

WESTERN POWER DISTRIBUTION

Housing Development Installation and Records framework appendix Part 2 of 2 to be read in conjunction with:

ENA Engineering Recommendation G81 “Framework for Design and Planning, Materials Specification and Installation and Record for Greenfield Low Voltage Housing Development Installations and Associated, New, HV/LV Distribution Substations” – Part 3 Installation and Records. Version agreed at Ofgem ECSG on 12th October 2004

WESTERN POWER DISTRIBUTION

HOUSING DEVELOPMENT INSTALLATION AND RECORDS FRAMEWORK DLH SPECIFIC APPENDIX

PART 2 OF 2

6.0 DOMESTIC ELECTRICITY SERVICES TO FLATS, MAISONNETTES & BEDSITS

6.1 WPD requirements are set out in Part 2* of this Housing Development Framework Document Appendix; it is an extract from a handbook previously issued to architects and builders. *(separated out to reduce individual file sizes when downloading this document from the Internet)

6.2 Introduction

Developers are requested to provide suitable accommodation for Western Power Distribution's ("WPD's") electrical equipment, including cable ducts and meter cabinets.

The method of servicing each flat should be agreed at the earliest possible stage, so that cable routes and meter positions can be properly accommodated as building works progress.

It is the Developer's responsibility to conform with the current revision of the Building Regulations.

For the purposes of this booklet the following abbreviated terms will apply:-

SNE Cable : Cables utilising separate Neutral and Earth conductors

CNE Cable : Cables utilising combined Neutral and Earth conductors

The abbreviations TN-C-S, TN-S and TT, are defined within BS7671 – IEE Wiring Regulations.

6.3 General Requirements

The Exit Point (supply terminals) are defined in the Electricity Safety, Quality and Continuity Regulations 2002 (as amended) as "the ends of the electric lines at which the supply is delivered to a consumer's installation". The supply terminals are normally deemed to be the outgoing meter terminals.

WPD Preferred Arrangement

Figure 1 shows the preferred arrangement with the meter for each dwelling located in a communal switchroom at ground floor level.

WPD's responsibility shall end at the Exit Point and the Developer shall be responsible for providing the service cable to each dwelling. The customer/ landlord will take ownership of the service cable and be responsible for its ongoing

maintenance or replacement. The customer / developer shall ensure each cable is identified to its flat at the meter position

The Developer must provide protection (fuse or miniature circuit breaker) and isolation facilities for each service cable immediately adjacent to the meter position.

This arrangement is suited to multi-storey developments but may also be adopted in single-storey developments. It is a neat solution and will normally be the cheapest option.

Alternative Arrangements

For practical or commercial reasons the Developer may have a preference for an alternative arrangement, with the meters being located somewhere other than as described under the WPD preferred arrangement.

Figure 2 shows an alternative arrangement where the meter is located in or immediately outside each dwelling. Under this scenario WPD will be responsible for providing the service cable to each dwelling. WPD will retain ownership of the service cable and remain responsible for its ongoing maintenance or replacement.

WPD will use SNE service cables and provide an earthing terminal at each dwelling for the Developer to utilise, employing the necessary PME (TN-C-S) bonding.

To properly accommodate these electrical arrangements the developer should provide:

- a suitable enclosure or enclosure for a cutout and multi-way distribution board in an accessible location when required;
- a suitable cable route to each dwelling;
- a suitable meter position and Exit Point at each dwelling.

Figure 3 shows an alternative arrangement that may be utilised in smaller single and two-storey developments, typically for conversion of houses to multi-occupancy dwellings.

Where possible WPD will use SNE service cables and provide an SNE earthing terminal at each dwelling for the Developer to utilise, employing the necessary bonding.

Note: It is not acceptable to mix PME (TN-C-S), SNE (TN-S) or directly earthed (TT) connections within the same building.

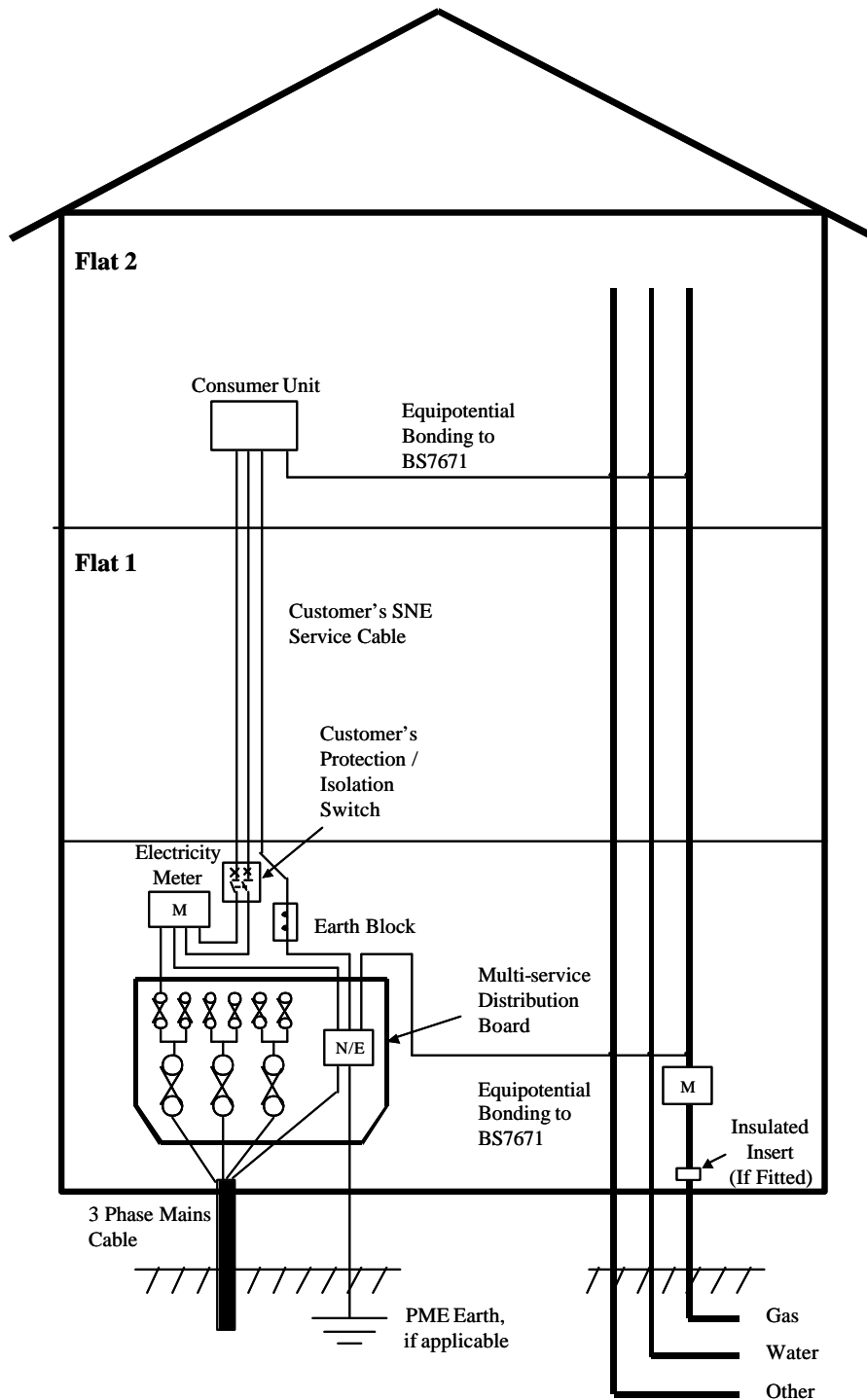
To properly accommodate these arrangements the developer should provide:

- a suitable cable route to each dwelling;
- a suitable meter position and Exit Point at each dwelling

Where the developer wishes to employ alternative arrangements these should be agreed with WPD at an early stage. Alternative arrangements shall be allowed at WPD's discretion.

FIGURE 1

PREFERRED ARRANGEMENT
Group Metering and Customer owned SNE Rising Services

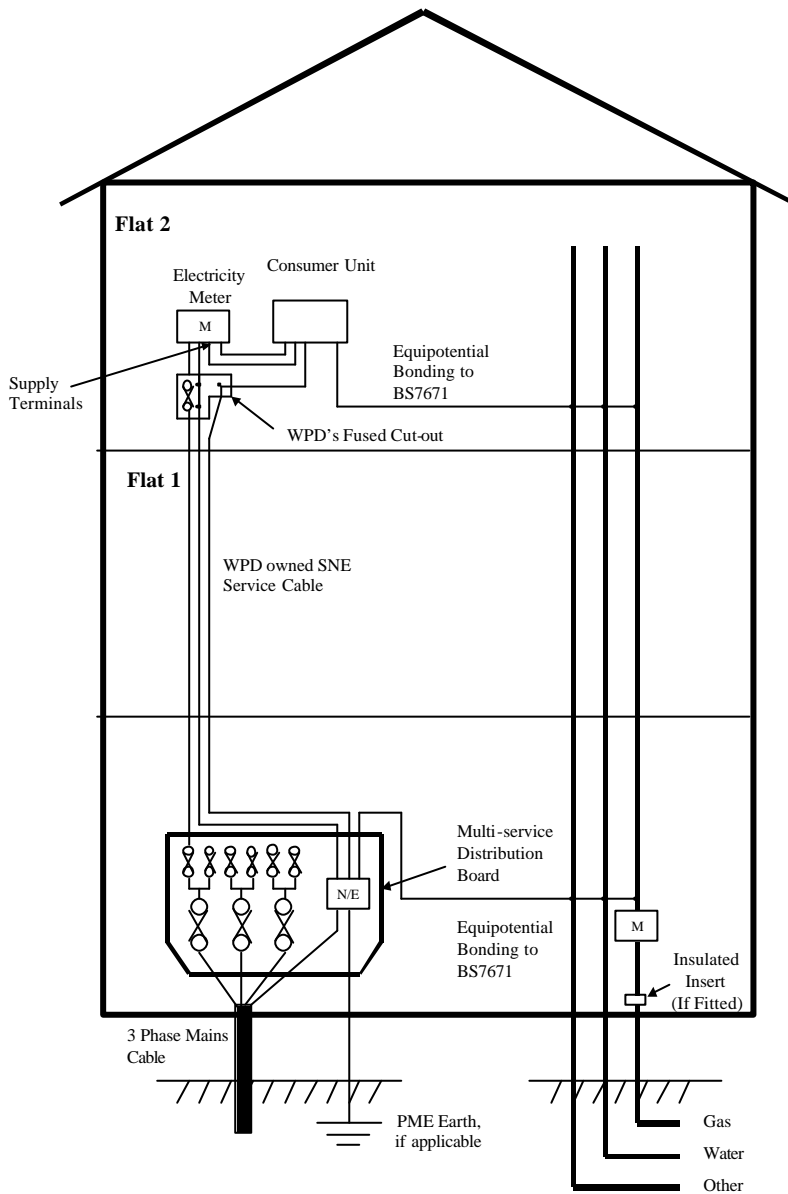


Notes:

1. Connection to only one flat shown for clarity
2. PME main cable shown. SNE main cable may also be used

FIGURE 2

**ALTERNATIVE ARRANGEMENT
Rising Services owned by WPD
Meter Positions adjacent to each flat**

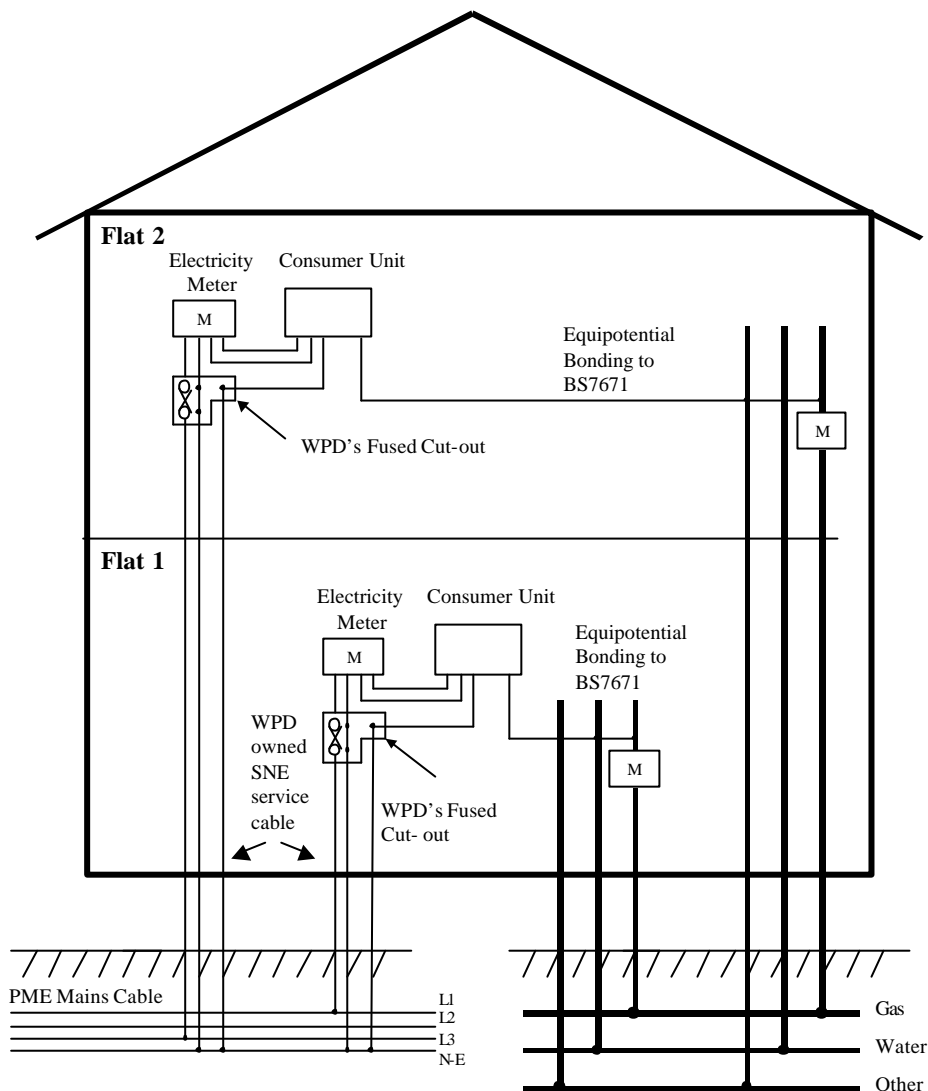


Notes:

1. Connection to only one flat shown for clarity.
2. The rising service cable must not be routed through any dwelling other than that to which it is to provide a service.

FIGURE 3

**ALTERNATIVE ARRANGEMENT
(Single and Two Storey Flats)**



Notes:

1. The incoming cable should be terminated at a single cut-out, inside a fire resistant meter cabinet, located to minimise the routing of the cable through the building interior.
2. The service cable must not be routed through any dwelling other than that to which it is to provide a service.
3. A three phase domestic cut-out may be used to terminate an incoming three phase cable from which concentric single phase cables provide a service to each dwelling.
4. It is not acceptable to mix PME connections with SNE or directly earthed connections in the same building.

7.0 COMMERCIAL INSTALLATIONS

When the landlord is selling on the electricity to his tenants, there will only be one WPD electricity meter and one Exit Point. These can be placed in a suitable location within the building.

In this situation, it is the landlord's responsibility to install and maintain those cables beyond the Exit Point.

8.0 MAINS/SERVICE CABLE ENTRY TO BUILDINGS

Without charge to WPD, the developer should install suitable 150mm (mains cable) or 38mm (service cable) internal diameter black alkathene ducting from each service position, to a position clear of the building and any concreted area as shown on the Site Plan. A draw cord should be incorporated and uniquely marked along its route for ease of location. There should be a minimum of 450mm cover above the ducting. The minimum bending radius of the 150mm duct will be 900mm.

Alternatively, a service cable may provide a direct service to each dwelling as shown in Figure 3. For each incoming service cable a 38mm, internal diameter, black alkathene duct, must be laid from the exterior of the building. The minimum bending radius of the alkathene duct will be 600mm.

9.0 MAINS CABLE ENTRY TO CABLE TERMINATION ENCLOSURE

A straight 150mm duct, coloured black, will be required for each incoming mains cable. The duct must be laid from the exterior of the building to the enclosure with 450mm of cover above the ducting.

A drawpit in the enclosure will be required, with minimum dimensions of depth 700mm, length 1000mm and width 450mm. Again, these details must be agreed with WPD in advance of works.

10.0 TERMINATION OF INCOMING CABLES

Where a building contains a large number of services from a single incoming mains cable, or the building is of three or more storeys, an enclosure will be required in which to terminate the incoming cables. Outgoing services to each dwelling can be taken from an appropriately fused multi-way distribution board. Depending upon the number of services a heavy-duty cutout may be required before the distribution board. At least 300mm space shall be provided between the electricity service equipment and any gas meter.

The exact dimensional requirements for the enclosure will depend upon the service arrangement and the number of dwellings. The enclosure must be a minimum height of 2100mm. There should be at least 1300mm of space in front of the WPD equipment to allow a person to work safely and comfortably. The width will depend on the numbers of dwellings. For group metering an area 400mm wide x 600mm high is recommended for each meter. This is in addition to space requirements for the termination equipment associated with the incoming cable.

The enclosure must not experience average temperatures above 30⁰C or be used for other purposes which will give risk of fire or affect the operation of WPD's equipment.

In the case of the entrance being closed for security reasons or there is no alternative means of escape the enclosure should be sited adjacent to an external wall and be accessible from the open air. For an enclosure, full width doors are required which must be lockable. If outside, doors must be weatherproof and vandal resistant. Locks will be supplied by WPD for the developer to fit.

In conversions and high amenity sites it is appreciated that there will be design difficulties. Discussion will be necessary to reach agreement on enclosure location.

11.0 SERVICE CABLE ROUTES WITHIN BUILDINGS

Where it is agreed that WPD will own and maintain the service risers, whether from a distribution board or by direct servicing, the cable route to each dwelling must be carefully planned and take full account of safety considerations. The developer is responsible for the design, construction and installation of this cable route to the standard described below. This will enable the WPD service cable(s) to be safely installed to each dwelling.

To supply each dwelling safely and to enable compliance with statutory obligations, the following guidelines (and APPENDIX 1) should be followed:

- the service cable route length must be as short as practical. Voltage drop considerations usually dictate that the service route cable length be less than 30 metres;
- the service cable route must not go through any dwelling other than that to which it is to provide a service;
- electrical services must not be installed in the same ducting as non-electrical services. Where a multi-service shaft is provided the electrical installation must be compartmented to provide a fire-barrier from the other services in the ducting;
- the method of ducting should be agreed with WPD taking into account the derating factor of the current carrying capacity of the cable;
- after installation the cable must be accessible, i.e. the cable must be withdrawable and replaceable without causing damage to the building structure;

where a service route passes through a part of the building structure required to have a minimum period of fire resistance then the method of ducting must allow the integrity of this fire resistance to be maintained. In addition, every vertical duct, shaft or trunking must have internal barriers to prevent excessive heat rise near its top. The maximum distance between these barriers is the distance between floors or 5m, whichever is the least;

- after WPD cabling has been installed the developer must ensure that all necessary fire-stopping is completed prior to connection of the electricity supply. Suitable fire stopping materials are:

- cement mortar, gypsum based plaster, cement or gypsum based vermiculite/perlite mixes, intumescent mastics, proprietary sealing systems, rockwool.

The construction of suitable cable routes to each dwelling can prove an onerous task, particularly within property conversions.

The exact methods to be used in a particular installation should be agreed with WPD before work commences.

12.0 METER POSITIONS

(a) Group metering in a communal area

Figure 1 shows the recommended arrangement for group metering in a communal area. For security reasons it may be required to place this within a lockable location to which residents have access. The physical size and location will have to be considered and agreed with WPD in advance of construction. Reference should be made to section 2.0, and APPENDIX 1. Please contact WPD at an early stage to discuss.

(b) Individually to the outside of each dwelling

Where the developer requests individual metering located at each dwelling fire resistant meter cabinets are the only acceptable method to house the metering and associated equipment. The cabinets are flush fitting and provide a convenient meter location for WPD, the developer and the occupier. WPD can provide suitable meter cabinets. This arrangement is shown in Figure 4. To prevent water ingress, openings in the top of the meter cabinet shall be avoided.

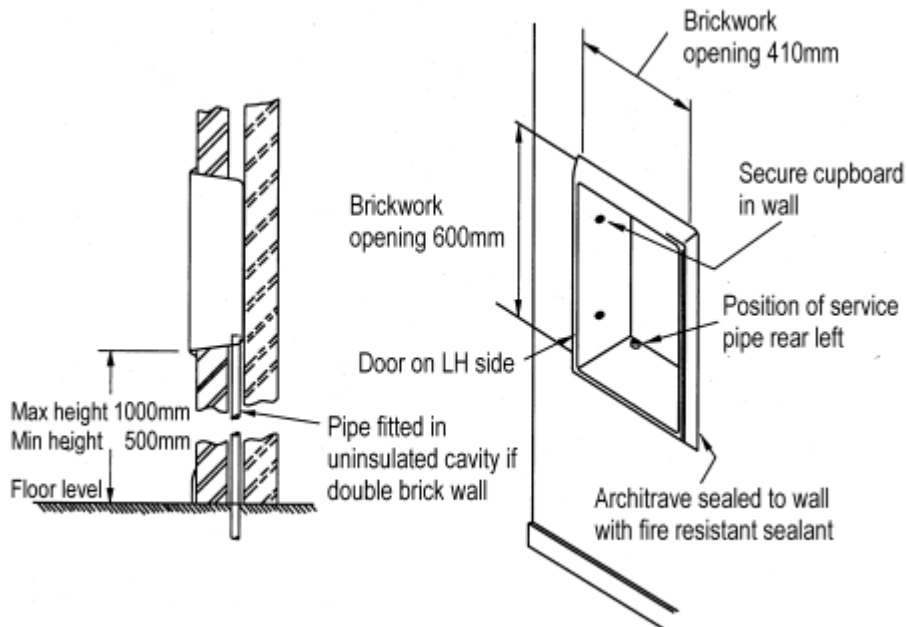


Figure 4

The meter cabinet must be located in a wall of the dwelling for which it is to house the metering equipment. It must also be installed in a wall of the dwelling so that it is accessible from a communal area. To remove the risk of electric shock by simultaneous touch under earth fault conditions, meter cabinets shall either be separated by 2.0 meters, effectively screened or effectively bonded. The location of the fire resistant enclosure must be agreed in advance of the construction. Suitable cable access must be provided to each dwelling as described in Section 7.

(c) **Unusual situations**

In case of difficulty in applying (a) or (b) please consult WPD.

13.0 REFERENCES

Electricity Act 1989 As amended.

Electricity Safety, Quality and Continuity Regulations 2002 As amended.

BS:7671 - IEE Wiring Regulations.

BS 31: Specification steel conduit and fittings for electrical wiring.

BS 731: Flexible Steel Conduit

BS 4648: Cable Trunking
Part 1: Steel Surface Trunking
Part 2: Steel Underfloor Trunking

BS 6099: Conduits for electrical installations
Part 1: Specification of General Requirements
Part 2: Specification for rigid non-flame propagating conduits of insulating materials

BS 6946: Specification for metal channel cable support systems for electrical installation

BS 5588: Part 1: 1990

The Building Regulations 1985 B2/3/4 Fire Spread.

NJUG6: National Joint Utilities Group
Service entries for new dwellings on residential estates

14.0 CONTACTING WESTERN POWER DISTRIBUTION

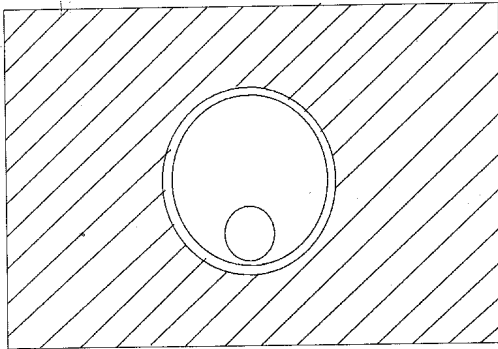
For enquiries relating to South Wales Area please call 0845 601 3341 or write to:

Central Support
Western Power Distribution (South Wales) plc
Ffynnon Menter
Phoenix Way
Llansamlet
SWANSEA SA7 9HW or FAX: 01792 784510

And for enquires relating to the South West of England Area please call
0845 601 2989 or write to:

Records Team
Western Power Distribution (South West) plc
Lostwithiel Road
Bodmin
Cornwall PL31 1DE or FAX: 01029 616892

Notes on design and construction of service cable routes

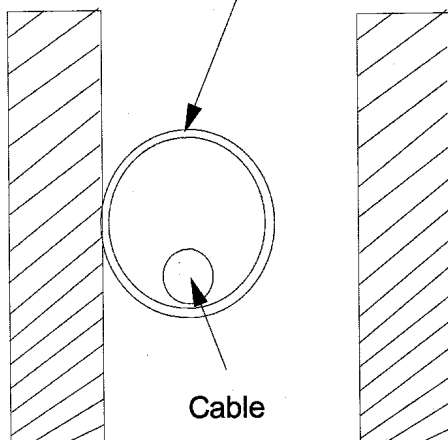


Cables in Conduit in Building Structure.

Notes:

- 1. Non-thermally insulating materials to be used.
- 2. 38mm conduit for single service cable

Conduit supported in cavity

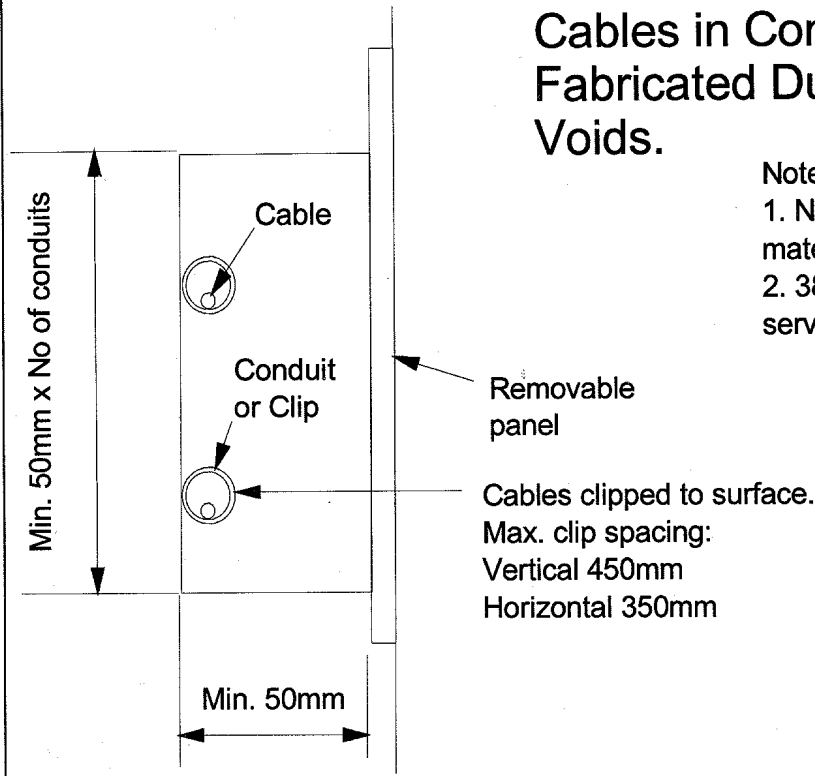


Cables in Conduit in Building Structure.

Notes:

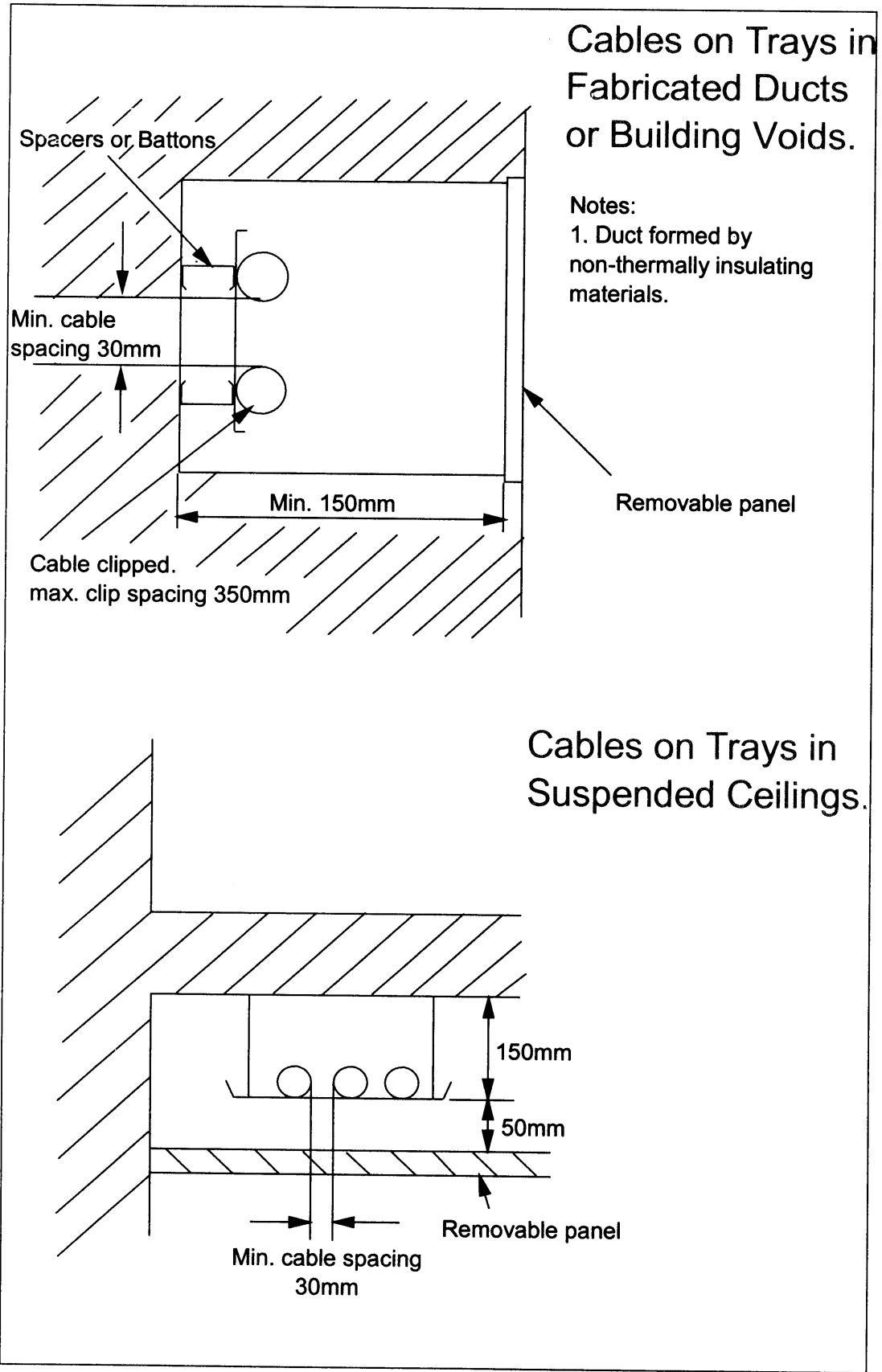
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- 2. 38mm conduit for single service cable

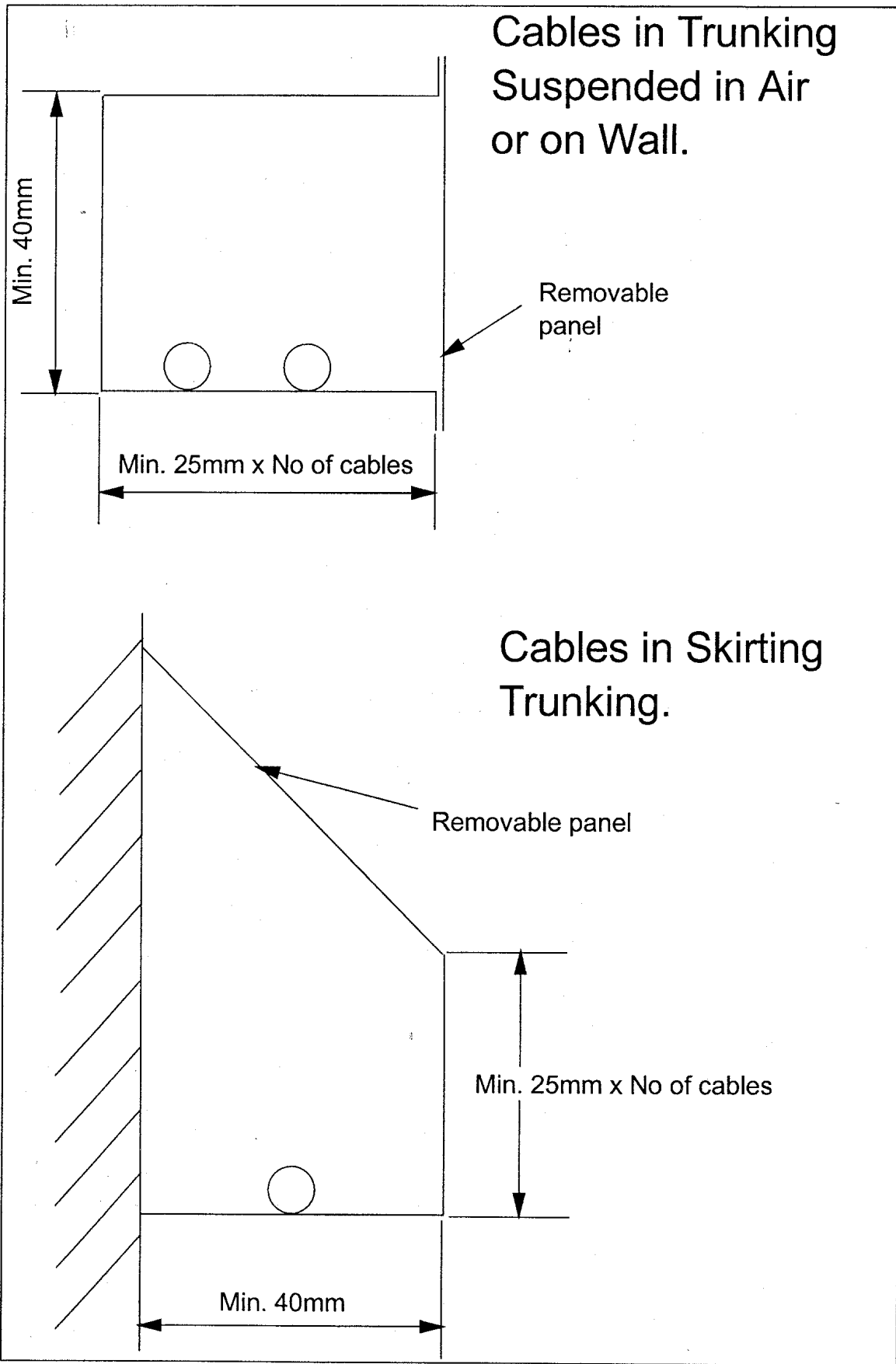
Cables in Conduit in Fabricated Ducts or Building Voids.

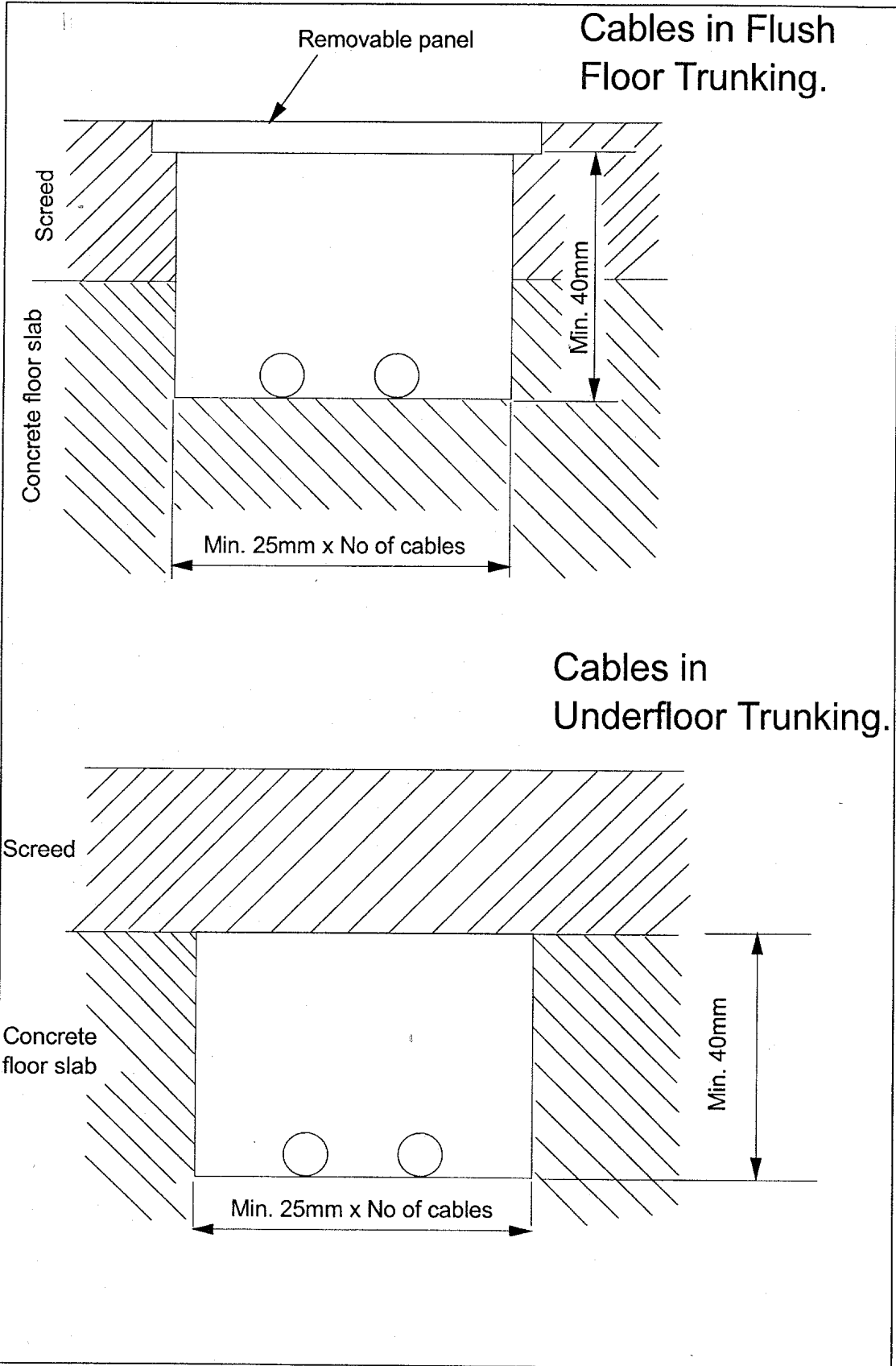


Notes:

- 1. Non-thermally insulating materials to be used.
- 2. 38mm conduit for single service cable







Cables in Trunking under Suspended Floor.

