



NICC 802: 11kV & 7.6kV TO LOW VOLTAGE Mk7 PADMOUNT TRANSFORMERS INFORMATION & REQUIREMENTS FOR CUSTOMERS/CONTRACTORS

Network Information for Customers and Contractors (NICC)

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Revision Notice:

Date	Explanation
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18 June 2013	<ul style="list-style-type: none">• The vertical 'black-line' marked in left margin are the current amendments.• All figures and various clauses updated.• Removed previous section 6: "Determination of Maximum Demand"

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1. INTRODUCTION

The installation of the Mk7 padmount transformer is appropriate when SA Power Networks receives an application for Supply that indicates a potential load beyond the capacity that can be conveniently supplied from our low voltage distribution system.

Note: For the installation of transformers in the Adelaide CBD area, please consult with SA Power Networks - Customer Solutions Manager (Adelaide) prior to design work commencement.

There are many factors to be considered if your project requires a Mk7 padmount transformer. When the installation of a Mk7 padmount transformer is required, the Designers, Engineers, Internal/External Contractors, Consultants and Customers of SA Power Networks shall refer to this brochure which provides information/guidelines in a number of areas, but does not provide complete details of SA Power Networks requirements.

The Mk7 range supersedes the full 11kV Mk6 range where transformers are used for either loop in loop out or radial applications. The Mk7 style of padmount transformer is the most suitable installation in an underground area supplied by cables, within a building structure or where a transformer has to be sited on the Applicant's land.

Note that from here onwards, we have addressed 'SA Power Networks' as 'we', 'our' and/or 'us' unless and otherwise specified.

2. SCOPE

This brochure provides information and guidelines for installing a Mk7 padmount transformer and it clarifies the responsibilities of Designers, Engineers, Internal and External Contractors and Customers of SA Power Networks in carrying out their duties in providing a safe, reliable and cost effective installation.

It shall be noted that this brochure is not a stand-alone reference and is not intended to incorporate our complete requirements, technical standards, site specifications and/or construction details. Customers are advised to refer and maintain the requirement stated in relevant standards and in other regulatory/obligatory documents. A few references are mentioned in Appendix-C of this brochure.

It is important that you contact us in the early planning stages of your project to enable us to assist you in establishing your installation requirements and the most suitable method of supply.

For further assistance/information concerning this NICC 802 brochure, please contact our relevant Customer Solutions Manager/Network Project Officer and to obtain a copy, please click here [Internet](#) website.

3. OVERVIEW OF THE Mk7 TRANSFORMER

The Mk7 is our current standard padmount transformer. It provides neat and compact ground level installation. It also includes new features that focus on improvements to safety, reliability and productivity.

The standard range is supplied with a 2 switch oil ring main unit (RMU) in the high voltage compartment which now includes earth switches on both LS1 & LS2.

The Mk7 is capable of supplying a Customer with 3 phase 230/400V range which includes 11/0.4kV & 11-7.6/0.4kV, and sizes 315, 500, 750, 1000, 1500 and 2000kVA. The Mk7 transformer consists of 3 footprint sizes and is backwards compatible with the Mk6 arrangement.

The colour of the new Mk7 padmount transformer is Solver Colorbond 'Rivergum' green. Refer to section 6.0, Tables 1 to 4 in this brochure for the Mk7 general and protection co-ordination data.

3.1 Major Features of the Mk7 Transformer

The major features of the Mk7 padmount transformer include:

1. Replacement of the staggered configuration of the Mk6 HV bushings with all three phases at one height. This height is equivalent to the lowest bushing height on Mk6;
2. The HV side of the transformer can be isolated using a two position transformer switch (LS3);
3. Earthing facilities built into the HV switches provide easier switching/isolation and allows for dead break connectors to be used as standard. This provides more secure connections and also means earth leads are not required;
4. Cable clamping supports are now included at the base of the HV compartment;
5. To reduce the time to locate HV underground faults, the Mk7 has been fitted with a fault indicator on LS1. The indicator unit is located at the top left hand corner of the HV compartment. A clear window in the HV door allows the signal to be seen from a distance and without the need to open the transformer door;
6. The Mk7 transformer is fitted with two separate oil tanks. One tank is for the HV switches and the other for the transformer windings; and
7. Three flexible twist lock earthing leads are included in the LV compartment. Earthing can be done by connecting these earth leads to the LV main bus or to any of the individual LV circuits, therefore separate earth leads are no longer required.

4. CUSTOMER'S RESPONSIBILITIES

You, or your representative, will need to consult with us prior to your project commencing. Our relevant Customer Solutions Manager/Network Project Officer will assist you in establishing the padmount transformer size that best suits your requirements, the proposed location, and the appropriate cable route.

We will need from you, a site plan showing the proposed location of the padmount transformer, and the location of any other services in the vicinity of the transformer. The electrical design should be approved by us prior to proceeding with any site preparation in the vicinity of the proposed cables and padmount transformer.

4.1 Transformer Location and Trenching

The Customer is normally responsible for trenching, backfilling, reinstatement, levelling and work associated with the transformer installation. We can provide a quotation for this work. The location of the padmount transformer and the cable route for our cables needs to be clear of other services. Refer to section 4.3 for the minimum separation requirements between outdoor transformer and building structures.

The trenching contractor will need to know the location of all underground services in the vicinity of the transformer site and along the cable route. For more information on our requirements for trenching and conduits, please refer to our Technical Standard [TS-085](#).

Customer's infrastructure shall not encroach on our easement. The padmount transformer shall be installed centrally within the transformer easement as practical as possible. For more details on easement requirements, refer to our Technical Standard [TS-102](#).

For interpretation of the Regulations under the Building Act you will need to liaise with your local council's building inspector.

Where the padmount transformer is installed inside a building or structure, adequate ventilation is required to prevent excessive temperatures. The transformer room is required to be designed so that the temperature inside the building shall comply with the requirements of our Technical Standard [TS 108](#).

For a URD, the Mk7 transformer size should NOT exceed 315kVA and associated cable ratings shall also be taken into consideration. In circumstances where a LV residential feeder is supplied from a larger transformer installed for a spot load Customer, i.e. shops, apartments, a school, the designer will need to ensure that there is adequate fault current protection at the closest residential supply point. For more details refer to our Technical Standard [TS-100](#).

When designing a network, the ideal configuration for supply to a transformer is to create a 'ring circuit'. This will give the network flexibility and enable maintenance and switching to easily occur. It is important that High Voltage cables do not cross over. Consideration in planning shall be given to the location of the transformer and feed direction to avoid crossing cables.

Designers and Constructors need to be aware that, if the Mk7 transformer is to be a radial supply only and installed with cables supplying from the LEFT hand side, then the cables shall be terminated on the LS1 side. This is to ensure that the line fault indicator (LFI) that is supplied with a fixed length connection can be placed around the cables.

If a radial transformer is to be installed with cables supplying from the RIGHT hand side, then it is acceptable to terminate to LS2 where LFI is not required to be connected. If the transformer becomes a loop feed, the additional cables will be connected to LS1 (where the LFI will be installed).

4.2 Transformer (Indoor) Minimum Separation

Where 3 hours fire rating (i.e. FRL 180/180/180) as determined by the Building Code of Australia (BCA) of the room is achieved, then a minimum of **1.0m** clearance, measured from inside wall(s) of the room to the indoor distribution transformer and/or equipment, shall be maintained.

For more details on 'Distribution Transformer Room Size' requirements, refer to our Technical Standard [TS 108](#) - clause 6.3.

4.3 Transformer (Outdoor) Minimum Separation

The installation design of an outdoor padmount transformer shall ensure that no part of the padmount transformer enclosure is within **1.2m** of any part of a building or wall that has a fire rating less than 3 hours (i.e. FRL 180/180/180) as determined by the Building Code of Australia (BCA).

Refer to Technical Standard [TS-085](#) and [TS-100](#) - Section 7.3.6 "Clearance to Other Services" for more detail. Also refer to Technical Standard [TS-102](#) and [SA Electricity Distribution Code \(EDC\)](#) - Part B for easements requirements.

5. TRANSFORMER SITE REQUIREMENTS

5.1 Typical Transformer Operating and Easement Area

An operating area of 3.5m x 3m, located in the front of the transformer, is required. This may be provided in car parks, passageways, footpaths or private roadways subject to the approval from our relevant Customer Solutions Manager/Network Project Officer.

This area is additional to the area requested for the padmount transformer easement. Refer to our Technical Standard [TS-102](#) and the illustration below.

A minimum 600mm wide space is required around padmount transformer. This requirement also applies for the transformer installed below ceilings, cover or roof enclosures.

For more information on 'Access Route to the Distribution Transformer Room', refer to our Technical Standard [TS 108](#).

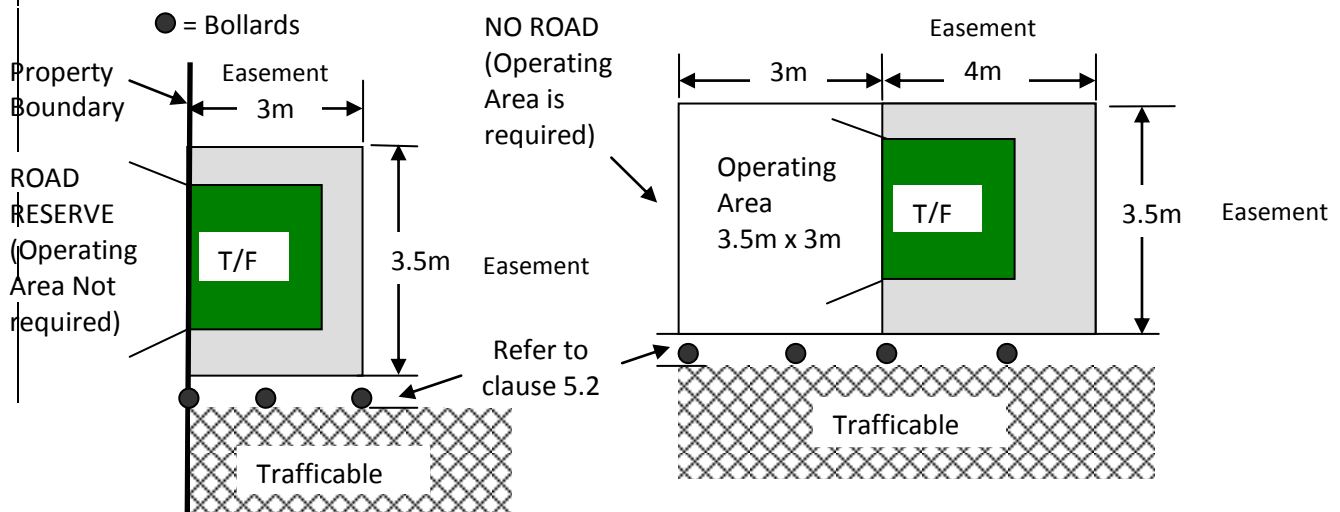


FIGURE 1:
TYPICAL LAYOUT OF SITE PLAN
Easement Dimensions
(Up to and including 750kVA TRANSFORMER)

FIGURE 2:
TYPICAL LAYOUT OF SITE PLAN
Easement Dimensions
(Greater than 750kVA TRANSFORMER)

5.2 Typical Traffic Bollards

Bollards are to be used whenever a padmount transformer is adjacent to trafficable areas to prevent vehicle impacts. Traffic bollards are to be supplied and installed by the Customer. We will need to assess the suitability of a bollard prior its installation/connection. Refer to figures 3 & 4 for typical traffic bollard.

In areas accessible to traffic the transformer shall be protected by either one of the following:

1. Concrete filled steel bollards at not more than 1.5m centres; or
2. 200mm high x 150mm wide concrete kerbs provided with drainage holes; or
3. Alternative barriers approved by our relevant Customer Solutions Manager/Network Project Officer.

NOTES:

1. The proposed mechanical protection (type and position) shall be approved by our relevant Customer Solutions Manager/Network Project Officer prior to construction and shall be completed before the transformer is energised.
2. Some temporary protection may be required during construction.

Where agreed, the Customer shall ensure that the bollards are installed within **1.0m** of (outside) our easement boundary (Refer to figures 1 & 2 above). Bollards are not to be a part of SA Power Networks asset and the Customer shall maintain and replace them as required.

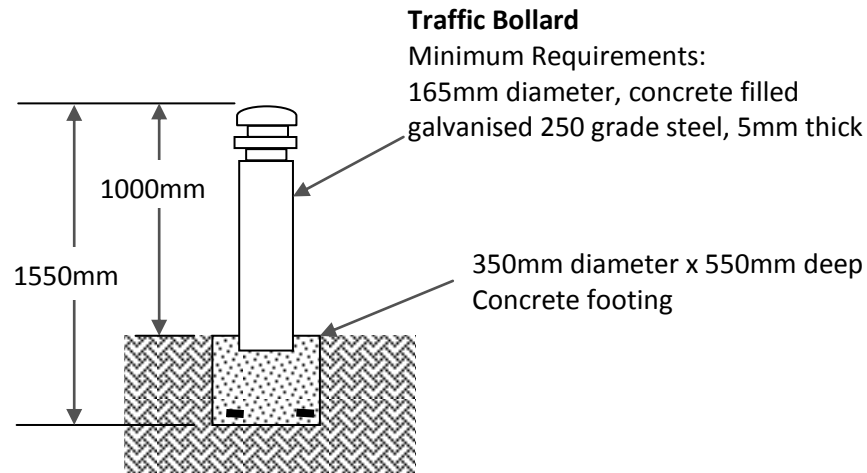


FIGURE 3: TYPICAL TRAFFIC BOLLARD

A **typical removable bollard** is shown in figure 4 below. Such bollards are to be supplied and installed by the Customer either in front and/or on the sides of the transformer. We will need to assess the suitability of such removable bollards prior to its installation. We will provide suitable pad locks as described in our [Service and Installation Rules](#) Table 4.2 when removable bollards are for our purpose.

NOTE:

Removable bollards are required where it impacts the operational access to the transformer.

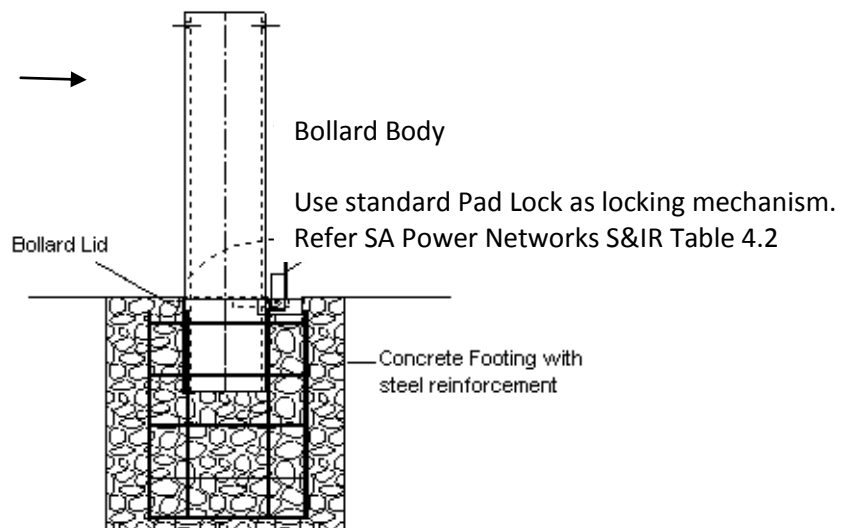


FIGURE 4: TYPICAL REMOVABLE BOLLARD

5.3 Transformer Access

Clear and safe access to the padmount transformer shall be provided at all times (24hours/7days) for our personnel and heavy transport vehicles. A carriageway from the property boundary to the distribution transformer, easement of 4.5m (H) x 4.5m (W) is required, for the installation and/or removal of the distribution transformer. For more details, refer to our Technical Standard [TS 108](#).

The padmount transformer that is installed below ceilings, cover or roof enclosures where headroom is limited, then a minimum height of 4.0m above floor level is acceptable if FRL 180/180/180 is maintained. Refer to BCA and AS 2067 clause 5.5.4 'Service Areas' for more detail.

Shrubs, trees, creeping or climbing plants shall not be planted on the transformer's easement area or within the operating area. If the Customer's service point is nominated as being in the low voltage compartment of the transformer cubicle, the Customer is responsible for LV reticulation beyond this service point. Find more information in our Technical Standard [TS 108](#).

It is the Customer's responsibility to provide appropriate lifting equipment for installation/removal of padmount transformer when headroom is limited.

5.4 Typical Footing Arrangement

A padmount transformer will normally be installed on a concrete pad footing which incorporates a cable vault under the high and low voltage compartments. Any floor supporting a transformer shall be capable of safely supporting the weight of the transformer as stated in clause 6.0 - 'General Data and Protection Co-ordination' in this brochure. Refer to figure 5 for the 'Typical Footing Arrangement for the Mk7 Padmount Transformer' and the following notes provide specific requirements.

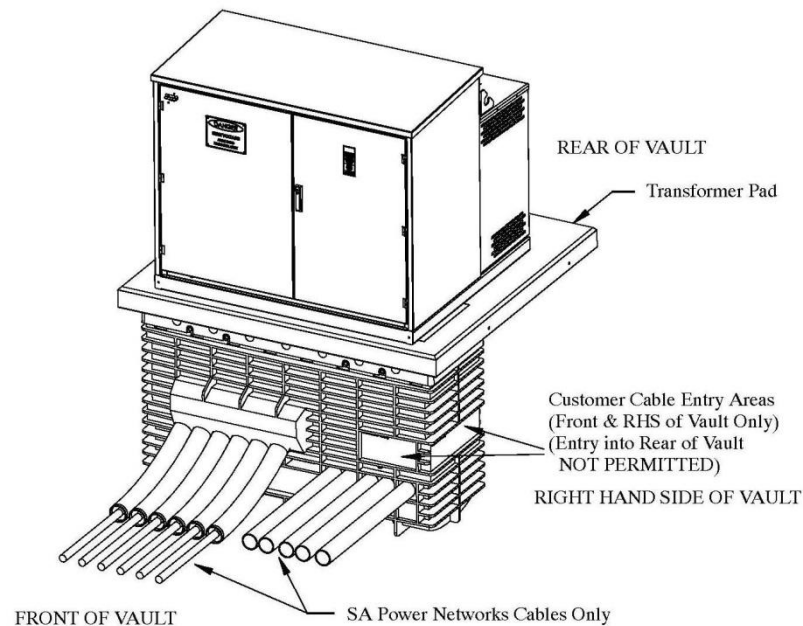


FIGURE 5: TYPICAL FOOTING ARRANGEMENT FOR THE MK7 PADMOUNT TRANSFORMER

NOTES:

1. All distribution cables to enter the front of the vault via the designated areas.
2. Entry of LV cables in the HV compartment is not permitted.
3. Customers' mains shall:
 - Enter the vault through the front or right hand side of the vault only via the designated areas.
 - Not be permitted to enter via the rear (ie. behind) of the vault.
4. Consumers' mains installation and/or termination into the cable vault and low voltage compartment of an **energised** transformer will require a '**Network Access Permit**'. **Not applicable**, if the transformer is **not energised** and/or **not under our control**.
5. Contact our Network Access Officer on (08) 8404 4119 for assessment, prior to commencing such works, to ensure a need for isolation (ie. de-energisation) of transformer and a requirement for our authorised representative to remain present on site at the Customers' cost.
6. For Consumers' mains entry, drill in the area provided to produce a neat fitment for cables/conduits. Produce neat entry holes by using holesaw or similar to suit conduit sizes being used.
7. Where cables have been installed in conduits, the conduits entry shall be adequately sealed (ie. around conduits and inside conduits end around cables) to prevent the entrance of dirt, stones, white ants and moisture into the vault and through the conduits.
8. Refer to Technical Standard TS-085 'Sealing of Conduits' requirements.

5.5 Special Footing Arrangement

In some cases, a normal footing and vault may not be feasible due to the transformer location (eg. in basements). Our relevant Customer Solutions Manager/Network Project Officer may decide to support the transformer clear of the floor on a raised platform, or plinth to facilitate connection of the cables or the ability to install/remove the transformer with the use of a forklift. In this case additional headroom may be required.

In areas such as the CBD, there may be an additional requirement for an 'Extended Vault' in front of the padmount transformer. This extended vault will facilitate safe access to the cabling arrangements.

Designers shall seek project specific approval from our relevant Customer Solutions Manager/Network Project Officer prior to the commencement of construction when planning to install a padmount transformer which may require an 'Extended Vault' in front of the padmount transformer.

6. GENERAL DATA AND PROTECTION CO-ORDINATION

TABLE 1:

Mk7 PADMOUNT TRANSFORMER GENERAL DETAILS

PADMOUNT TRANSFORMER NOMINAL RATING (kVA)	NOMINAL DIMENSIONS (W x D x H) (mm)	WEIGHT (TONNES)	MAX SA Power Networks LV 'NH' FUSE LINK OR CIRCUIT BREAKER RATINGS (A)	NOMINAL IMPEDANCE (%)	PROSPECTIVE FAULT CURRENT (kA) #
315	1,950 x 1,662 x 1,627	2.6	315	3.6	13.5
500	1,950 x 1,662 x 1,627	3.0	400	4	19.3
750	1,950 x 2,042 x 1,677	4.1	400 or CB set 1,360*	4.4	26.3
1,000	1,950 x 2,042 x 1,677	4.5	400 or CB set 1,360*	4.4	35.1
1,500	2,200 x 2,117 x 1,797	6.1	N/A	6.3	36.8
2,000	2,200 x 2,117 x 1,797	6.6	N/A	6.5	47.6

* = Long time setting, # = Based on minimum transformer impedance

NOTE:

Nominal dimensions and weights of padmount transformers are subject to change by the transformer manufacturer without notice. The actual weight is stencilled on the padmount transformer nameplate.

NICC 802: 11kV and 7.6kV to LV Mk7 Padmount Transformers - Information & Requirements for Customers/Contractors

TABLE 2: 11/0.4 kV Mk7 PADMOUNT TRANSFORMERS

PADMOUNT TRANSFORMER NOMINAL RATING (kVA)	NOMINAL VOLTAGE (kV)	PADMOUNT TRANSFORMER FULL LOAD CURRENT (A)	PADMOUNT TRANSFORMER LOSSES (W)	HV TAPPING RANGE (TAP STEPS = 2.5%)
315	11/0.4	420	4,994	-10% To +5%
500	11/0.4	667	6,962	-10% To +5%
750	11/0.4	1,000	10,188	-10% To +5%
1,000	11/0.4	1,333	14,361	-10% To +5%
1,500	11/0.4	2,000	21,834	-10% To +5%
2,000	11/0.4	2,667	29,962	-10% To +5%

TABLE 3: 11/7.6/0.4 kV (i.e. Dual Ratio) Mk7 PADMOUNT TRANSFORMERS

PADMOUNT TRANSFORMER NOMINAL RATING (kVA)	NOMINAL VOLTAGE (kV)	PADMOUNT TRANSFORMER ACTUAL RATING (kVA)	PADMOUNT TRANSFORMER FULL LOAD CURRENT (A)	PADMOUNT TRANSFORMER LOSSES (W)	HV TAPPING RANGE (Tap Steps = 2.5%)
315	11/0.4	315	420	4,994	-10% To +5%
	7.6/0.4	268	357		
500	11/0.4	500	667	6,962	-10% To +5%
	7.6/0.4	425	567		
750	11/0.4	750	1,000	10,188	-10% To +5%
	7.6/0.4	638	850		
1,000	11/0.4	1,000	1,333	14,361	-10% To +5%
	7.6/0.4	850	1,133		
1,500	11/0.4	1,500	2,000	21,834	-10% To +5%
	7.6/0.4	1,275	1,700		
2,000	11/0.4	2,000	2,667	29,962	-10% To +5%
	7.6/0.4	1,700	2,267		

TABLE 4: PROTECTION CO-ORDINATION

CUSTOMER'S SERVICE ADMD (A)	SPECIAL ORDER SA Power Networks LV CIRCUIT BREAKER OR FUSE LINK RATING (A)	MAX CUSTOMER LV FUSE "T" TYPE FOR CO-ORDINATION WITH SA Power Networks LV PROTECTION
50A to 100A	100A	50A
100A to 200A	200A	125A
200A to 250A	250A	160A
250A to 300A	315A	200A
300A to 400A	400A	250A
400A to 600A	630A	315A
600A to 800A	800A	400A
800A to 1,000A	2,000A CB set to 1,360A	560A **
1,000A to 1,400A	2,000A CB set to 1,600A	630A **
1,400A to 2,000A	N/A	-
2,000A to 2,600A	N/A	-

** = CB protection relay set to instantaneous to protect LV cables based on FLA and curve to suit grading with HV fusing.

7. CONNECTION OF CONSUMER'S MAINS TO PADMOUNT TRANSFORMERS

All low voltage circuits emanating from padmount transformers are via fuse switch disconnectors, a circuit breaker or isolator. The number and size of Customers' cables that can be connected is limited.

Refer to figures 6, 7, 8, 9 & 10 below for various typical arrangements.

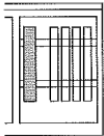
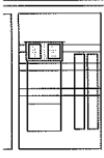
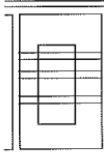
STANDARD L.V. COMPARTMENT CONFIGURATIONS FOR Mk7 PADMOUNT TRANSFORMERS		
Transformer Rating (kVA)	L.V. Compartment Layout	
315 and 500kVA		1000A isolator with 4 x 630A size 3 fuse switch disconnectors (in-line type)
750 and 1000kVA		2000A Circuit Breaker & 2 x 630A size 3 fuse switch disconnectors (in-line type)
1500 and 2000kVA		1500kVA -2500A isolator 2000kVA -3150A isolator

FIGURE 6:
STANDARD LV COMPARTMENT CONFIGURATION FOR
315kVA to 2000kVA - Mk7 PADMOUNT TRANSFORMERS

NOTES:

1. Where spare transformer capacity is available, we may include one or more supplies to our mains, or may supply another Customer. In this case the LV compartment will contain a fuse switch disconnector for each circuit and a main isolator. In emergencies this arrangement may be used to provide a limited supply to the Customer in the event of a HV failure at the transformer.
2. The terminals for connecting Customer's cables are tin plated copper suitable for tinned copper or aluminium terminal lugs, which shall be supplied by the contractor. M12 bolts are supplied with the switchgear.
3. The contractor or electrical worker shall clearly identify each phase and neutral of the Customers' mains.
4. When installing Customers' cables, allow 700mm above the top of the concrete pad footing for termination to switchgear.
5. In all cases we will supply appropriate shields for the Customer's mains.
6. Offset brackets are fitted as standard with the Mk7 padmount transformer.

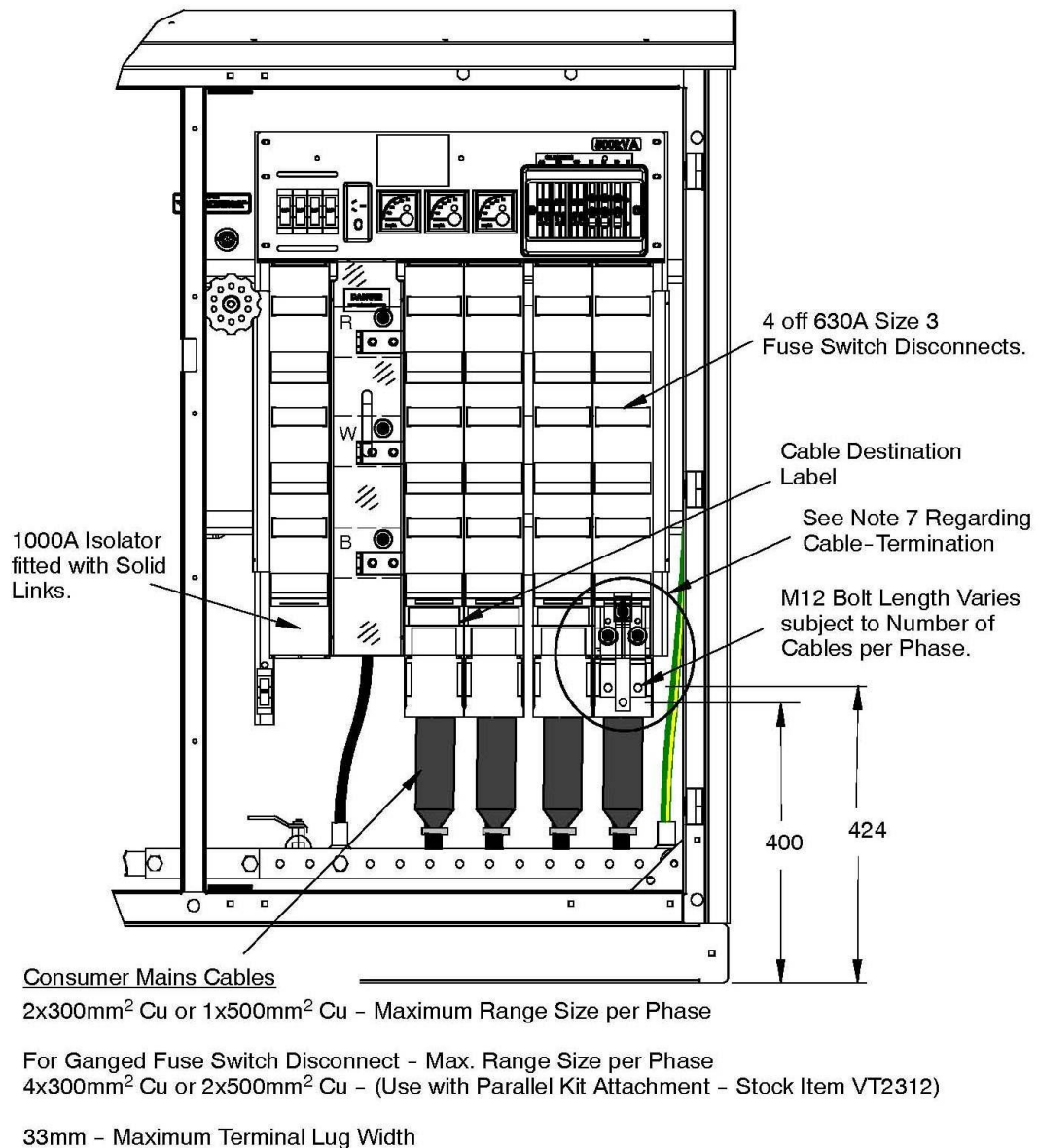


FIGURE 7:
STANDARD LV COMPARTMENT FOR 315kVA & 500 kVA Mk7 PADMOUNT TRANSFORMERS

NOTES: The following notes are applicable to the figures 7, 8, 9 and 10:

1. By prior arrangement, aluminium cables of the same number and dimensions are acceptable provided the required bi-metal lugs are provided and installed.
2. Where non-compliant conductors are installed they shall be converted to compliant conductors prior to being connected to our equipment.
3. We shall be consulted where the suitability of proposed connection facilities is in doubt.
4. Ensure adequate phase to phase clearance is maintained using suitable shrouds or approved insulating materials.
5. Cables to be clamped in vault. For more details, refer to section 8.0 'Typical Securing LV Cables' in this brochure.
6. If larger cables are required for voltage drop reasons, then these larger cables shall be terminated to allow for appropriate size cable at our connection point.
7. Offset brackets are fitted as standard to the Mk7 T/F.

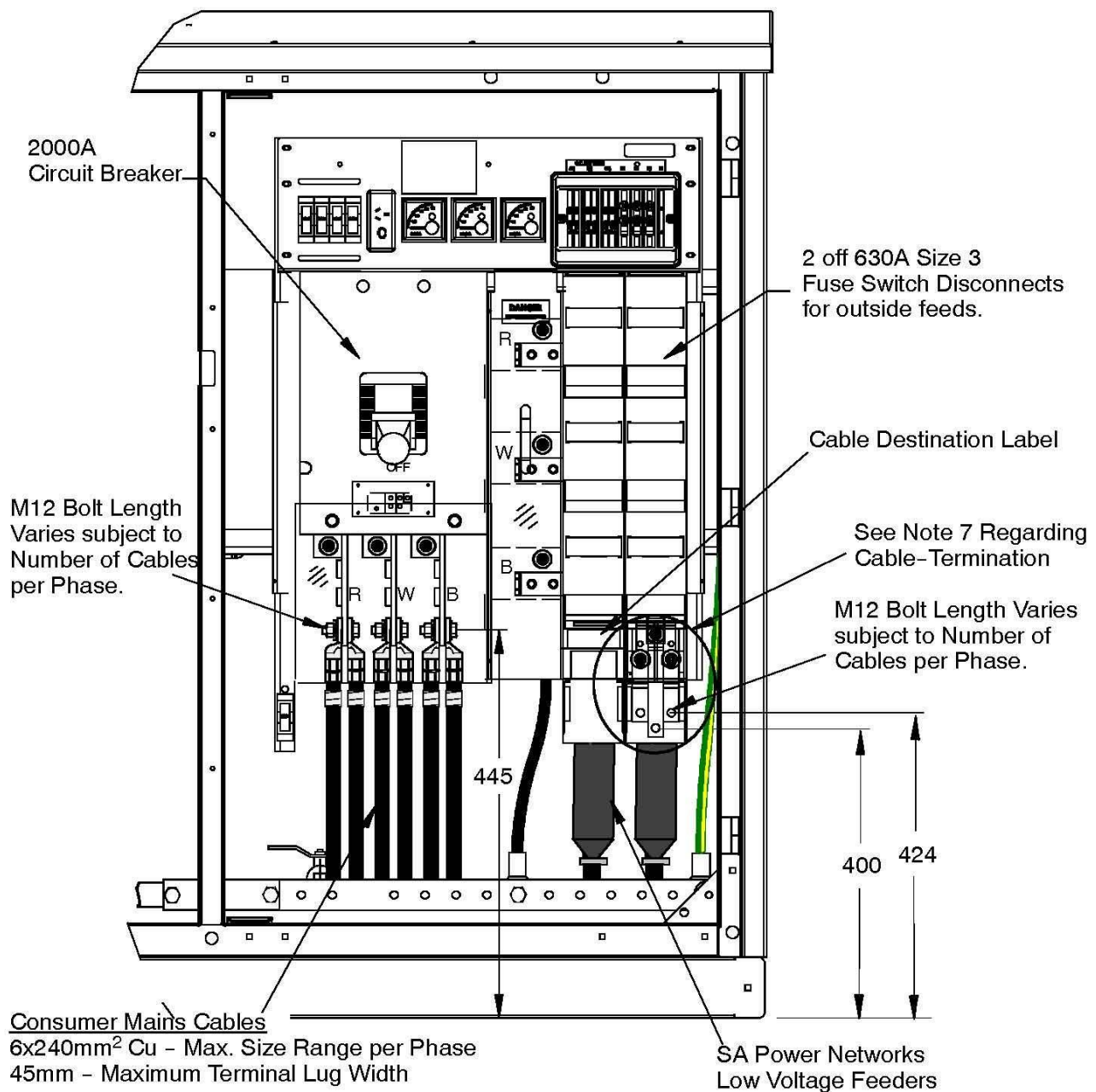
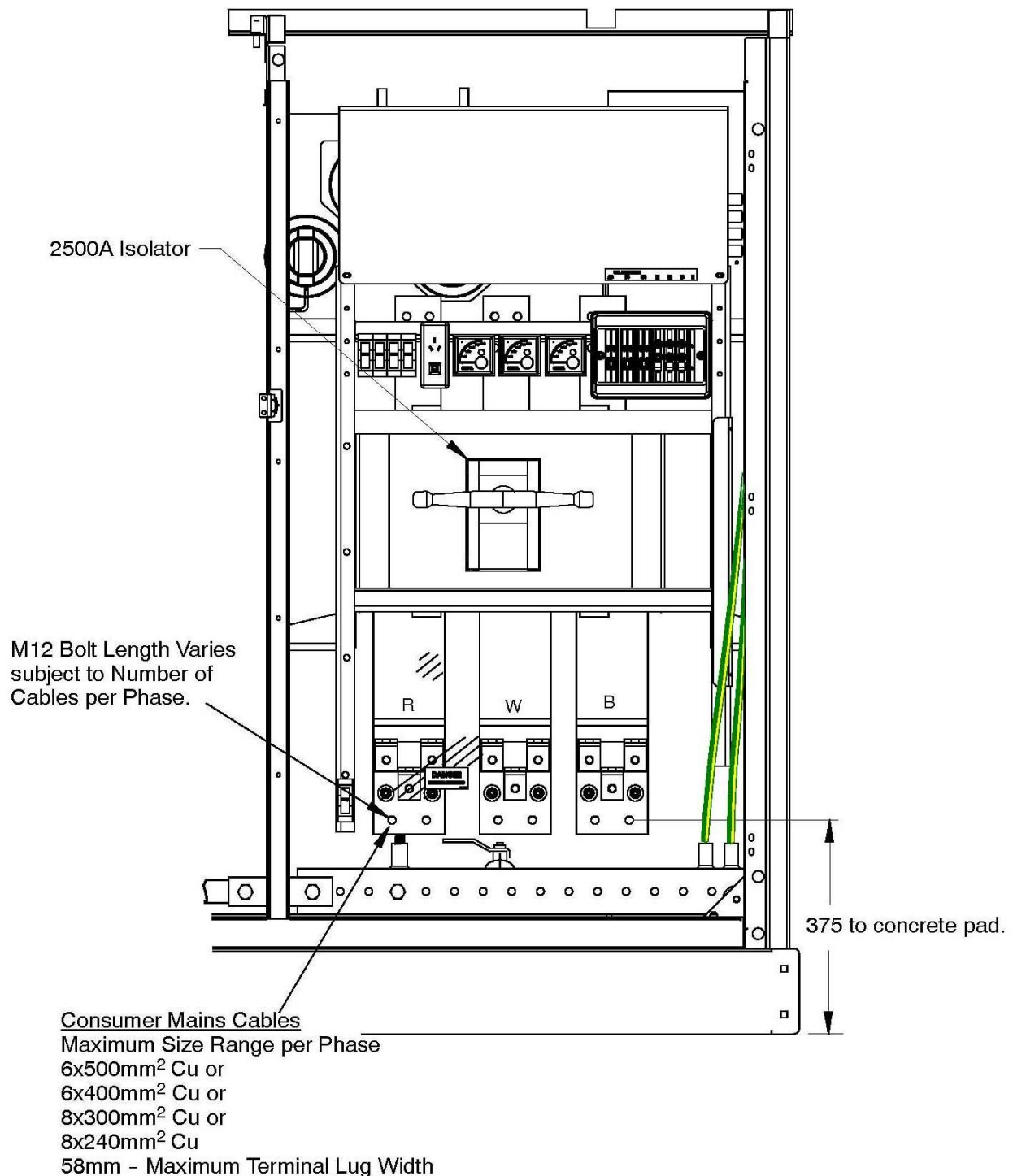


FIGURE 8:
STANDARD LV COMPARTMENT FOR
750kVA & 1000kVA
Mk7 PADMOUNT TRANSFORMERS



**FIGURE 9:
STANDARD LV COMPARTMENT FOR
1500kVA
Mk7 PADMOUNT TRANSFORMER**

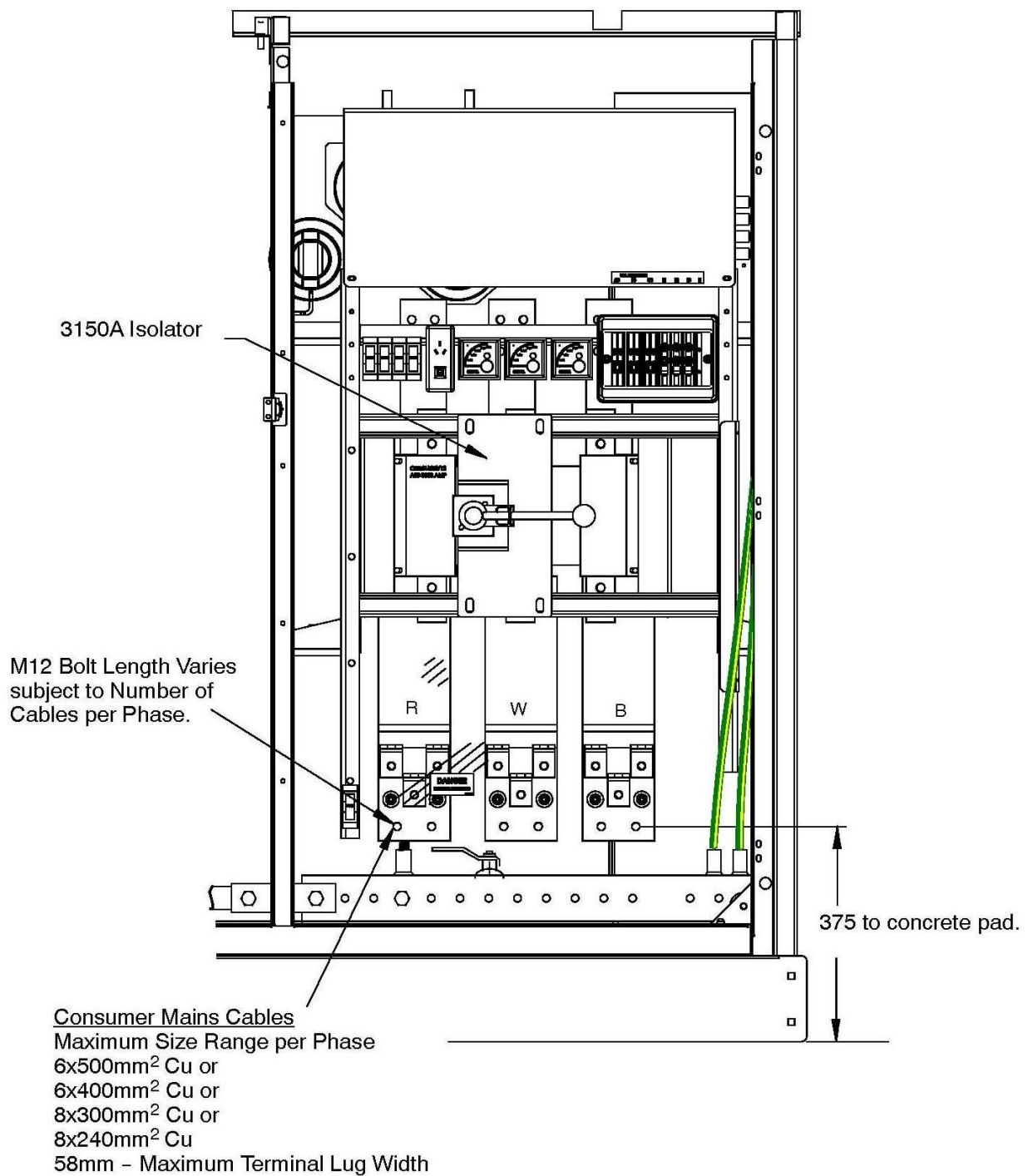


FIGURE 10
STANDARD LV COMPARTMENT FOR
2000kVA
Mk7 PADMOUNT TRANSFORMER

8. TYPICAL SECURING LV CABLES

Customer's mains terminated in padmount transformers shall be secured. Support rails etc. will be supplied by us on request to our relevant Customer Solutions Manager/Network Project Officer. All cable vaults are pre-assembled with a centre cross member.

Customer to supply cable clamps (Unistrut P2024 series or equivalent) and shall ensure the clamps do not allow a continuous magnetic loop around the cable by using a brass screw, nut and spacer washer.

Refer to figure 11 for 'Typical Securing LV Cables'.

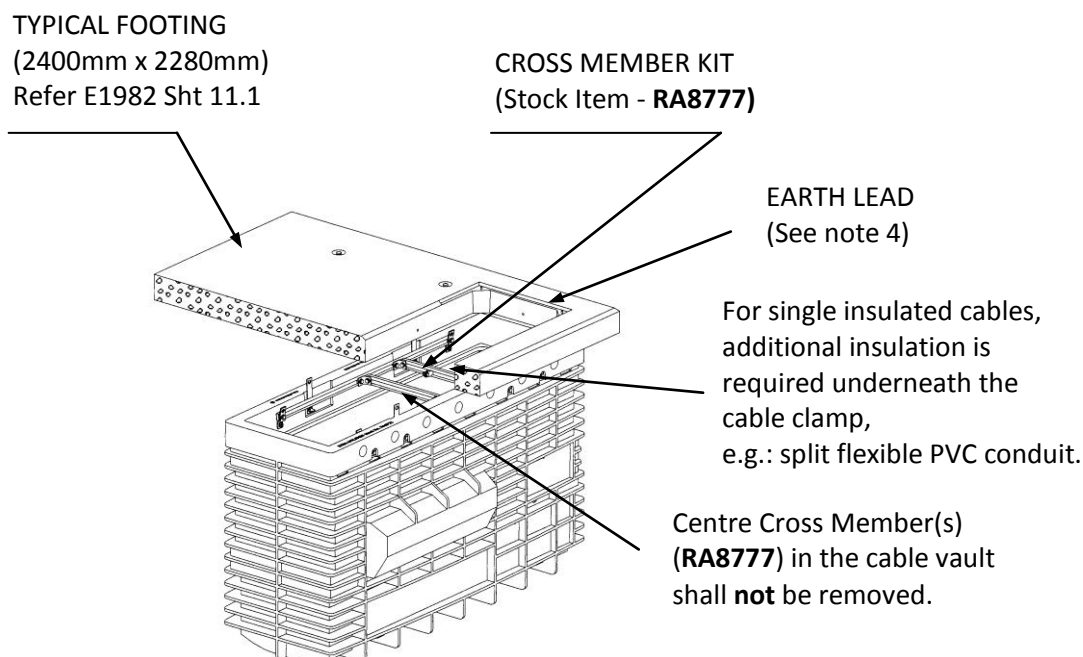


FIGURE 11:
TYPICAL SECURING LV CABLES

NOTES:

1. Where more than one cross member kit is used for securing cables, one steel angle bracket and one copper angle bracket (as supplied in the kit) shall be used to avoid magnetic loops around single core cables.
2. Channels, brackets, spring nuts and setscrews are Unistrut components or equivalent.
3. In CMEN areas bond framework to transformer LV earth bar using earth lead and in MEN areas bond framework to transformer case using an earth lead.
4. Regarding Network Access Permit, sealing of conduits and other specific requirements, refer to notes in clause 5.4 in this brochure.

APPENDICES

Appendix-A: Who should you talk to?

ENQUIRIES FOR ALL NETWORKS:

Asset Areas	Customer Solutions Manager	Phone (08)	Mobile
Country North (Port Lincoln)	John APLIN john.aplin@sapowernetworks.com.au	8682 0567	0428 563 010
North (Elizabeth)	Mario PEPICELLI mario.pepicelli@sapowernetworks.com.au	8282 1545	0403 582 096
Adelaide (CBD)	James CASE james.case@sapowernetworks.com.au	8404 5407	0403 582 220
Hills & Murray (Mount Barker)	Geoff WEGENER geoff.wegener@sapowernetworks.com.au	8391 7702	0428 100 030
South (St Marys)	Malcolm FARMER malcolm.farmer@sapowernetworks.com.au	8275 0902	0403 582 102
South East (Mount Gambier)	John RIEDEL john.riedel@sapowernetworks.com.au	8724 1617	0403 582 274

ENQUIRIES FOR NETWORK ACCESS PERMITS:

All Networks	John FOOTE (Network Access Officer) nao@sapowernetworks.com.au	8404 4119	Fax: 8329 2685
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ALL OTHER ENQUIRIES:

All Enquiries	Builders & Electrical Contractors Service (8am to 5pm Monday - Friday)	1300 650 014	Fax: 1300 650 016
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ENQUIRIES FOR OFFICE OF THE TECHNICAL REGULATOR:

Regulation Enquiries	Office of the Technical Regulator (OTR) Level 8, ANZ Building, 11 Waymouth Street Adelaide SA 5000 dmitre.otr@sa.gov.au	8226 5500	Fax: 8226 5523
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Appendix-B: Definitions

Applicant (or Customer) - Person applying for access to the SA Power Networks. Applicant/Customer has the meaning given to that term in the Electricity Act 1996, namely a person who has a supply of electricity available from a transmission or distribution network for consumption by that person and includes:

1. The occupier for the time being of a place to which electricity is supplied;
2. Where the context requires, a person seeking an electricity supply;
3. A person of a class declared by regulation to be Customers; and
4. Applicant (or Customer) may or may not necessarily be the landowner but may be a (authorised) person in charge of the premises.

Contractor - includes but is not limited to licensed subcontractors, consultants and sub consultants engaged by the Applicant.

Condition of Offer - means the SA Power Networks project specific Terms and Conditions of Offer as issued by the relevant SA Power Networks Manager.

Development - means the development proposed by the Applicant on the Land and any land external to that land included in the Applicant's proposal.

Easement Standard - means the Easement Standard for Distribution Networks TS-102, issued by SA Power Networks as varied from time to time.

Electrical Connection Works - includes:

1. Those works required for the connection of the proposed Development to SA Power Networks distribution system.
2. Any works (electrical or non-electrical) that involve work on around under or above the existing network.

Electrical Works - includes:

1. All cable laying, cable jointing, installation of poles and overhead mains and street lighting required to service the Applicants requirements, and any works required to connect the to the SA Power Networks distribution system but does not include Low Voltage electricity reticulation beyond the first point of supply that is either on private property and remaining in private ownership, or is in the common property, or a strata development and remains in the ownership of the strata corporation.
2. Transformer and switching cubicle installation and ancillary equipment associated with overhead and underground line constructions.

Licensed Contractor - means an individual who is registered as a Restricted Electrical Worker in accordance with [Plumbers, Gas Fitters and Electricians Act 1995](#), for the relevant endorsements of 'Limited to works on overhead lines' or 'Limited to cable jointing and underground distribution systems up to consumers terminals excluding (or including) lead'.

Network Access Permit (NAP) - is the SA Power Networks - Network Access Permit (NAP) issued by NAO and is a notification process for a contractor and any third party contractor.

NECF - means 'National Electricity Customer Framework'.

Shall - is to be understood as mandatory.

Points of Supply - are the positions beyond which the Applicant is responsible for the provision and maintenance of the electrical installation (except metering equipment) and can be at low voltage service pillars inside allotment boundaries at the low voltage terminal of a transformer or on a SA Power Networks pole at the fuse box.

Property - For the purpose of this brochure 'Property' means either what is commonly described, as a Torrens Title allotment, a Community Title Scheme or Land, which is owned by the Crown on which the owner/occupier has the right to the installation of an electricity supply. A property may include any combination of contiguous (adjacent) land and/or an individual title that constitutes a single development, to which an owner/occupier or a Customer has the right to the installation of an electricity supply.

Terms and Conditions - means SA Power Networks publication Construction Terms (Non Contestable & Contestable) as amended from time to time.

URD - means Underground Residential Development for the supply of electricity.

Works - means the term Works as defined in the SA Power Networks Terms and Conditions documentation.

Appendix C: References

The following listed documents are for additional information but may not be a conclusive list and other documentation may be required on a project specific basis. Refer to the following SA legislative acts & regulations, SA Electricity code, SA Power Networks publications, relevant AS/NZS and ENA standards for more detail. Please note it's your responsibility to ensure you have complied with all relevant standards.

Building Code of Australia (BCA) Publications:

- Volume 1 - Class 2 to Class 9 Building
- Volume 2 - Class 1 and Class 10 Buildings – Housing Provisions

Energy Networks Association (AUS) Publications:

- [ENA NENS 03](#) - National Guidelines for Safe Access to Electrical and Mechanical Apparatus
- [ENA NENS 04](#) - National Guidelines for Safe Approach Distances to Electrical and Mechanical Apparatus

Essential Services Commission of South Australia (ESCOSA) Codes:

- [SA Electricity Distribution Code \(EDC\)](#)

South Australian Act & Legislations:

- [Environment Protection \(EPA\) Act 1993](#)
- [Environment Protection \(EPA\) Regulations 2009](#)
- [Plumbers, Gas Fitters and Electricians Act 1995](#)
- [Plumbers, Gas Fitters and Electricians Regulations 2010](#)
- [SA Electricity Act 1996](#)
- [SA Electricity \(General\) Regulations 2012](#)
- [SA WH&S Act & Regulations 2012](#)

Standards Australia & ISO Publications:

- [AS 60038](#) - Standard Voltages
- [AS/NZS 1158](#) - Lighting for Roads and Public Spaces Set
- [AS/NZS 3000](#) - Electrical Installations (known as the AUS/NZ Wiring Rules)
- [AS/NZS ISO 14001](#) - Environmental Management System Standard
- [AS/NZS ISO 31000](#) - Risk Management - Principles and Guidelines

SA Power Networks Documents:

- [Asset Access Manual No. 27A](#)
- [NICC Brochures](#)
- Relevant E-Drawing Series
- [Service and Installation Rules](#)
- [Technical Standards](#)

The Departments of Planning Transport and Infrastructure (DPTI) Publications:

- [DPTI Notification Form](#)
- Information on Transport SA Guide to Matters of National Environmental Significance and a List of Roadside Significant Sites visit DPTI website.
- [Reinstatement Pavement Configuration](#)
- [Underground Service Request - Trains and Trams](#)
- [Works on Roads by Other Organisations](#)

The Office of Technical Regulator (OTR) Publications:

- [Building Safely Near Powerlines Brochure](#)
- [OTR-Powerline Safety, Trees and Powerlines Brochure](#)
- [Working Safely Near Overhead Powerlines Brochure](#)
- [Working Safely Near Powerlines and Identifying Powerlines](#)