

INSTALLATIONS OF ELECTRICAL CONDUITS

The following sample specifications cover the use of rigid and flexible metal and PVC conduit installation for an electrical wiring work contract in a new multi-storey building.

Scope

The scope of this section is to set out the requirements, methods, materials, workmanship, standards and regulations in connection with the electrical equipment and their installation works.

General

These specifications shall be read together with the relevant drawings, and schedule of quantities if there is any, that form part of this contract. All the works of wiring and cabling are generally as indicated and specified on these drawings.

Ducts and trenches necessary to accommodate cables and switchgears that are generally shown on the drawings will be provided by Contractor unless otherwise stated. However, it shall be the contractor's responsibility to ensure during the progress of the work that the various ducts and trenches are constructed in the correct manner and that they are adequate for the electrical works whether such details are specifically mentioned or not.



All conduits, fittings and associated accessories shall be galvanized and shall comply with **B.S. 31**. Conduits shall be screwed and welded **Class "B"** and fittings shall be manufactured from steel or malleable cast iron.

Where PVC conduits are specified, they shall be of high quality rigid type with all approved type joints, tee off and jointing materials.

Concealed conduit shall be fixed securely to prevent movement before casting of floor slabs, floating of plaster and casting of columns and beams.

Conduits and associated accessories shall be painted with one coat of red lead whenever the exposed galvanized surface has been cut or otherwise damaged including exposed threads and connections after erection.

Conduits shall be properly and tightly screwed into the full depth of box spouts and butted in sockets between lengths to ensure maximum mechanical strength and electrical continuity so that the wiring is continuously and effectively protected throughout its whole length, is not in any way under mechanical stress.

The whole of the conduit system shall be continuous throughout. A separate earth continuity conductor shall be provided in all metal conduits. All conduits shall be earthed at terminations.

Flexible metal conduits shall not be accepted as a means of providing earth continuity. A separate earth continuity-conductor shall be provided with every part of the system formed by such conduit.

Conduit sizes shall be selected carefully for the number and size of cables they are to contain. The conduits shall be arranged with an adequate number of boxes to allow easy draw in and draw out of any one or all of the cables at any time.

The conduit sizes shall not in any circumstances be less than 20mm and the number of cables drawn in shall not be greater than the appropriate number permitted in the Edition of IEC Wiring Regulations.

PVC Conduits are use to protect the wiring which is concealed in concrete or in walls Etc.

All PVC conduits and fitting should be complying with British Standard (BS) **BS.4607, 6053, 6099**. And International Electro Technical Commission **(IEC) 423**.

Nominal cross section area of conductors in mm ²	Size of conduit in mm		
	20	25	32
	Max.number of cables drawn		
1.5	7	12	-
2.5	5	9	12
4.0	3	6	9
6.0	-	5	8
10.0	-	3	6
16.0	-	-	4
25.0	-	-	3

Cables for lighting and power circuits shall not be drawn into the same conduit as those for extra low voltage systems.

Lighting and power final circuits shall not be run in the same conduits, except where an adaptable box is employed as a final distribution point. A number of final circuits may be grouped together in a larger circuit between the distribution board and the adaptable box provided that all sub-circuits are of the same phase. Conduit work and accessories where not concealed shall be fixed effectively by means of heavy patterned spacing saddle and some approved metal or other non-disintegrating plugs of proprietary manufacture.

On straight runs the conduit shall be supported by saddles at intervals not exceeding 900 mm in addition to supports provided by any structure, box or fittings included in the run. For 40 mm conduit saddles maybe spaced at intervals not more than 1220 mm.

Hanging or suspending conduits using wires are not permitted.

Where conduits cross expansion joints they shall be installed in such a way so as not to resist relative movement of the sections. A suitable crossing shall comprise conduits telescoped one inside the other with the free ends or ends projecting immediately to one side of the crossing. Earth bonding of the telescoped end, which shall be suitable bushed, shall be affected inside the box to maintain earth continuity of the system.

Immediately on the completion of erection of any conduit during building construction all exposed switch, socket and conduit risers shall be plugged effectively against the ingress of water and dirt particularly where concrete shall be poured. Such seals shall be maintained in good order for such times as is necessary to complete wiring and connection of fittings and switches.

All conduits shall be free from moisture to the S.O. satisfaction before wiring is commenced. Draw in tapes with absorbent cloth, such as flannel or army pull through cloth shall be used for this purpose. TYPES OF CIRCULAR PVC BOXES

TERMINAL - ONE WAY

THROUGH - TWO WAY

ANGLE -TWO WAY

TEE- THREE WAY

INTERSECTIION - FOUR WAY

U - TWO WAY

Y- THREE WAY

H - FOUR WAY



GI CONDUITS: -GI conduits (Galvanized steel) are to be installed as an expose piping where this is no condition of concealed. Instead of PVC.conduits. GI conduits to be install. With material **BS.4568, 6053, 6099.and 731** and **IEC 423, 614 & 423**. These types of installation are made with the use of threading tools to join GI conduits with suitable fittings.

GI BOXES: - There are two types of GI boxes one is single gang box and another is twin gang box. This GI boxes are use to make safe concealed space in concrete or in walls. To fix switch and sockets. Mostly GI boxes are installed in walls where the more number of Switch and sockets has to be installed.

GI BOXES INSTALLED IN WALL



3X3 GI BOX



3X6 GI BOX



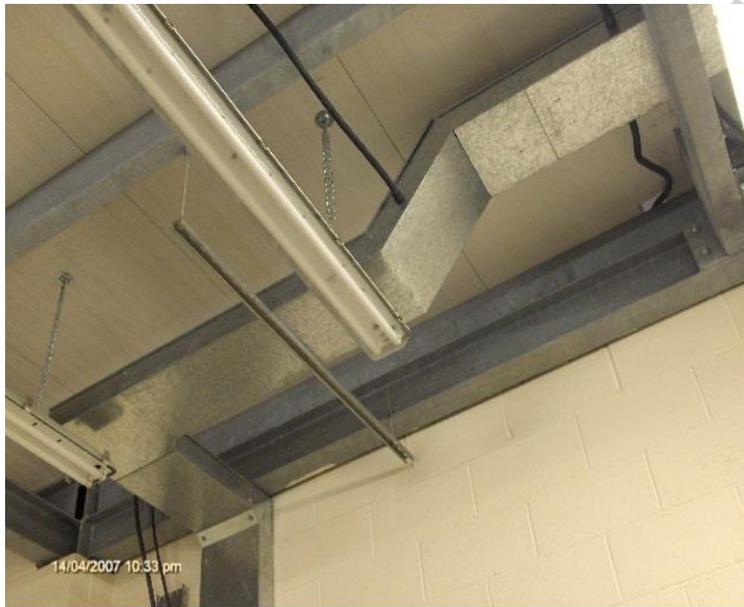
PVC conduits and fittings used in building installation shall be from high impact rigid

PVC complies with **BS 4607, 6053, 6099**.

Suitable for use at ambient temperature up to 48 degree c, the material shall not soften or suffer structural degradation at a Temperature of 70 degree c and shall be non-hygroscopic fire retardant. Steel conduits and fittings shall comply with relevant specifications in **BS4568, 6053, 6099 and BS31** and shall be hot dip galvanized to class u protection, both inside and outside. Flexible steel conduits and fittings shall comply with **BS 731**.

TRUNKING

Where applicable, surface and under floor (duct) trunking and their fittings shall comply with **BS 4678**. Trunking and fittings shall be constructed of steel, hot dip galvanized both inside and outside or non-combustible insulating material with removable covers. Installation of the trunking shall be carried out strictly as per the manufacturers.



INSTALLATION OF GI TRUNKING



FITTINGS OF GI TRUNKING