 Heavy duty supporting structures to be fabricated and welded from steel structural members and prime painted before installation.

.2 Finishes:
.1 Outdoors, wet locations: Hot dipped galvanized.
.2 Indoors, dry locations: Galvanized when available, prime painted if not available.
.3 Nuts, bolts, machine screws: Cadmium plated.

.3 U-Channel Supports:
.1 41mm x 41mm, 12 gauge steel, with mounting screws for supporting conduits 50 mm and larger.

2.2 CONCRETE AND MASONRY STRUCTURES .1 Materials: Hardened steel inserts, zinc plated for corrosion resistance. All anchor bolts must be galvanized.

.2 Components: non-drilling anchors for use in predrilled holes, sized to safely support the applied load with a minimum safety factor of four.

- 2.3 NON-METALLIC ANCHORS .1 Material: Plastic anchors for sheet metal screws.
- 2.4 CONDUIT SUPPORTS .1 General: Malleable iron two-hole conduit straps where exposed to weather. Stamped steel two-hole straps indoors.
- .2 Masonry, concrete, stone, etc.: Anchors.
- .3 Title: Toggle bolts.
- .4 Metal studs, ceiling hangers, etc.:.
- .1 Clips made of spring steel, rated for indoor use in non-corrosive environments
- .2 UL listed
- .3 vertical load limit of 45 kg and horizontal load limit of 11 k,
- .4 capable of accommodating 9.5 mm through 51 mm EMT, rigid, and aluminum conduit
- .5 pre-assembled with manufacturer's specialty fasteners for connection to building structures like beam, flange, drop wire/rod, wood structure, concrete and acoustical tee grid.
- 2.5 CABLE SUPPORTS AND CLAMPS .1 General: As per conduit supports, except that for single conductor cables, suitable non-ferrous or approved stainless steel or aluminum clamps shall be used.

PART 3 - EXECUTION

- 3.1 GENERAL .1 Do not cut or drill beams, joists or structural steel unless written permission of the Departmental Representative is obtained.
- .2 Distance between conduit or cable supports not to exceed code requirements.
- .3 Supports to be suitable for the real loads imposed by equipment.
- .4 Supports to be securely fastened, free from vibration and excessive deflection or rotation. Maximum deflections are 4 mm over a 1 meter span and 8 mm over a 2 meter span.
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3.1 GENERAL
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- .5 Install fastenings and supports as required for each type of equipment cables and conduits, and in accordance with manufacturer's installation recommendations.
- .6 Provide conduit rack with 25% spare capacity for multiple runs.
- .7 Provide channel support with fittings for vertical runs of conduit and cables.

3.2 INSTALLATION

- .1 Secure equipment to solid masonry, tile and plaster surfaces with lead anchors.
- .2 Secure equipment to poured concrete with expandable inserts.
- .3 Support equipment, conduit or cables using clips, spring loaded bolts, cable clamps designed as accessories to basic channel members.
- .4 Fasten exposed conduit or cables to building construction or support system using straps.
 - .1 One-hole malleable iron or steel straps to secure surface conduits and cables 50 mm and smaller.
 - .2 Two-hole steel straps for conduits and cables larger than 50 mm.
 - .3 Beam clamps to secure conduit to exposed steel work.
- .5 Suspended support systems.
 - .1 Support individual cable or conduit runs with 6 mm dia threaded rods and spring clips.
 - .2 Support 2 or more cables or conduits on channels supported by 6 mm dia threaded rod hangers where direct fastening to building construction is impractical.
- .6 Shot driven pins may only be used with written approval of the structural engineer.
- .7 Use round or pan head screws for fastening straps, boxes, etc.
- .8 Do not support heavy loads from the bottom chord of open web steel joists.
- .9 Support outlet boxes, junction boxes, panel tubs, etc., independent of conduits running to them. Support conduits within 600 mm of outlet

3.2 INSTALLATION
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- .9 (Cont'd)
boxes. Support surface mounted panel tubs with a minimum of four 6 mm fasteners.
- .10 For surface mounting of two or more conduits use channels at 1.5 m o.c. spacing.
- .11 Provide metal brackets, frames, hangers, clamps and related types of support structures where indicated or as required to support conduit and cable runs.
- .12 Ensure adequate support for raceways and cables dropped vertically to equipment where there is no wall support.
- .13 Do not use supports or equipment installed for other trades for conduit or cable support except with permission of other trade and approval of the Departmental Representative.