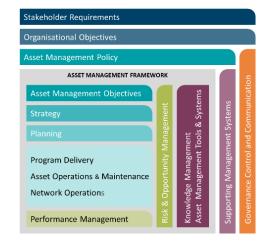
# Western Power's Asset Management System

Distribution Construction
Standard Handbook
Low Voltage Underground
Part 05 (U)



Original Issue: November 2003

Content Owner/Custodian: Distribution Design and Standards

This Revision: July 2025

Date for Next Review: April 2028

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#### **Document control**

# **Endorsement approvals**

	Name	Title	Signature and Date		
Compiled by	Nory Cerrado	Distribution Draftsperson	Signature on file		
Checked by	Chris Omodei	Principal Engineer	Signature on file		
Endorsed by	Ken Tiong	Team Leader	Signature on file		
Approved by	Pep Ngwenya	Distribution Design & Standards Manager	Signature on file		

#### **Record of revisions**

Revision No.	Date	Version	Compiled by	Description
1	01/04/2025	EDM 16	Nory Cerrado	First Revision with new Format and 3 yearly review
2	14/07/2025	Volt 17	Nory Cerrado	Refer to Amendment List

# This document gives direction to and influences the following documents.

Doc	Title of document
ALL CHAPTERS	DDC - DISTRIBUTION DESIGN CATALOGUE
ALL CHAPTERS	DCSH - DISTRIBUTION CONSTRUCTION STANDARD HANDBOOK
ALL CHAPTERS	DSPM - DISTRIBUTION SUBSTATION PLANT MANUAL

# **Stakeholders** (people that were consulted when document was updated)

# **Business Unit / Function**

Asset Management - Asset Performance

Asset Management – Safety Environment Quality and Training

Asset Management - Grid Transformation

Asset Operations – Network Operations

Asset Operations – Operational Services

Asset Operations – Customer Connection Services

Business and Customer Service - Customer Service

# **Notification list** (people to be notified when document is updated)

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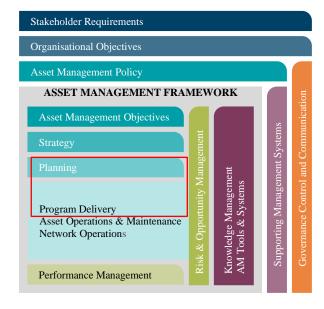
This document must not be made available to personnel outside Western Power without the prior written approval of Western Power.



# **Document classification and hierarchy**

A key requirement of the Western Power Asset Management Policy (AMP) is to develop and maintain an Asset Management System (AMS). This Distribution Substation Plant Manual is defined as a technical document within the AMS document classification and structure and sits within the planning and Program Delivery components of the AMS.

The AMS and the interrelationships between the collection of documents, tools and systems that are used for asset management are described in the AMS document EDM# 40304923.





#### **General Notes**

All equipment shall be installed in accordance with the manufacturer's instructions supplied with the equipment kit to which they relate.

Installer identification tags are required where provided as part of the equipment kit. The installer identification tags shall be labelled and fitted to the joint or termination equipment as per drawing R39.

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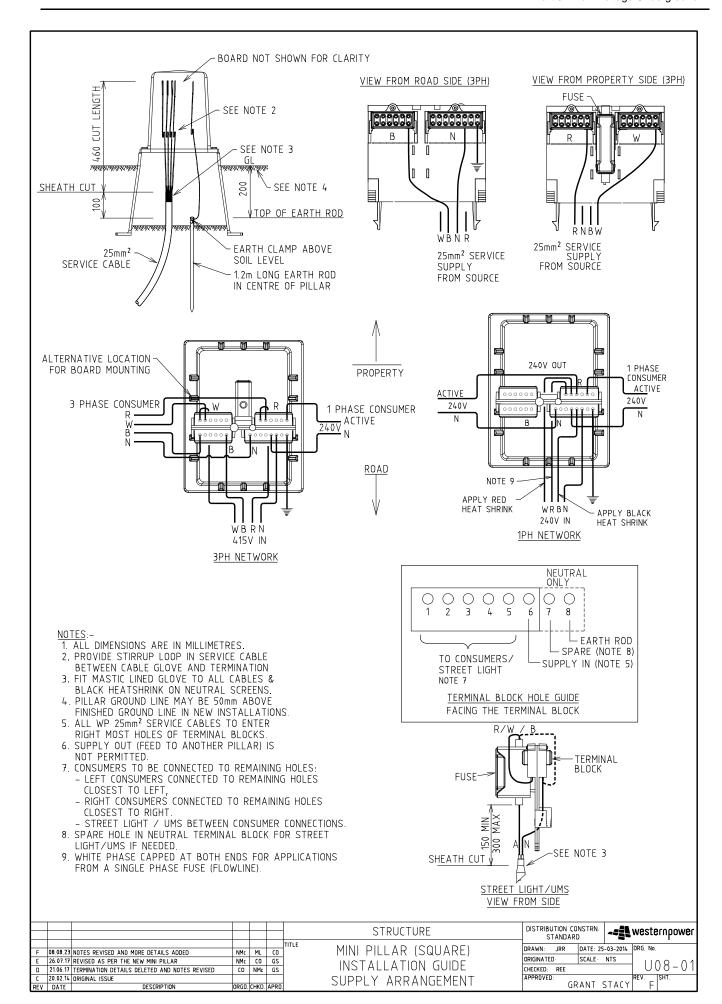
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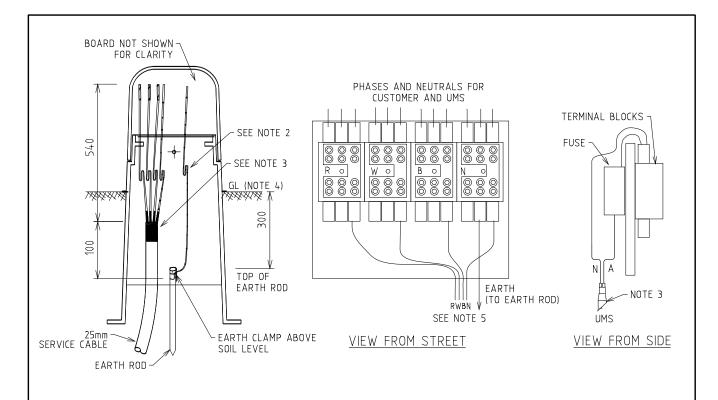
# **Drawing Register**

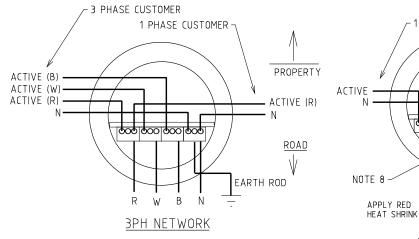
Number	Revision	Description
U08-01	F	Mini Pillar Installation Guide with 3Ph supply Arrangement
U08-04	В	Mini Pillar (Round) Installation Guide Supply Arrangement
U9	F	Universal Pillar, Installation Details
U15	В	Cable to LV Isolators, Cross-arm & Cable length detail
U16-1	D	120 to 240mm <sup>2</sup> Cable to LV Bare, Direct Connected
U16-2	A	120 to 240mm <sup>2</sup> Cable to LV ABC, Direct Connection
U17	В	120 to 240mm <sup>2</sup> Cable to LV ABC, Fused Connected
U18	В	25 mm <sup>2</sup> Cable to ABC
U19/1	С	25 mm <sup>2</sup> Cable to Open Aerial
U19/2	С	25 mm <sup>2</sup> 4 Core to 1 Phase Open Aerial
U19/3	G	Transformer Pole to Pillar on Customer's Property
U20	В	Wall Mounted Box, 100Amp
U21	В	Wall Mounted Box, 200 Amp
U23-1	G	Single Phase Supplied UMS Pit for one Single Phase UMS
U23-2	A	Unmetered Supply Mini Pillar Termination Details
U23-3	С	Three Phase Supplied UMS Pit for up to Three Phase UMS
U27/1	A	LV Cable to Fuse Switch
U27/2	A	LV Cable to Fuse Switch Installation Instructions
U30	G	Below Ground Service Pit (BGSP)
U31	В	Wall Box Surface Mounted on Customer's Wall
U32	В	Wall Box Semi-Recess Mounted on Customer's Wall
U33	В	Wall Box Mounted Inside Customer's Enclosure on Customer's Wall

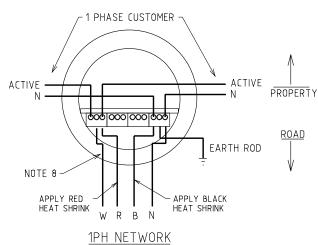












# NOTES:-

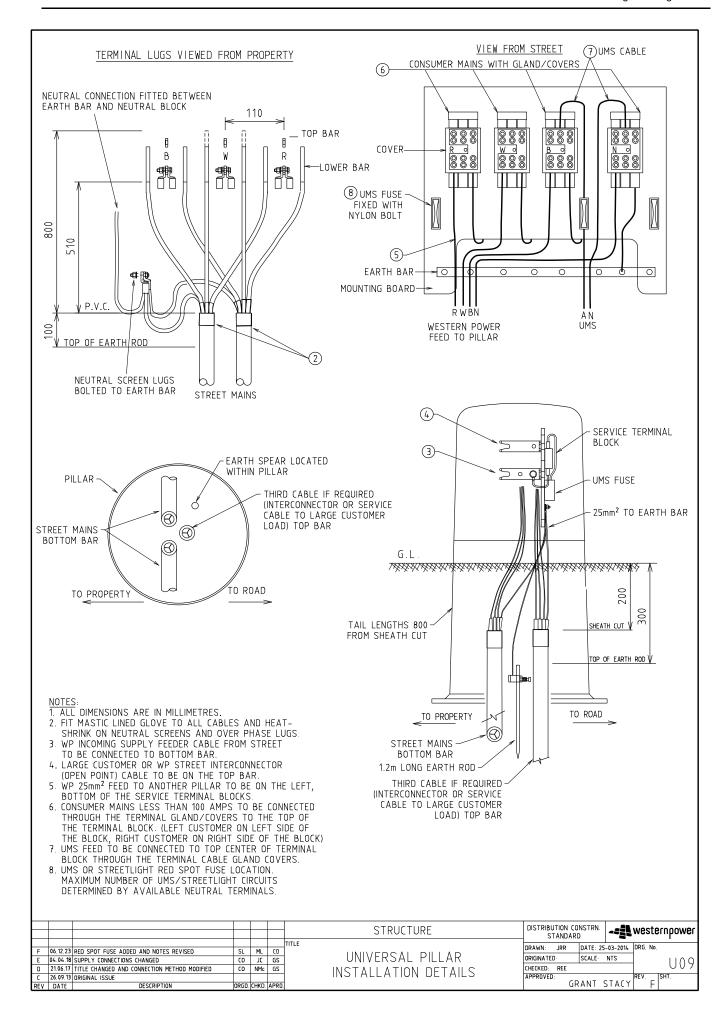
- 1. ALL DIMENSIONS ARE IN MILLIMETRES.
- 2. PROVIDE STIRRUP LOOP IN SERVICE CABLE BETWEEN CABLE GLOVE AND TERMINATION
- 3. FIT MASTIC LINED GLOVE TO ALL CABLES & BLACK HEATSHRINK ON NEUTRAL SCREENS.
- 4. PILLAR GROUND LINE MAY BE 50mm ABOVE FINISHED GROUND LINE IN NEW INSTALLATIONS
- 5. ALL WP 25mm<sup>2</sup> SERVICE CABLES TO ENTER BOTTOM RIGHT MOST HOLES OF TERMINAL BLOCKS.
- 6. SUPPLY OUT (FEED TO ANOTHER PILLAR) IS NOT PERMITTED.
- 7. CONSUMERS TO BE CONNECTED TO REMAINING HOLES, TYPICALLY TOP

   LEFT CONSUMERS CONNECTED TO REMAINING HOLES CLOSEST TO LEFT

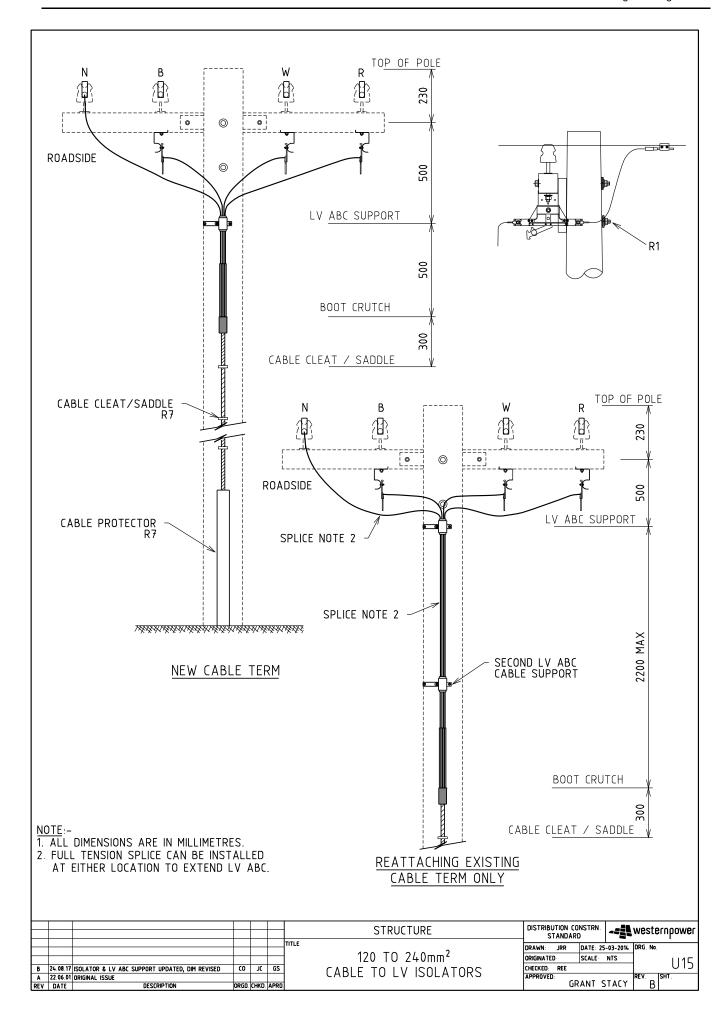
  - RIGHT CONSUMERS CONNECTED TO REMAINING HOLES CLOSEST TO RIGHT.
- STREET LIGHT / UMS BETWEEN CONSUMER CONNECTIONS.
  8. WHITE PHASE CAPPED AT BOTH ENDS FOR TRANSFORMER TO PILLAR APPLICATIONS FROM A SINGLE PHASE FUSE (FLOWLINE).

							STRUCTURE	DISTRIBUTION CONSTRN. STANDARD		<u>[</u> ]	westernpower
						TITLE	MINI PILLAR (ROUND)	DRAWN: JRR D	ATE: 03-1	11-2020	DRG. No.
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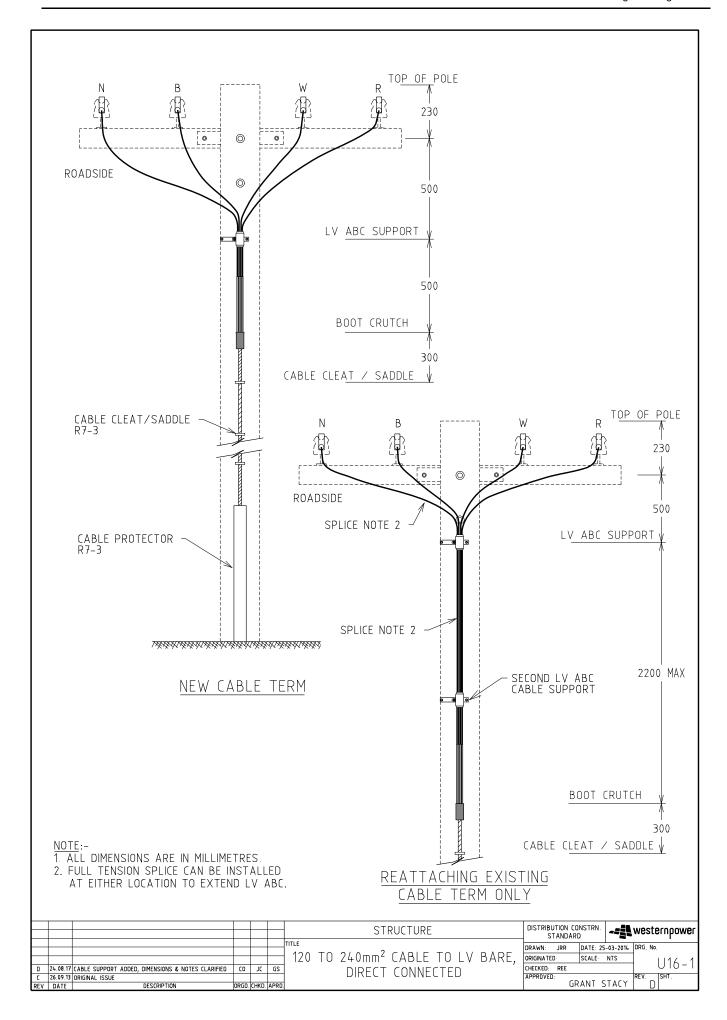




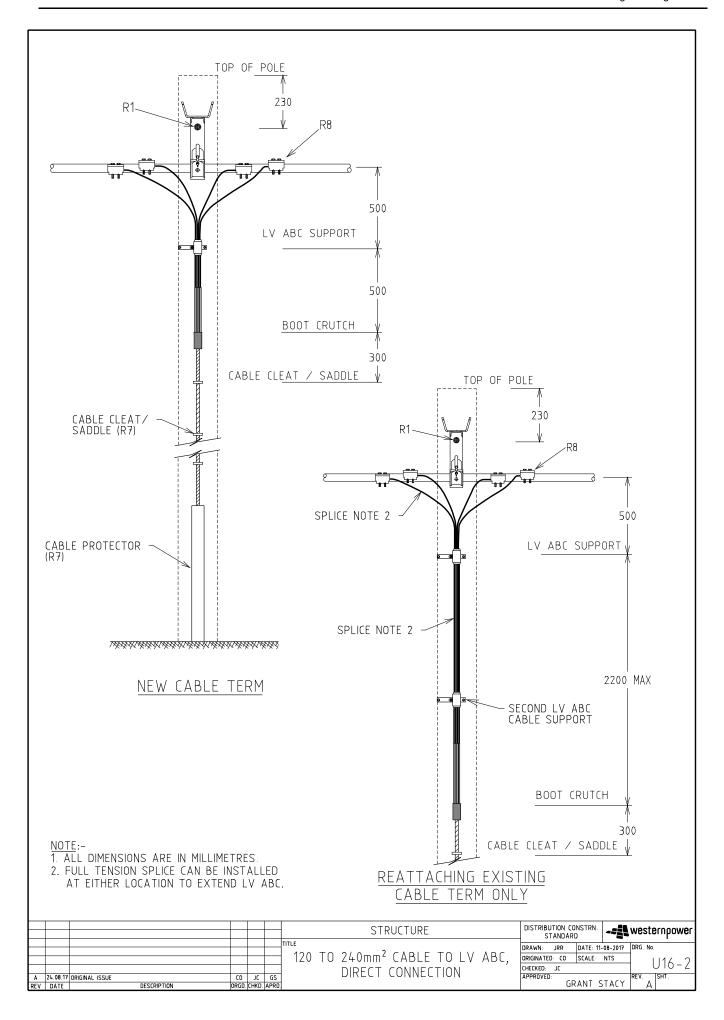




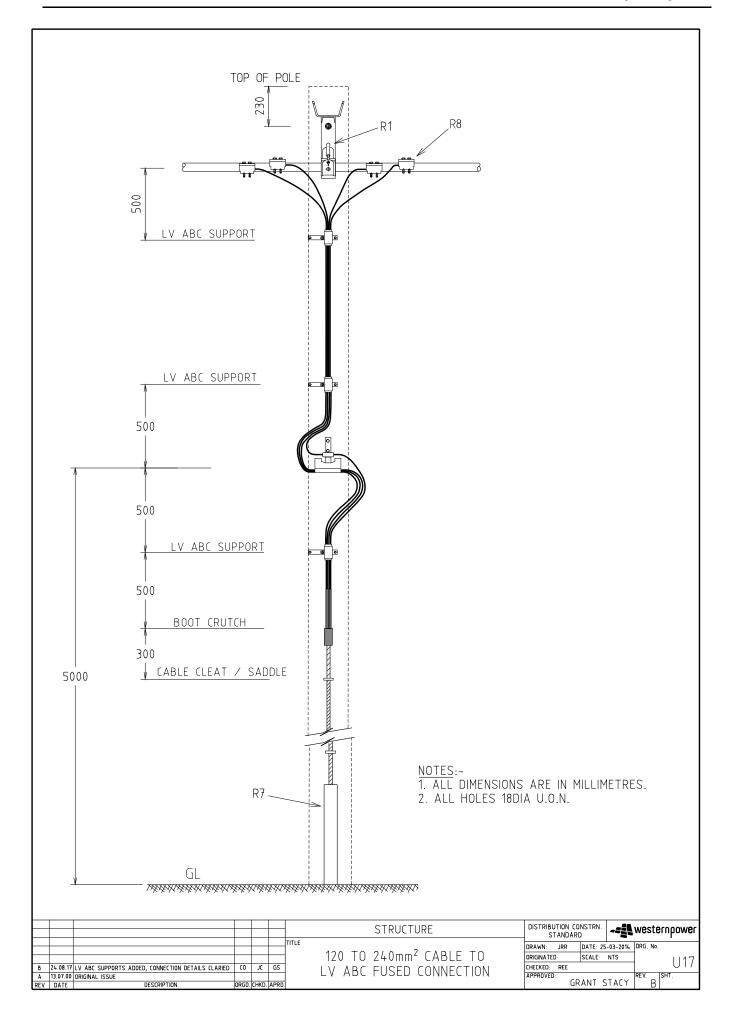




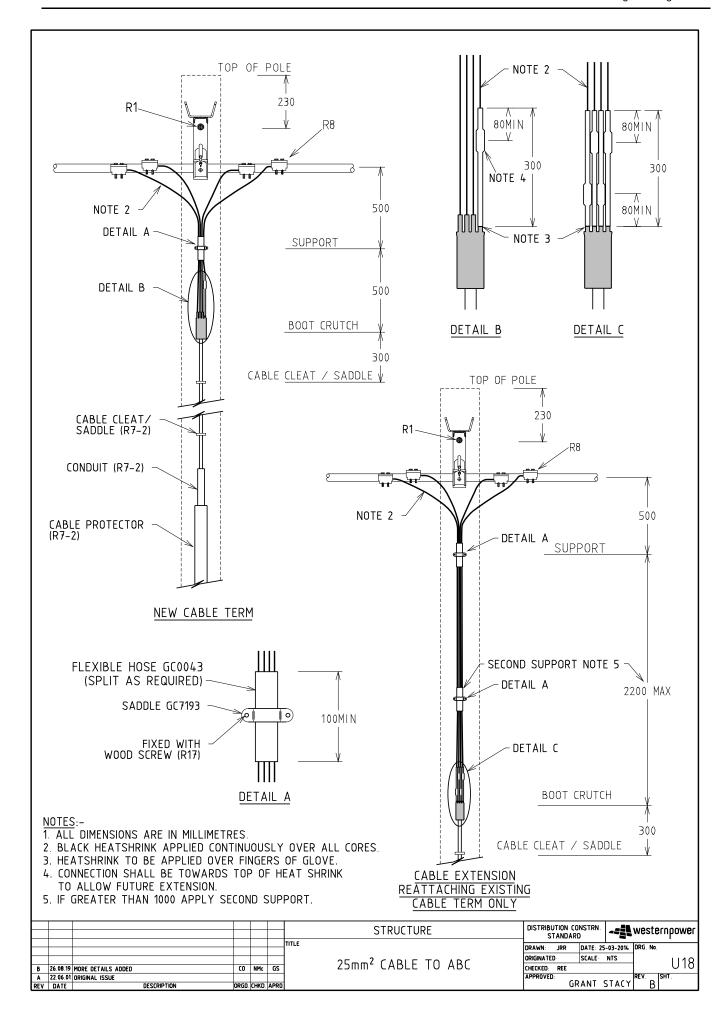


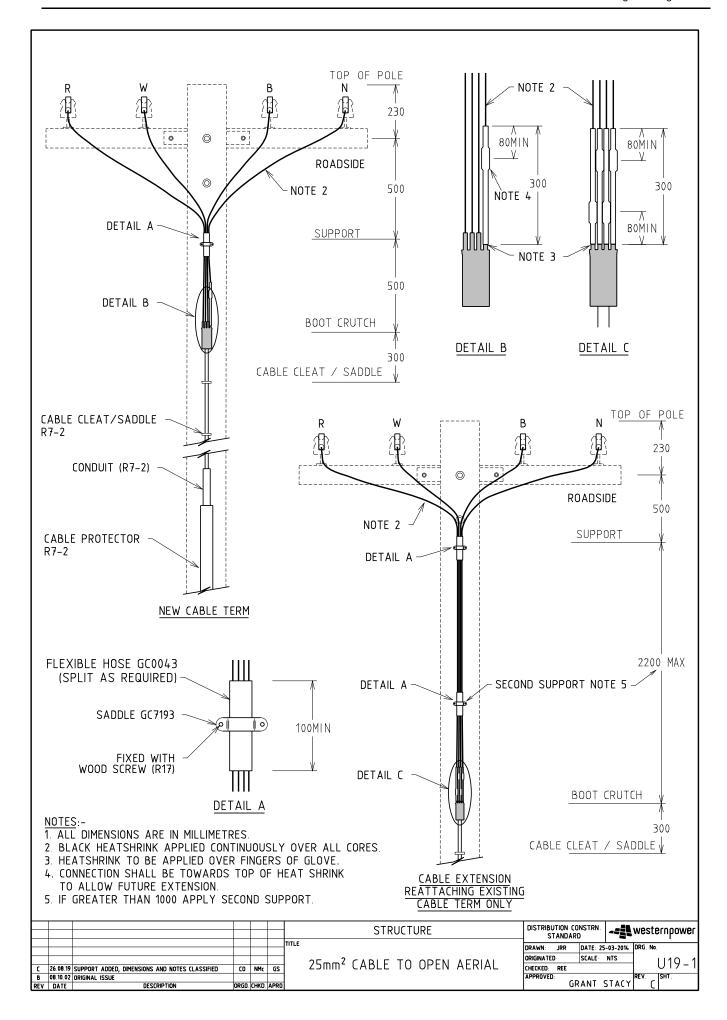


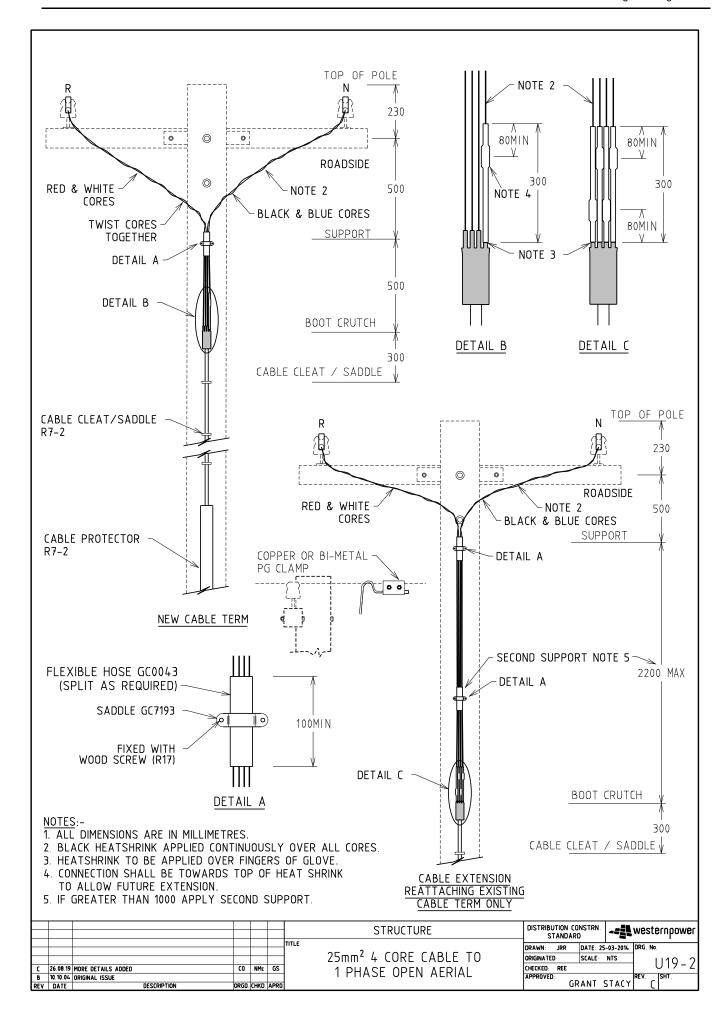




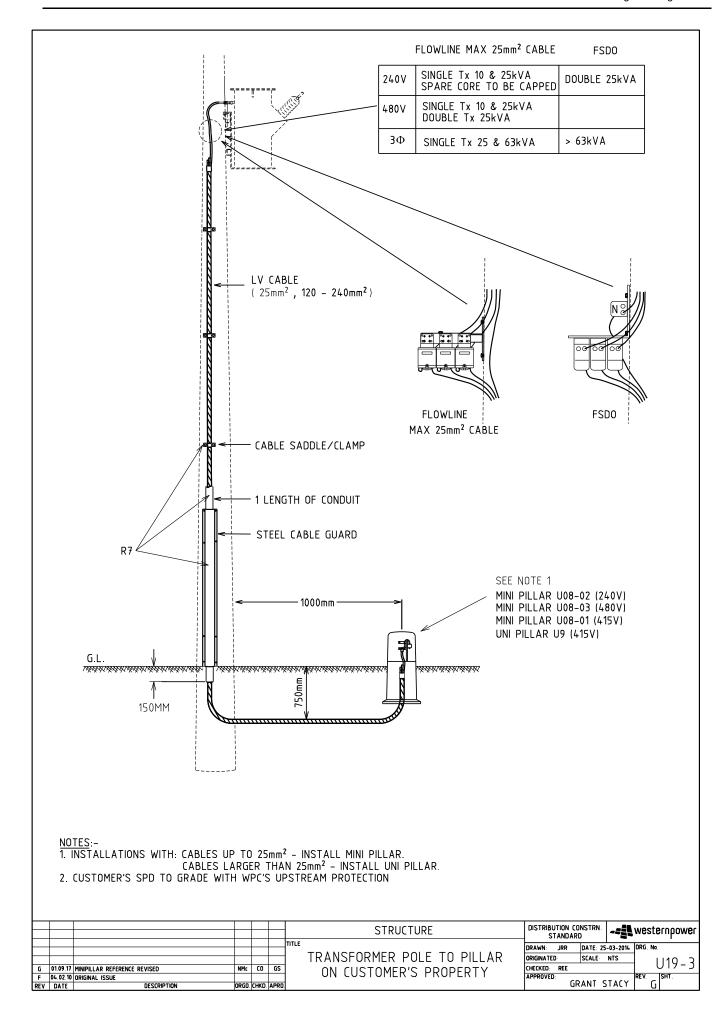




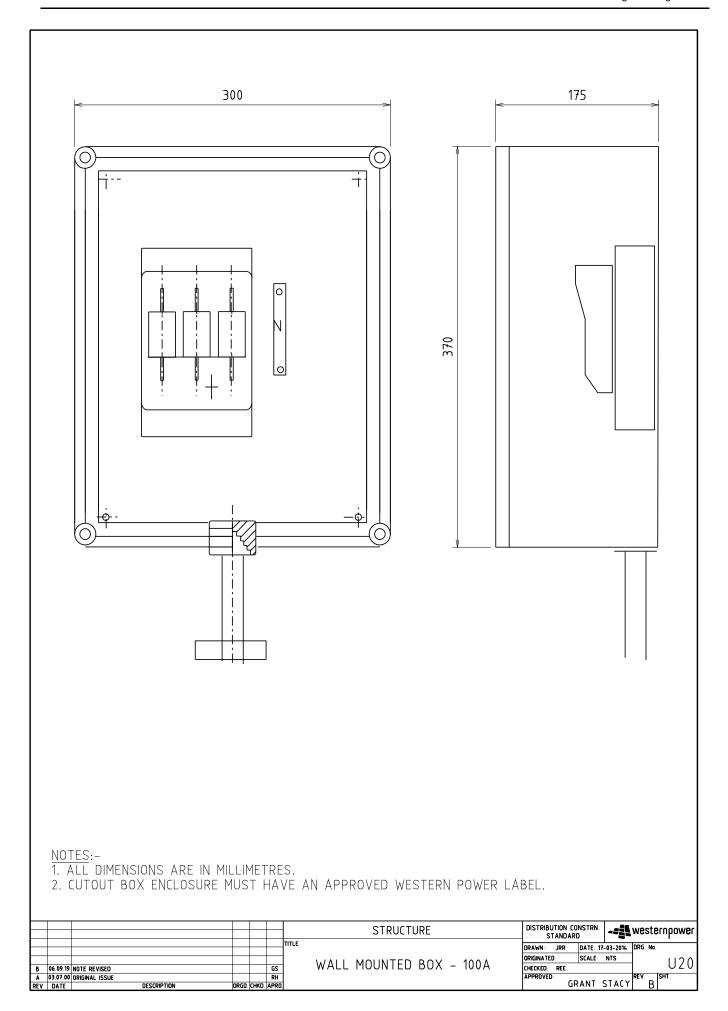




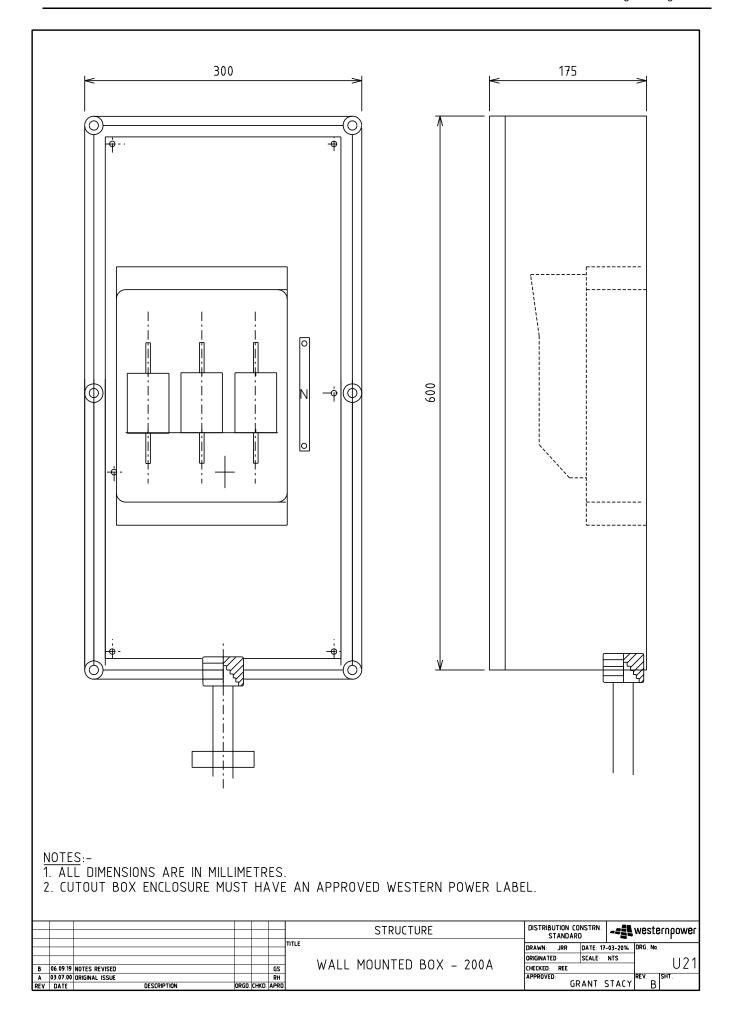




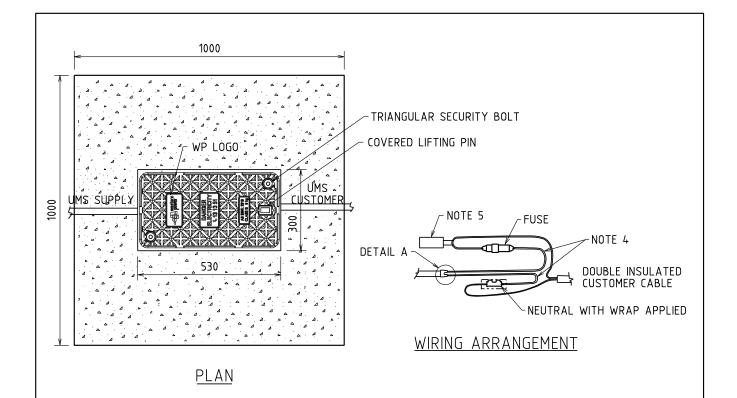


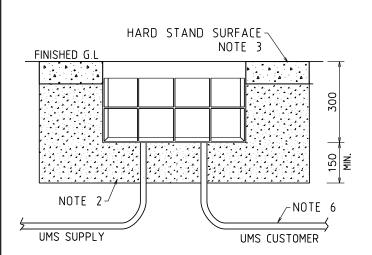












SIDE VIEW

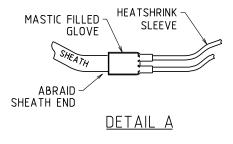


TABLE 1

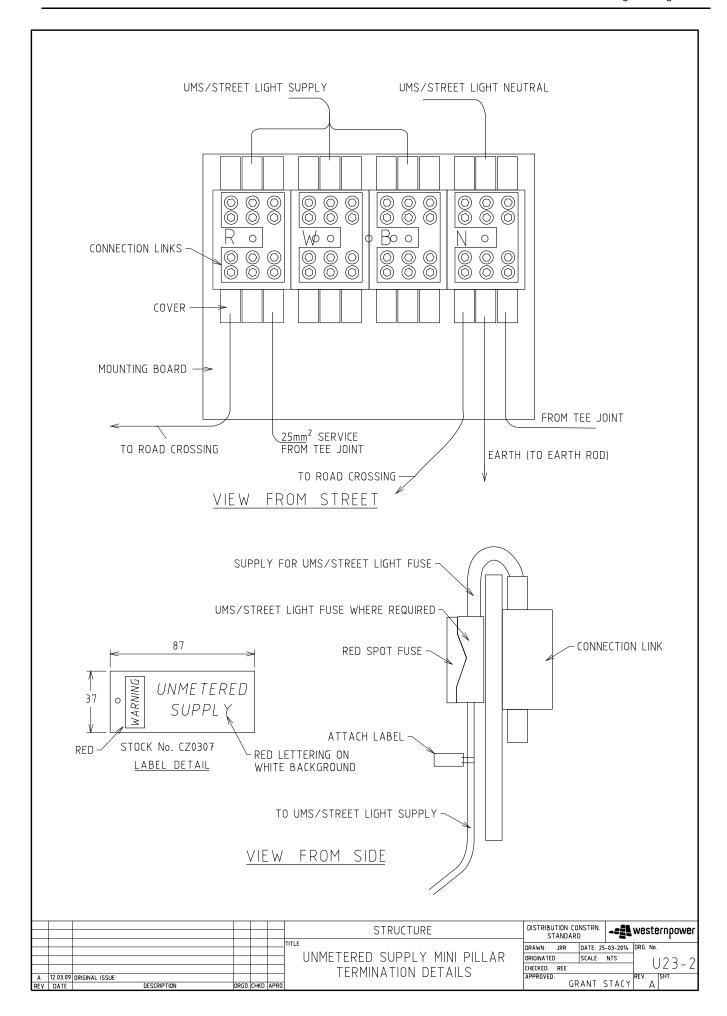
HARD STAND SURFACE	MIN. THICKNESS (mm)
DENSE GRADED ASPHALT	25
CONCRETE *	100
PAVING BLOCK	60

\* MINIMUM N25

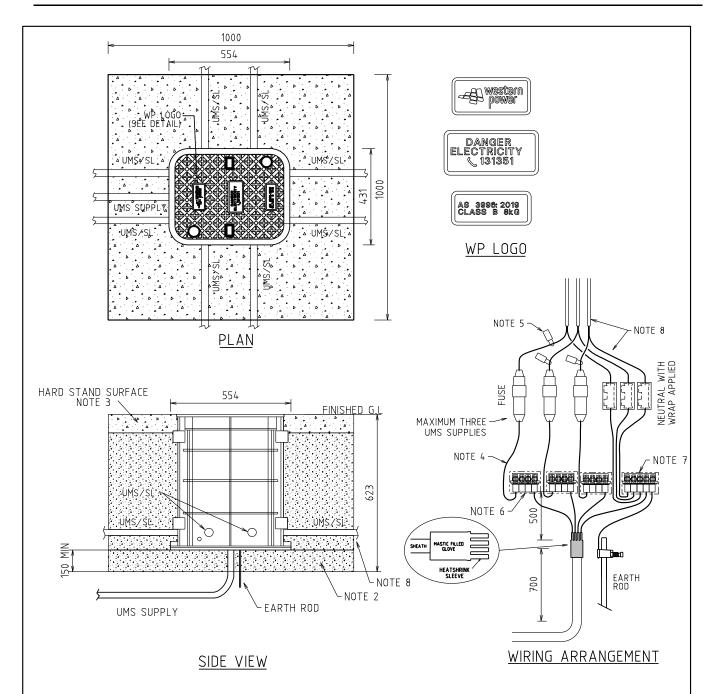
- 1. ALL DIMENSIONS ARE IN MILLIMETRES.
- 2. BACKFILL MATERIAL CAN BE NATURAL SOIL. SOIL SURROUNDING PIT COVERING 1m2 (MINIMUM) SHALL BE COMPACTED TO ACHIEVE A MINIMUM RELATIVE DENSITY RATIO OF 92% IN ACCORDANCE WITH AS 1289.5.2.1. COMPACTION OF SOIL IS TO BE CARRIED OUT IN LAYERS OF 300mm.
- 3. FINAL FINISHED GROUND LEVEL SHALL BE OF HARD STAND SURFACE, REFER TO TABLE 1.
- 4 CORES TO BE 500mm LONG AND HAVE HEATSHRINK APPLIED OVER THE FULL LENGTH.
- 5. UMS/SL CONNECTION SHALL HAVE UMS TAG (CZ0307).
- 6. ALL UMS/SL CABLES SHALL BE DOUBLE INSULATED AND PROTECTED BY CONDUIT. CONDUIT SHALL PROTRUDE INTO PIT, MINIMUM 30mm AND MAXIMUM 50mm.

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$\perp$							TITLE	DRAWN JRR	DATE 25	-03-2014 D	RG No
L	5 0	9 06 25	NOTE 3 UPDATED	NG	SH	CO	CINICLE DUACE CHODILIED LIMC DIT		_		
	- 1	18.02.21	DRAWING REVISED AND MORE DETAILS ADDED	CO	NN	GS	SINGLE PHASE SUPPLIED UMS PIT	ORIGINATED:	SCALE:	NTS	1123 1
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#### NOTES:

- 1. ALL DIMENSIONS ARE IN MILLIMETRES.
- 2. BACKFILL MATERIAL CAN BE NATURAL SOIL. SOIL SURROUNDING PIT COVERING 1m<sup>2</sup> (MINIMUM) SHALL BE COMPACTED TO ACHIEVE A MINIMUM RELATIVE DENSITY RATIO OF 92% IN ACCORDANCE WITH AS 1289.5.2.1. COMPACTION OF SOIL IS TO BE CARRIED OUT IN LAYERS OF 300mm.
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- 6. DUST CAPS MUST BE LEFT ON ANY UNUSED CONNECTOR CABLE ENTRY TO AVOID GEL CONTAMINATION. DUST CAPS CAN BE LEFT ON WHILE INSERTING CABLE INTO GELPORT.
- 7. AFTER CABLE TERMINATION, THE CONNECTION CAP MUST BE LOCKED TO FULLY SEAL.
- 8. ALL UMS/SL CABLES SHALL BE DOUBLE INSULATED AND PROTECTED BY CONDUIT CONDUIT SHALL PROTRUDE INTO PIT, MINIMUM 30mm AND MAXIMUM 50mm.
- 9 FOR PERMANENT DISCONNECTION, DO NOT REMOVE CABLE FROM GELPORT. REMOVE FUSE AND CLOSE FUSE HOLDER.
- 10 MAXIMUM 3 UMS SUPPLIES, 1 PER PHASE

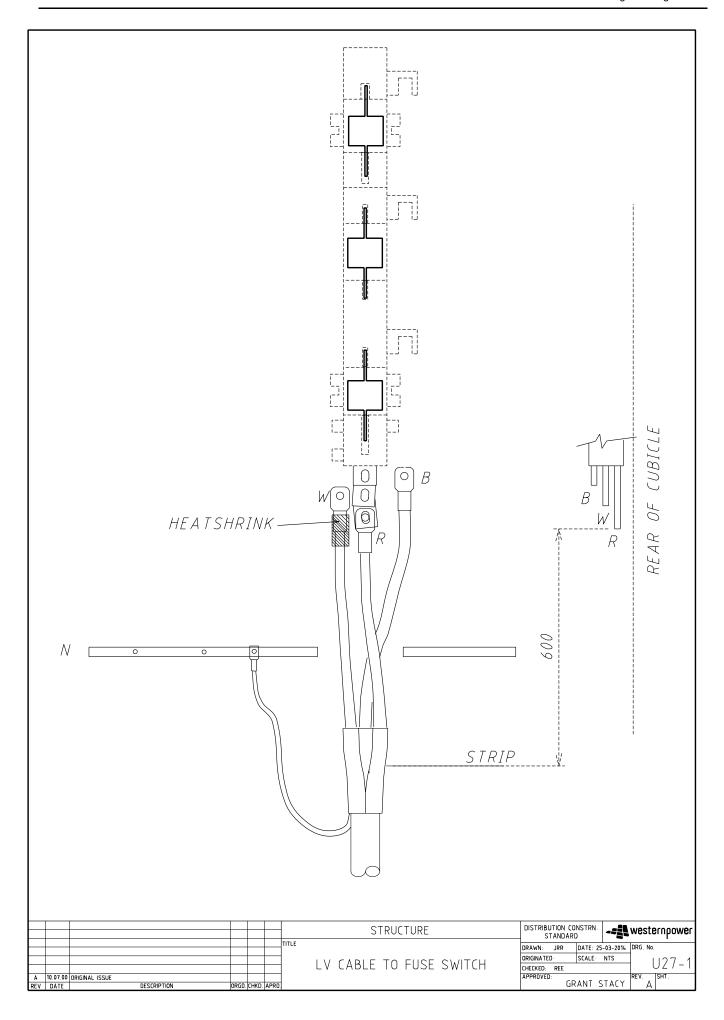
#### TABLE 1

HARD STAND SURFACE	MIN. THICKNESS (mm)
DENSE GRADED ASPHALT	25
CONCRETE *	100
PAVING BLOCK	60

\* MINIMUM N25

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	t -		1		1	T   DRAWN JRR   DATE 10-09-2019   DRO	No.
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	10.06.25	UMS PIT AND CONNECTORS CHANGED	NG	SH	LU		1177-1
В	23 05 22	4 PORT CONNECTOR CHANGED	CO	SH	GS		025-5
Α	18.02.21	ORIGINAL ISSUE	CO	NN	GS		
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# CABLE TO LV FUSE SWITCH

# SAFETY INSTRUCTION.

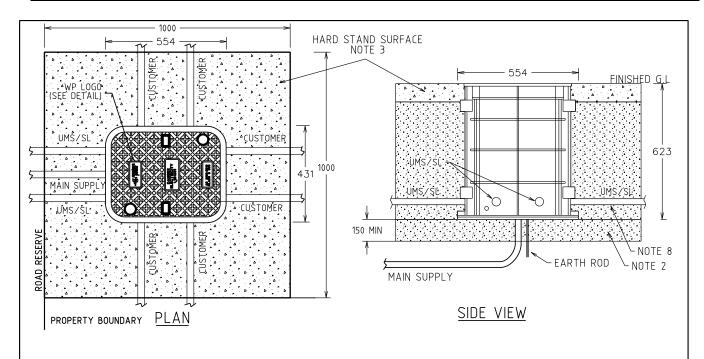
THE CABLE TO BE WORKED ON, MUST BE DEAD AND THE REMOTE END MUST BE TERMINATED OR MADE OFF BEFORE WORK COMMENCES AT THE FUSE SWITCH.

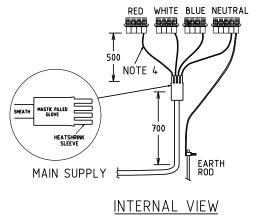
# TERMINATION PROCEDURE

- 1. POSITION THE CABLE TO SUIT THE CORRECT CIRCUIT ON THE LV DISTRIBUTION BOARD.
- 2. MARK SHEATH, CUT 600mm BELOW BOTTOM OF FUSE UNIT.
- 3. REMOVE SHEATH ABOVE THIS MARK.
- 4. BRING OUT NEUTRAL WIRES AND FORM INTO ONE CORE AT THE BACK OF THE CABLE.
- 5. ABRADE CABLE SHEATH FOR APPROXIMATELY 100mm.
- 6. FIT HEATSHRINK GLOVE, PULL WELL DOWN INTO CRUTCH AREA AND HEATSHRINK STARTING FROM CENTRE.
- 7. SHAPE NEUTRAL CORE TO SUIT CONNECTION TO NEUTRAL BAR, CUT AND CRIMP APPROPRIATE SIZE LUG.
- 8. FIT BLACK HEATSHRINK OVER NEUTRAL FOR REQUIRED LENGTH AND HEATSHRINK SO ONLY LUG PALM EXPOSED.
- 9. BOLT NEUTRAL TO NEUTRAL BAR.
- 10. SET PHASE CORES TO FINAL TERMINATING POSITIONS, STARTING WITH RED PHASE AT THE BACK OF THE UNIT TO BLUE AT THE FRONT.
- 11. FIT AND CRIMP APPROPRIATE SIZE SECTOR LUGS TO PHASE CORES.
- 12. FIT 100mm LENGTH OF HEATSHRINK OVER EACH LUG TO SEAL LUG AND CORE.
- 13. APPLY JOINTING COMPOUND TO PALMS OF LUGS AND CONNECTIONS.
- 14. ENSURE PHASING IS CORRECT, THEN BOLT LUGS TO CONNECTORS USING BOLTS PROVIDED.
- 15. LABEL CIRCUIT.

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				-		1	LV CABLE TO FUSE SWITCH	ORIGINATED: SCAL	LE NTS
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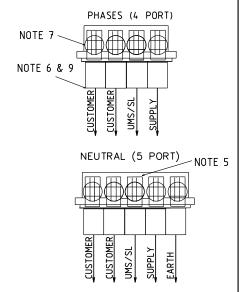




THE USE OF A BELOW GROUND SERVICE PIT (BGSP) SHALL ONLY BE CONSIDERED WHERE NO OTHER CONNECTION ARRANGEMENTS ARE POSSIBLE (WADCM 12.5.2) AND THE BGSP IS EXPECTED TO BE IN A THOROUGHFARE (I.E. DRIVEWAY OR PATH) WHERE A PILLAR WOULD PRESENT A TRIP HAZARD OR SAFETY CONCERN.

#### <u>NOTES</u>

- 1. ALL DIMENSIONS ARE IN MILLIMETRES.
- 2. BACKFILL MATERIAL CAN BE NATURAL SOIL. SOIL SURROUNDING PIT COVERING 1m2 (MINIMUM) SHALL BE COMPACTED TO ACHIEVE A MINIMUM RELATIVE DENSITY RATIO OF 92% IN ACCORDANCE WITH AS 1289.5.2.1 COMPACTION OF SOIL IS TO BE CARRIED OUT IN LAYERS OF 300mm
- 3. FINAL FINISHED GROUND LEVEL SHALL BE OF HARD STAND SURFACE, REFER TO TABLE 1.
- CORES TO BE 500mm LONG AND HAVE HEATSHRINK APPLIED OVER THE FULL LENGTH.
- 5. DEDICATED UMS/SL PORT. INSTALL UMS TAG (CZ0307) NEUTRAL ONLY.
- 6. DUST CAPS MUST BE LEFT ON ANY UNUSED CONNECTOR CABLE ENTRY TO AVOID GEL CONTAMINATION. DUST CAPS CAN BE LEFT ON WHILE INSERTING CABLE INTO GELPORT.
- 7. AFTER CABLE TERMINATION, THE CONNECTION CAP MUST BE LOCKED TO FULLY SEAL.
- 8. ALL SIDE ENTRY CABLES SHALL BE DOUBLE INSULATED AND PROTECTED BY CONDUIT. CONDUIT SHALL PROTRUDE INTO PIT, MINIMUM 30mm AND MAXIMUM 50mm.
- FOR PERMANENT DISCONNECTION, DO NOT REMOVE CABLE FROM GELPORT. CUT CABLE TO LEAVE APPROX 50mm PROTRUDING OUT OF GELPORT THEN CAP WITH HEATSHRINK USE CAUTION WHEN APPLYING HEATSHRINK TO AVOID DAMAGE TO GEL AREA



# GEL PORT CONNECTIONS

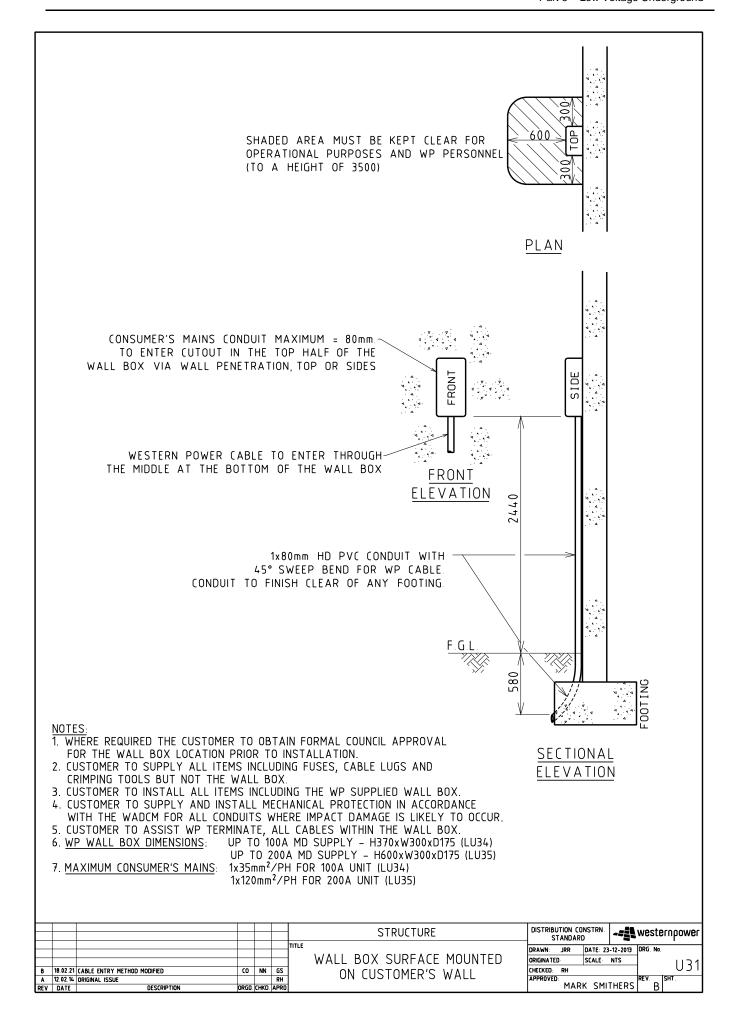
# TABLE 1

HARD STAND SURFACE	MIN. THICKNESS (mm)
DENSE GRADED ASPHALT	25
CONCRETE *	100
PAVING BLOCK	60

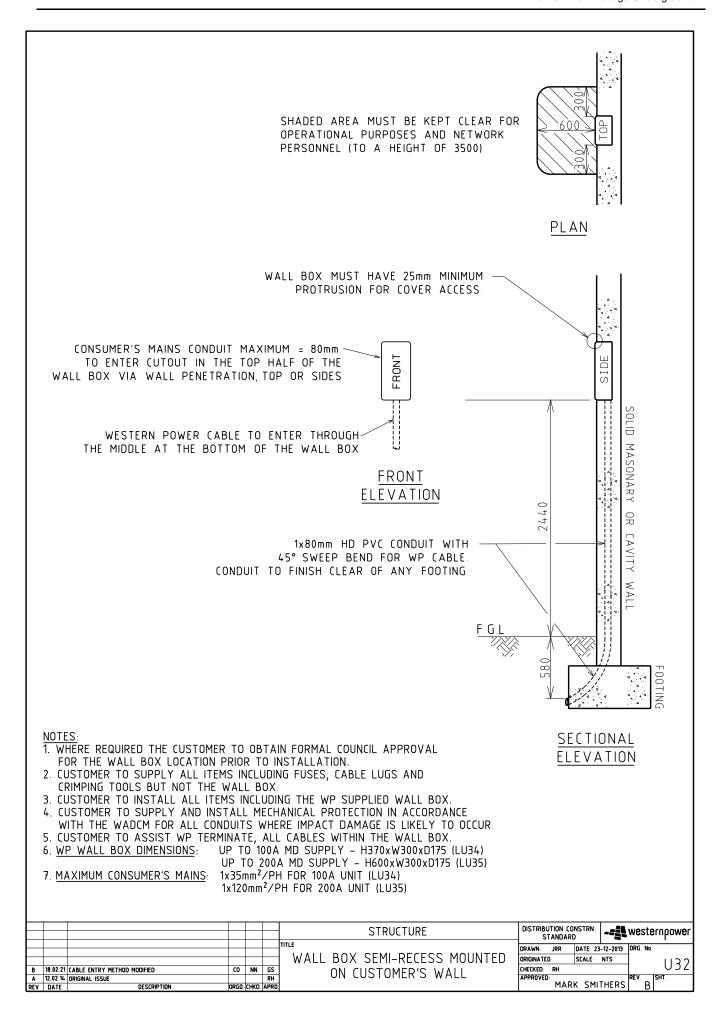
\* MINIMUM N25

							STRUCTURE	DISTRIBUTION CO	NSTRN ~	<b>westernpower</b>
G	09 06 2	25 PIT AND CONNECTORS CHANGED	NG	SH	CO		STRUCTURE	STANDAR	D   45	39 meeren nihamen
F	23.05.2	22 GEL PORT CHANGED	0	SH	GS	TITLE		DRAWN: JRR	DATE: 25-03-20	AN IDDG No.
Ε	18 02 2	21 NOTE 3 MADE CLEAR	9	NN	GS	]			-	014 DRG. 140.
D	23.07.1	19 REDRAWN	NN	CO	GS	1	BELOW GROUND SERVICE PIT	ORIGINATED:	SCALE: NTS	— H 113Λ
C	11.06.1	9 MOVED TO MAINTENANCE MANUAL	JC	REE	GS	1		CHECKED: CO		0.00
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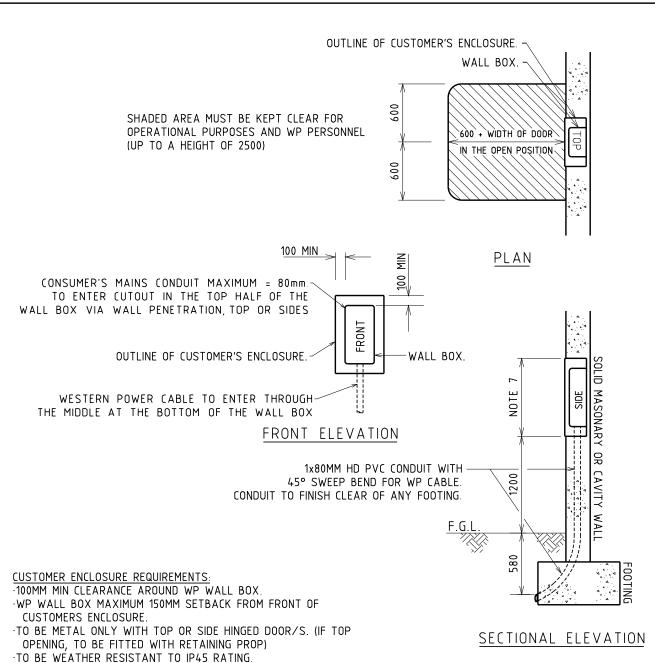












TO BE FITTED WITH WP MASTER METER LOCK.

DOOR TO BE FITTED WITH WP LABEL (SUPPLIED BY WP).

#### NOTES

- WHERE REQUIRED THE CUSTOMER TO OBTAIN FORMAL COUNCIL APPROVAL FOR THE WALL BOX LOCATION PRIOR TO INSTALLATION.
- 2. CUSTOMER TO SUPPLY ALL ITEMS INCLUDING FUSES, CABLE LUGS AND CRIMPING TOOLS BUT NOT THE WALL BOX.
- 3. CUSTOMER TO INSTALL ALL ITEMS INCLUDING THE WP SUPPLIED WALL BOX.
- 4. IF SURFACE MOUNTED THE CUSTOMER TO SUPPLY AND INSTALL MECHANICAL PROTECTION IN ACCORDANCE WITH THE WADCM FOR ALL CONDUITS WHERE IMPACT DAMAGE IS LIKELY TO OCCUR. 5. CUSTOMER TO ASSIST WP TERMINATE, ALL CABLES WITHIN THE WALL BOX.
- UP TO 100A MD SUPPLY H370xW300xD175 (LU34) 6 WP WALL BOX DIMENSIONS: UP TO 200A MD SUPPLY - H600xW300xD175 (LU35)
- 7. MAXIMUM CONSUMER'S MAINS: 1x35mm<sup>2</sup>/PH FOR 100A UNIT (LU34) 1x120mm<sup>2</sup>/PH FOR 200A UNIT (LU35)

					$\exists$		STRUCTURE	DISTRIBUTION CONSTRN. STANDARD		-== westernpower		
					╡	TITL	WALL BOX MOUNTED INSIDE	DRAWN		DATE 23		DRG. No.
		CABLE ENTRY METHOD MODIFIED	СО	NN GS	_	1	CUSTOMER'S ENCLOSURE	CHECKED: RH APPROVED:				REV. ISHT.
REV	12.02.14 DATE	DESCRIPTION	ORGO. C	RH HKD APR		,	ON CUSTOMER'S WALL	APPRU	MAR	K SMI	THERS	B Sni

