

**Section 5**

# **Special Small Services**

**Service and Installation Rules of New South Wales**  
**October 2006**  
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# 5 Special Small Services

## 5.1 INTRODUCTION

Special arrangements apply for supply to certain small installations usually located in public places. The electricity distributor will provide guidance on the selection of the connection point.

Generally, supply to these small installations does not exceed 230V single phase. Typical small installations include bus stop shelters, public conveniences, floodlights, decorative lighting, direction and locality signs and public telephones, etc. Special Small Services are restricted to public facilities located in public places.

Generally, meters are not used in these installations because an accurate assessment can be made of the energy usage.

Supply from the distribution mains allows for 24 hour operation and is not restricted. A time control switch or other controller may be required where the customer wishes to restrict the time of operation.

The electrical installation may only be connected to controlled street lighting mains if all of the following apply:

- (a) There are no distribution mains available.
- (b) Operation of the installation is only required at night.
- (c) There is adequate capacity in the street lighting mains to supply the proposed load (consult with the electricity distributor).
- (d) An individual controller is installed within the electrical installation, to restrict operation to night time usage, eg photoelectric cell.

Submit a location sketch of each site to the electricity distributor's local office. It should detail the position of the customer's structure with distances from the electricity distributor's equipment and property lines.

These arrangements do not include supplies to building sites or fetes etc, in public places.

## 5.2 CONNECTION TO THE DISTRIBUTION SYSTEM

### 5.2.1 Underground Supply from Overhead Mains

Figure 5.1 shows the standard arrangements for an underground electricity supply from overhead mains. The customer must supply and install an approved point of supply termination box on the electricity distributor's distribution pole. The box and conduit are to be mounted on the pole face opposite the traffic flow.

The customer must provide and arrange for the installation of the service mains consisting of minimum 6mm<sup>2</sup> stranded copper conductors single core thermoplastic insulated and sheathed cable.

An accredited service provider, authorised by the electricity distributor will install and connect the service mains cable to the electricity distributor's overhead distribution mains.

The service mains must be installed as follows:

- (a) Enclose the cable on the pole in flexible plain conduit to AS 2053.4. 'Conduits and fittings for electrical installations Part 4: - Flexible plain conduits and fittings of insulating material'.
- (b) Provide enough conduit to reach the cross arm and enable a bellmouth to be formed adjacent to the connection point.

- (c) Provide 1500mm of cable free of conduit at the connection point to enable the connection to the distribution mains.
- (d) Attach the conduit to the pole above the terminal box using sufficient full (2 hole) galvanised saddles and 40mm long galvanised clouts. Refer to clause 5.4 where other than timber poles are used.
- (e) Maximum number of UG/OHs on the electricity distributor's pole must comply with clause 2.10.4 of these rules.

### 5.2.2 Underground Supply from Underground Mains

Figure 5.2 shows the standard arrangements for supply from the electricity distributor's underground distribution mains. The customer must supply and install a point of supply termination box within an underground pit, pillar or structure, near the connection point. The route length of service cable must not exceed 10m.

Figure 5.3 shows the standard arrangement where supply is taken from the electricity distributor's street lighting standard or pillar.

Do not mount any customer equipment within the electricity distributor's equipment unless the electricity distributor gives permission to do so.

An accredited service provider authorised by the electricity distributor, will connect the underground service cable to the electricity distributor's underground distribution mains. The cable between the electricity distributor's underground mains and the point of supply termination box will be supplied by the customer.

The customer must provide and arrange for the installation of the underground service cable consisting of minimum 6mm<sup>2</sup> stranded copper conductor single core thermoplastic insulated and sheathed cable.

The cable must be installed in accordance with the AS/NZS 3000 and the principles outlined in this Section. Provide enough cable to connect the underground service cable to the underground distribution mains.

Underground cabling must be installed in, heavy duty, UPVC conduit as specified in the

AS/NZS 3000 for a Category A system enclosure, or as approved by the electricity distributor. The underground conduit must maintain 500mm depth throughout its length.

Orange marker tape, complying with AS 2648.1 'Underground marking tape Part 1: - Non-detectable tape' must be installed 300mm above all underground electrical conduits.

Underground electrical conduits located in footpaths are to run parallel with or at right-angles to the property line in accordance with Figure 5.2. Refer to Section 2 - Underground Services.

### 5.2.3 Overhead Service to Customer's Structure

Where an overhead service is installed to a point of attachment on a customer's structure, refer to Section 3 - Overhead Services.

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## 5.3 CUSTOMER'S STRUCTURE

If your structure is to be erected over the electricity distributor's footpath allocation for

underground mains, you must provide and install conduits, in accordance with Figure 5.6.

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## 5.4 CONCRETE AND STEEL POLES

Where concrete and steel poles are used you must provide stainless steel "band-it" or similar bands. The bands must have suitably sized conduit saddles to fix the conduit to the pole.

Equipment mounted on the pole must also use bands to fix it in place. **Do not drill any holes in concrete or steel poles for fixings.**

## 5.5 ELECTRICAL INSTALLATION

### 5.5.1 Type of Installation

The installation and wiring must comply with AS/NZS 3000 and this Section. The installation may be either double insulated or an earthed installation.

If you arrange for double insulation, all fittings and accessories must comply with the requirements of double insulation.

Where earthing is required it must be arranged as a multiple earthed neutral (MEN) system, unless supplied from RailCorp, refer to clause 1.10.7.1.

A notice in accordance with the requirements of the Electricity (Consumer Safety) Regulation 2006 is to be submitted for all work associated with the electrical installation.

### 5.5.2 Point of Supply Termination Box

Alternative box mounting positions to clauses 5.2.1 and 5.2.2 may be:

- On a customer pole, wall or structure, or
- Within a customer's pillar
- Near the point of attachment of an overhead service.

The terminal box must meet the following requirements:

- (a) If the box is in a pillar or structure it must be 150mm minimum above ground level.
- (b) The box, complete with lid and sealing gasket must be of suitable size to permit the necessary connections.
- (c) The box must have a minimum rating of IP23, for above ground use and IP27, for below ground use.
- (d) Access to a box not installed above 3000mm, or a box in a pit, must be provided by means of a tool and the box must be suitable to minimise vandal damage.

### 5.5.3 Control and Protection

The electrical installation must be provided with a **main control** and **overcurrent protection**. To satisfy this, the box must contain either:

- (a) A double pole switch for double insulated installations, or
- (b) A single pole switch, or
- (c) Combined Residual Current Device and Circuit Breaker (RCD/MCB).

A 20A minimum, current limiting (HRC) fuse carrier and base and neutral link must be installed in all options. The current limiting (HRC) fuse link must be a maximum of 20A.

The current limiting (HRC) fuse may be both the service fuse and circuit protection.

Exceptions to this requirement are:

- i) Installations where the customer wishes to supply load by means of an installed plug socket only. The plug socket control may be a switch which may be considered the installation main switch.
- ii) A switch installed at the connection point may be considered as the installation main switch.
- iii) Where supply is taken from a street lighting standard or a pillar, the current limiting (HRC) fuse at the connection point is the circuit protection for the installation and the box need only contain the main switch or RCD/MCB.

In all other cases AS/NZS 3000 will apply.

Figure 5.4 shows a point of supply termination box for 230V power supply suitable to be mounted on a pole, wall or structure or within a pillar. The point of supply is at the line side of the fuse mounted in the box, where the latter is mounted on an electricity distributor's distribution pole.

Figure 5.5 shows a point of supply termination box for 230V power supply installed below ground.

### 5.5.4 Installation on the Electricity Distributor's Pole

Refer to Figure 5.1. The method of installation on the electricity distributor's pole must meet the following requirements:

- (a) The submains or final subcircuit installed between the point of supply termination box and the customer's structure must be installed in flexible plain conduit to AS 2053.4 'Conduits and fittings for electrical installations Part 4: - Flexible plain conduits and fittings of insulating material' from the terminal box to a minimum of 1000mm from the base of the pole and be suitably protected against mechanical damage.
- (b) The conduit must be protected to comply with clause 2.10.2 of these rules.
- (c) The point of supply termination box is to be maintained by the customer and installed on the pole face opposite the traffic flow, a minimum of 3,000mm and a maximum of 3,800mm above ground.
- (d) Using sufficient full (2 hole) galvanised saddles and 40mm long galvanised clouts to secure the conduit to the timber pole (refer to clause 5.4 where other than timber poles are used). The conduit must

be installed on the pole face opposite the direction of traffic flow.

- (e) The customer will install the submains/final subcircuit up to the point of supply termination box.
- (f) The required mechanical protection of submains or final subcircuits between 2500mm above ground line and 300mm below ground line must be tubular or 'U' section construction with no side flanges (side securing tabs are permitted) to minimise the surface area of the pole that is covered.

**Unless authorised, the accredited service provider is not permitted to work on or near the electricity distributor's mains.**

### 5.5.5 Earthing

The earth electrode may be located:

- (a) Adjacent to the electricity distributor's pole, in a customer's pit (containing the

point of supply termination box or a separate pit), or

- (b) Within or adjacent to the structure being supplied. If within the structure the connection must be accessible from an inspection cover.

For electrical installation supplied by the RailCorp, refer to clauses 1.4.4, 1.5.9 and 1.10.7.1.

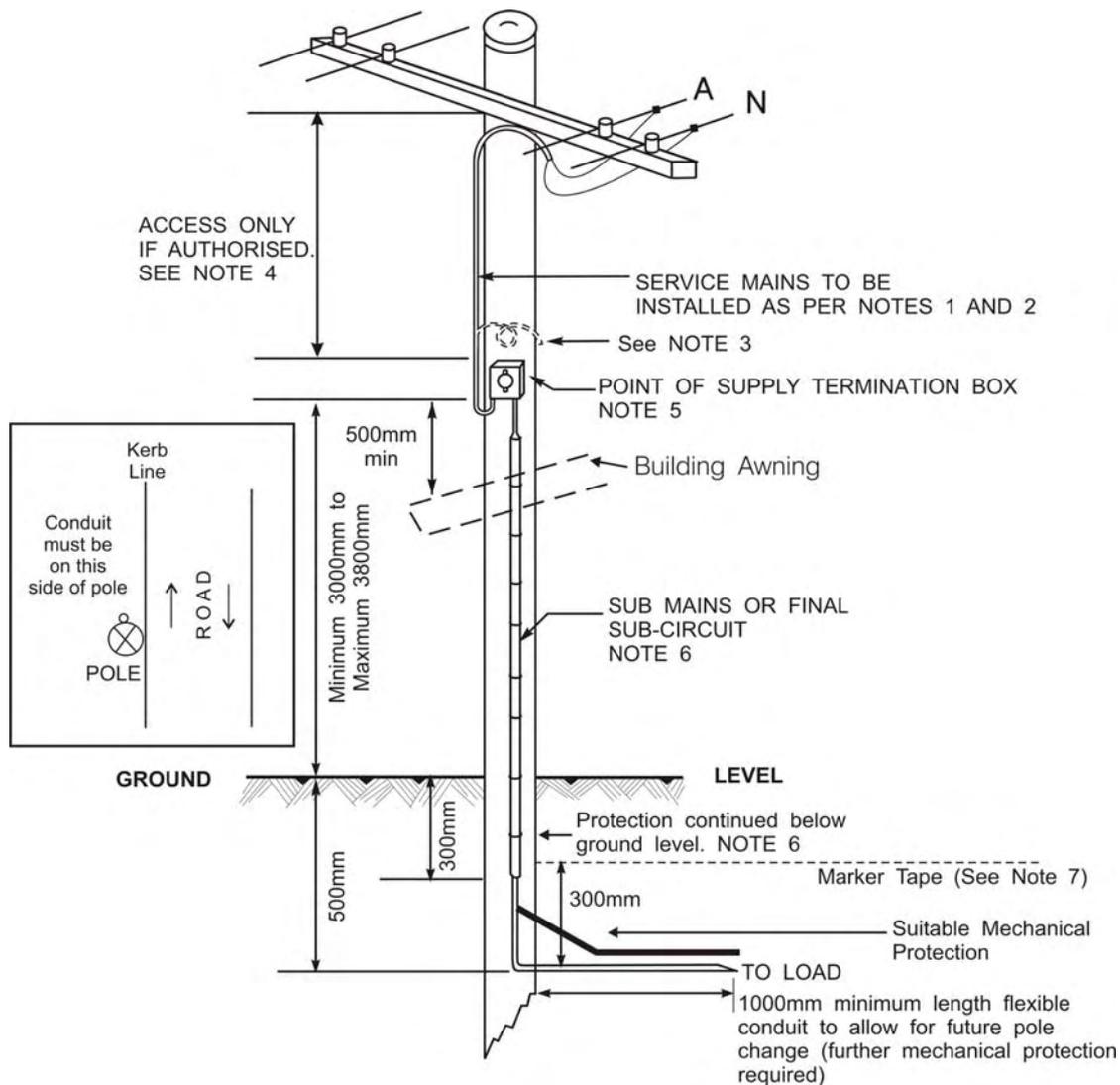
### 5.5.6 Labelling

Where the point of supply termination box is not readily associated with the equipment it controls, the box and the equipment must be labelled to indicate their respective locations.

### 5.5.7 Underground Sub Mains

The electrical installation wiring should be installed where possible in the electricity distributor's footway allocation.

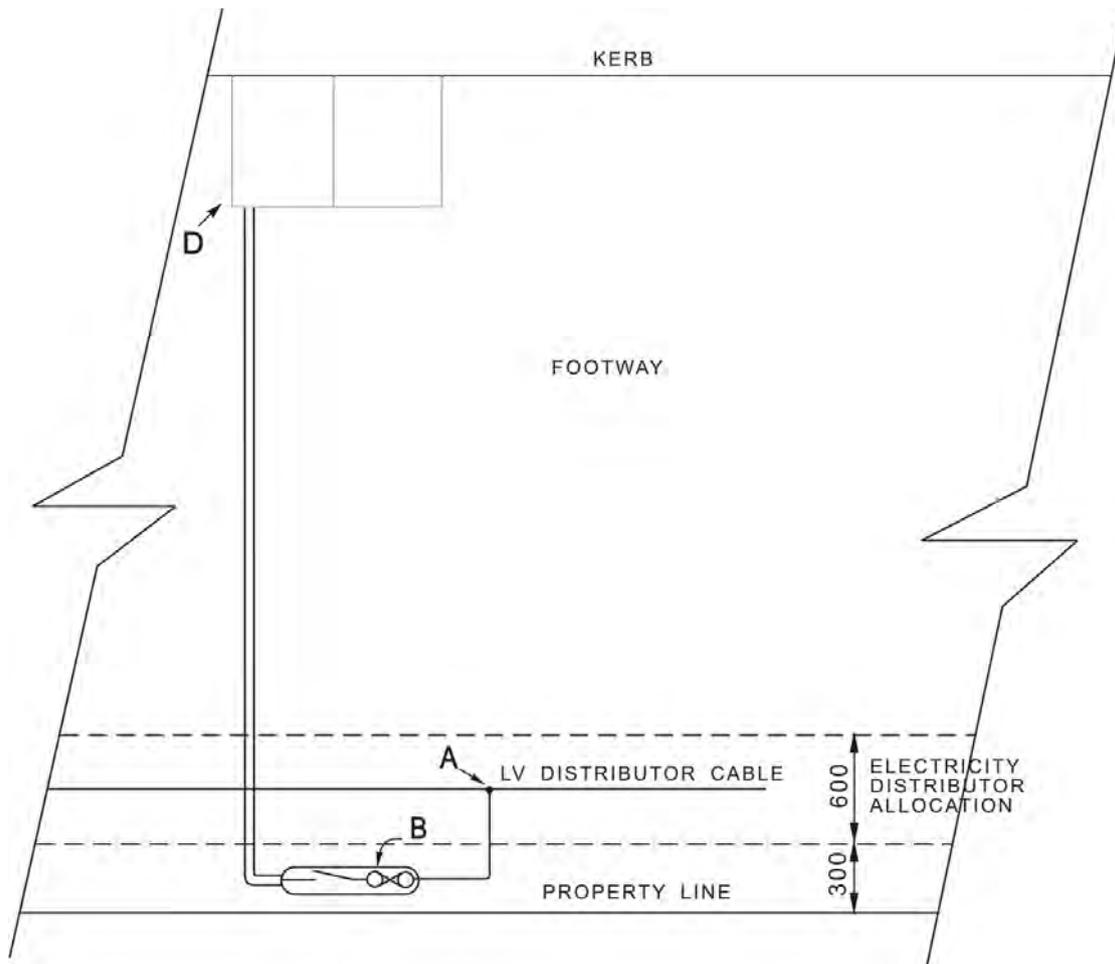
Figure 5.1: Standard arrangements for 230V power supply from overhead mains



## Note:

1. Install the required length of minimum 20mm flexible plain conduit (conduit to comply with AS 2053 'Part 4 flexible plain conduits and fittings') with minimum 6mm<sup>2</sup> single core double insulated cables for installation between the point of supply termination box and the connection point. Fix and terminate at the point of supply termination box.
2. Allow 1500mm of free length of cable without conduit at the electricity distributor's crossarm to connect to the electricity distributor's mains.
3. If not authorised, coil the cable and securely attach to the pole at the point of supply termination box for the accredited service provider's authorised person to complete the work. Also leave sufficient double hole galvanised saddles and 40mm long clouts for fixing the conduit. (Allow for spacing of saddles to be 400mm maximum).
4. Accredited service providers not authorised are not permitted to work on or near the electricity distributor's distribution system.
5. The customer is to provide and maintain an approved point of supply termination box. Refer to Figure 5.4. The box may also be located nearby on a wall or structure where supplied by an overhead service main.
6. Cables to be installed in conduit between the point of supply termination box and the customer's structure. The conduit on the pole and within 1000mm of the base of the pole must be flexible plain conduit, to AS 2053 - Part 4, or as agreed with the electricity distributor. The conduit is to be suitably protected against mechanical damage:
  - up to a distance of 2500mm above the finished ground level, and
  - over the underground portion of the flexible plain conduit.
7. Install marker tape 300mm above the conduit (refer to clause 5.2.2)

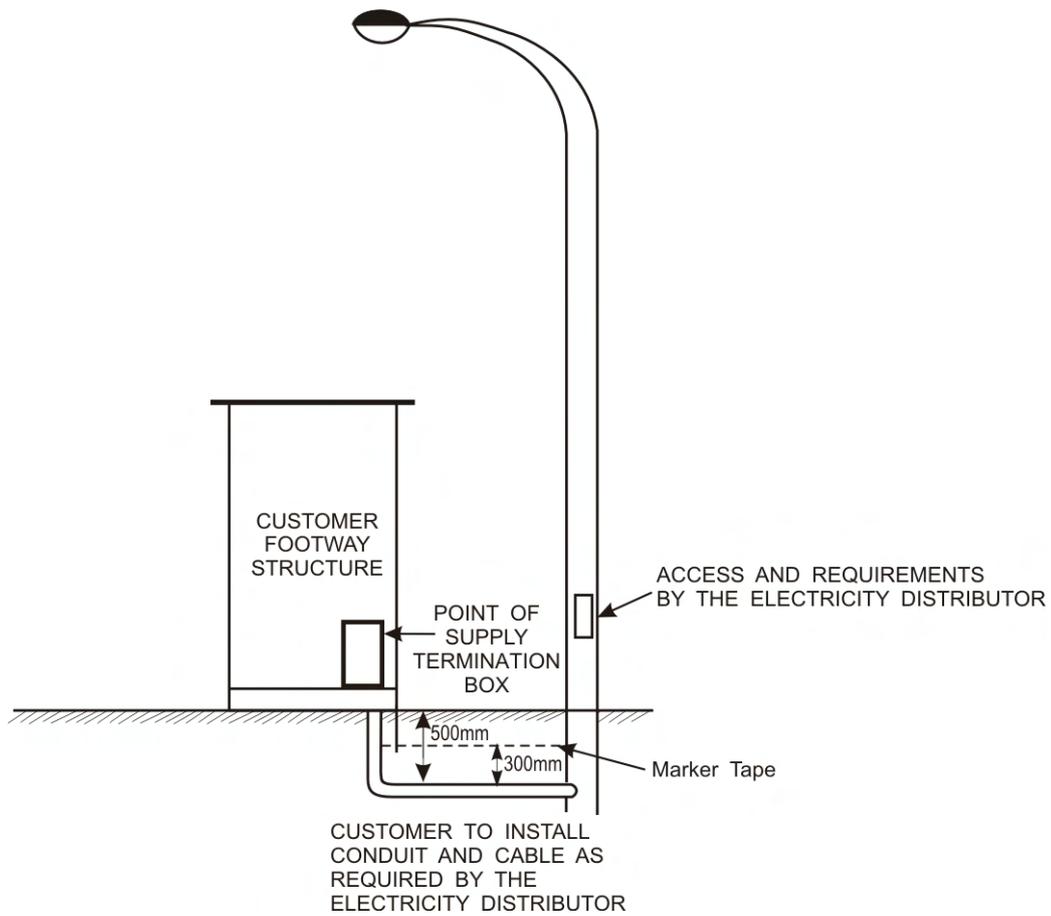
**Figure 5.2: Typical arrangements for 230V power supply from underground mains**



- A Refer to the electricity distributor for supply details, connection to the mains may be via a tee joint, distribution pillar or street light column.
- A-B Minimum 6mm<sup>2</sup> copper 0.6/1kV single core PVC/XLPE or PVC/PVC cable installed in accordance with the AS/NZS 3000 and clause 5.2.2 (to be kept as short as possible, maximum length is 10 metres).
- B Approved pit service box supplied and installed by the customer. Refer to Figure 5.5 - point of supply termination box installed in a pit below ground or Figure 5.3 when installed in a pillar or structure.
- B-D Cable installed by customer in accordance with the AS/NZS 3000 and clause 5.2.2.
- D Electrical installation.

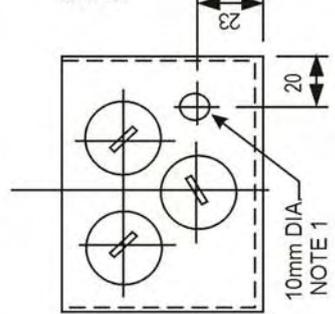
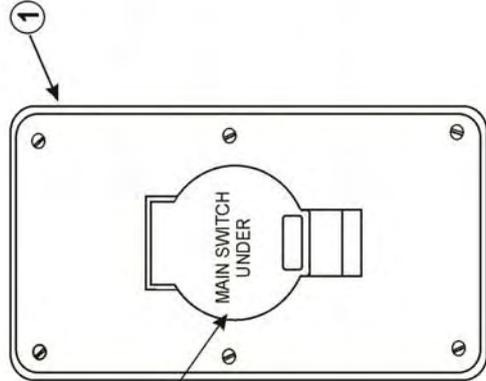
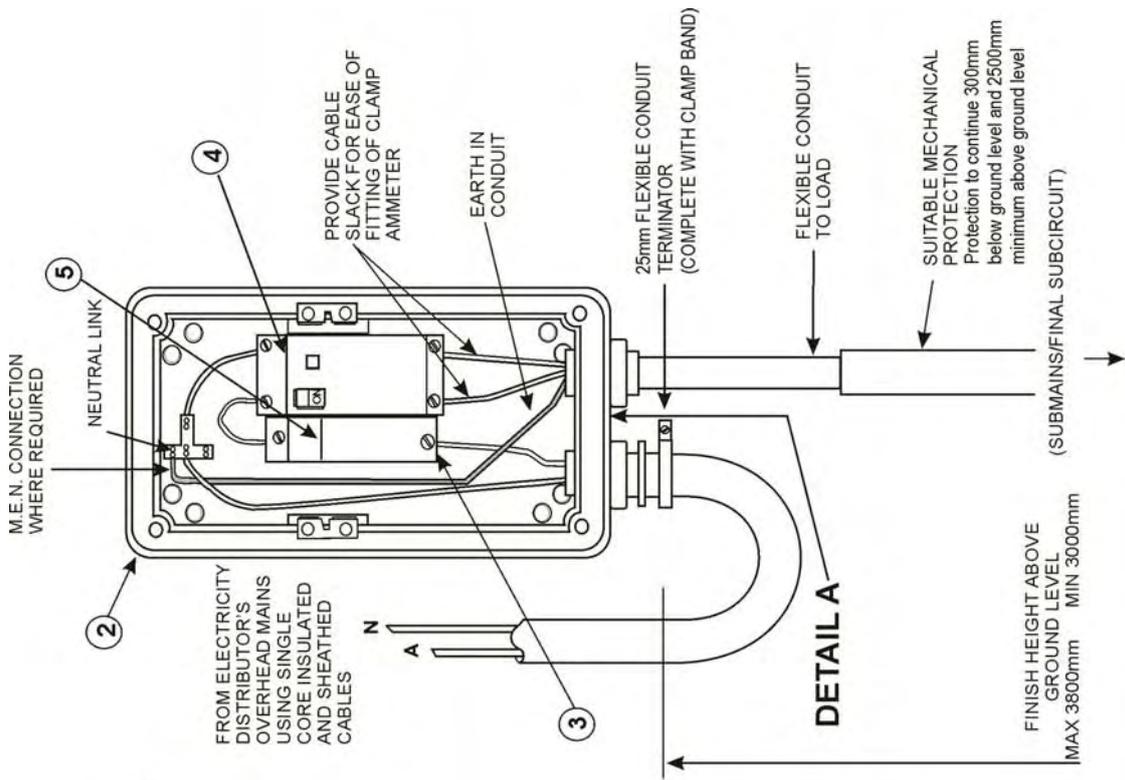
Note: Where the customer's footway structure is built over the electricity distributor's footway allocation, ducts are to be laid beneath the structure in accordance with Figure 5.6.

**Figure 5.3: Typical arrangements for underground 230V power supply from a steel street lighting standard**



- Note:
1. Refer to Figure 5.2 for requirements of laying customer's cables in footway.
  2. Refer to Figure 5.6 for requirements of ducts under customer's footway structure.
  3. Install marker tape (refer to clause 5.2.2)

Figure 5.4: Typical point of supply termination box 230V power supply for above ground use (pole mounting illustrated)



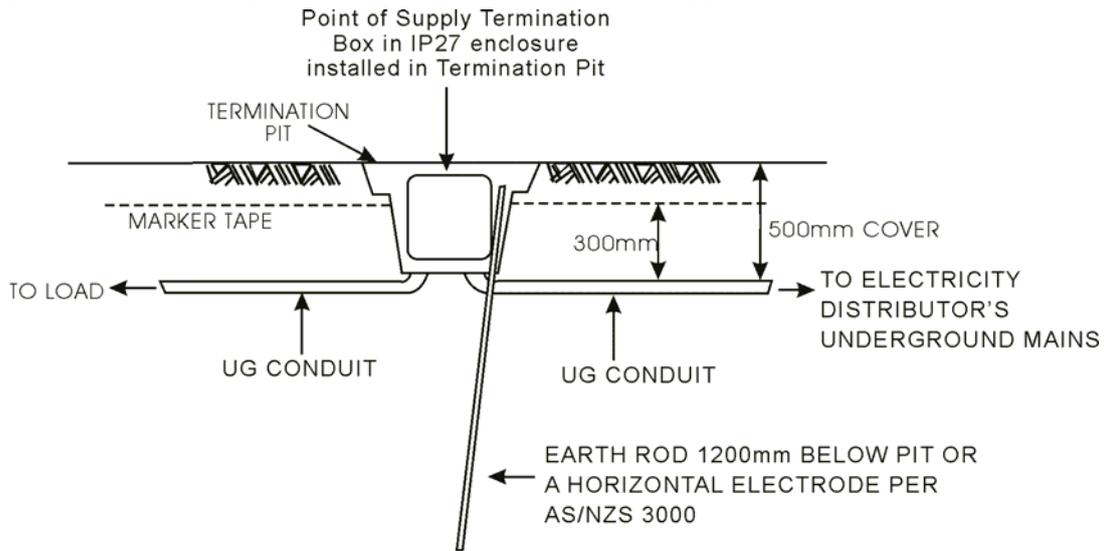
**DETAIL A (N.T.S.)**

LOCATION OF 10mm DIA. HOLE TO PREVENT CONDENSATION

5	CURRENT LIMITING (HRC) FUSE	1
4	COMBINED RCD/MCB 16A 30mA CORE BALANCED EARTH LEAKAGE CIRCUIT BREAKER OR SWITCH	1
3	FUSE HOLDER CURRENT LIMITING (HRC) SERVICE FUSE FRONT ACCESS THROUGH FLAP OR BY REMOVAL OF COVER	1
2	ENCLOSURE UV STABILISED	1
1	COVER ASSEMBLY GREY UV STABILISED COMPLETE WITH SEALING GASKET	1
ITEM NO	DESCRIPTION	NO. OFF

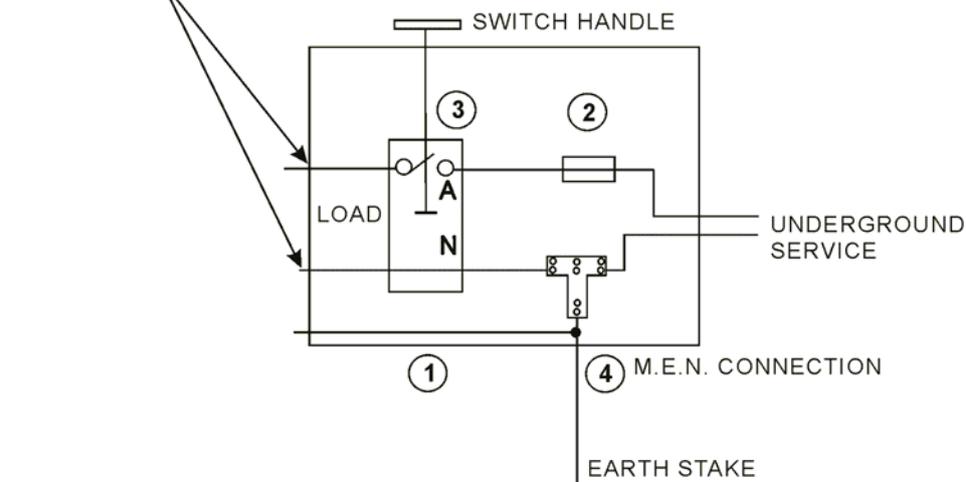
**NOTE 1.** Remove plug at installation or drill 10mm hole to prevent condensation

**Figure 5.5: Point of supply termination box for 230V power supply installed in a pit below ground**



### GENERAL ARRANGEMENT

ACTIVE & NEUTRAL SUBMAINS  
OR FINAL SUB-CIRCUIT

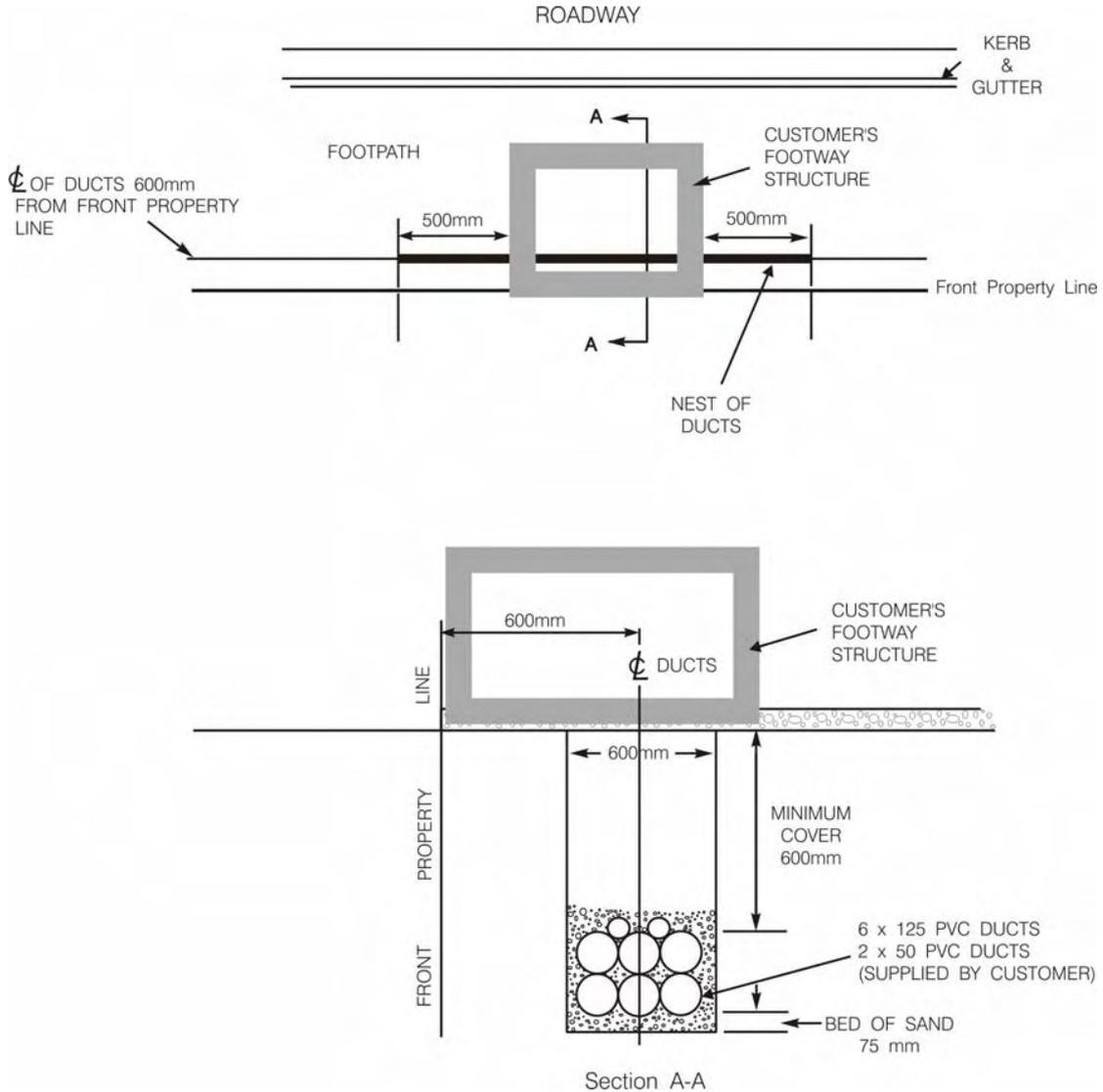


### CONSUMERS TERMINAL BOX

#### Components

- ① Enclosure to be IP27 rated.
- ② Current limiting (HRC) fuse carrier and base 20A minimum, maximum 20A current limiting (HRC) fuse link.
- ③ Combined RCD/CB may be used in place of a switch.
- ④ Neutral link and earth connection

**Figure 5.6: Installation of ducts under customer's footway structure**



- Note:
1. Confirm the electricity distributor's requirement and cable location prior to carrying out any excavation.
  2. Ducts to be installed on 75mm bed of sand.
  3. Ducts to be installed in a straight line and at an even grade.
  4. End of ducts to have each end plugged with PVC plugs prior to backfilling.
  5. Minimum of three working days notice to be given for work on site.