


# **OVERHEAD CONSTRUCTION MANUAL**

## **Section 7 – Pole Mounted Plant**


Approved by: C Noel

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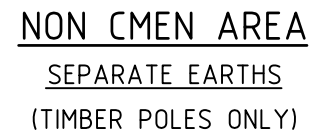
A	ORIGINAL ISSUE		APPD J. Lansley	CKD K. De Manser	DRN P. Judge	Index updated			 ©COPYRIGHT 2012 ENERGEX This drawing must not be reproduced in part or whole without written permission from ENERGEX	OVERHEAD CONSTRUCTION MANUAL  <u>POLE MOUNTED PLANT</u>  INDEX		APP'D	K.Ball	TECH STDS		AUTOCAD
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												DWN	M.Welsh	FILE:		


	DESCRIPTION	SECTION / PAGE		DESCRIPTION	SECTION / PAGE
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										DATE	2-12-92	4920-A4		L
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POLE MOUNTED PLANT  
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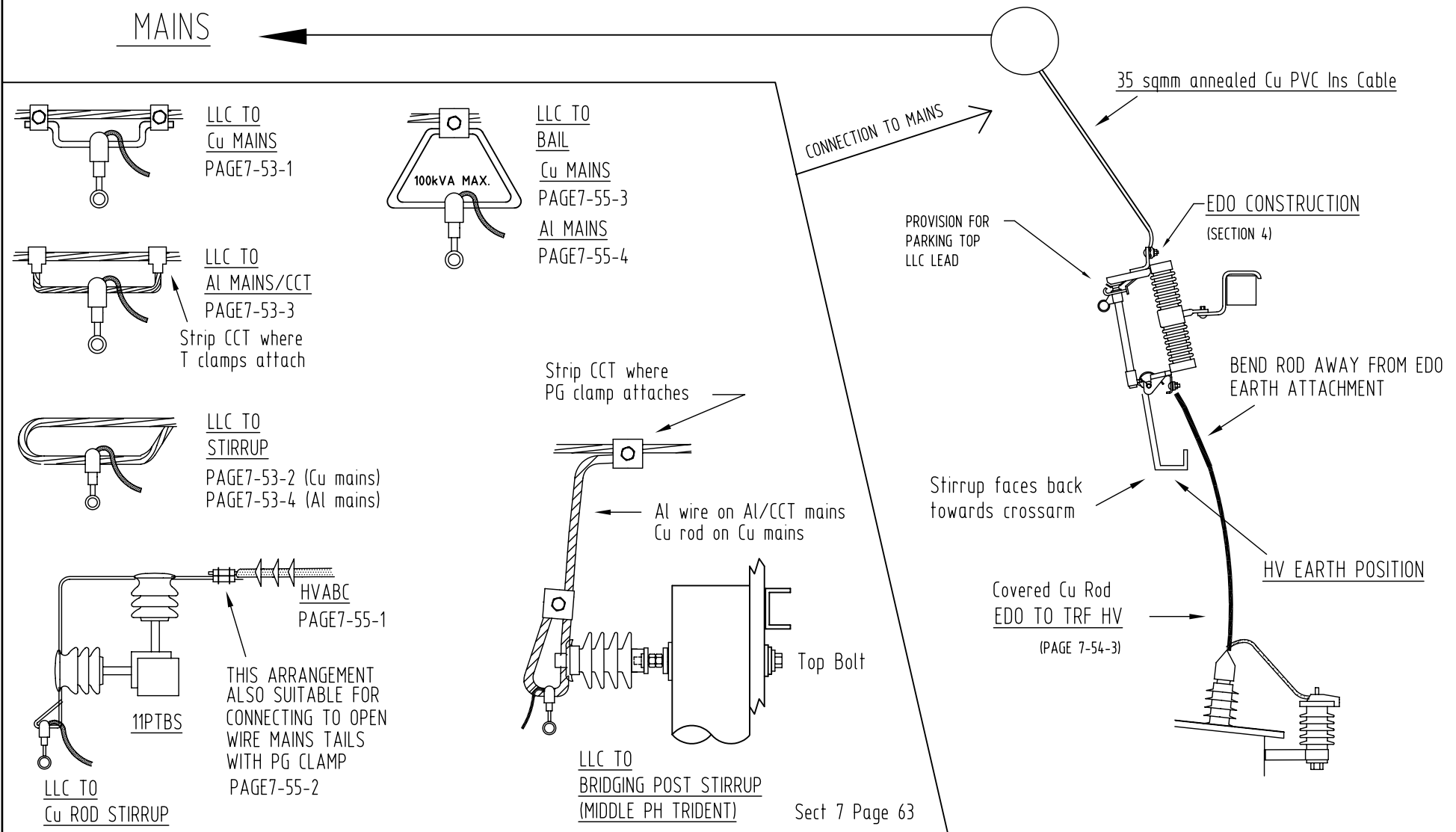




H	ORIGINAL	ISSUE	APPD	CKD	IDRN	Butt earth added to dwg PG clamp on download clarified for main/tap conductors.	 © COPYRIGHT 2011 ENERGEX  This drawing must not be reproduced in part or whole without written permission from ENERGEX	OVERHEAD CONSTRUCTION MANUAL		APP'D	C.LEE	Tech Stds		CAD
	J	DATE						17-03-2011	4920-A4		J			
	Roy English							REC'D	J.TUNNEY	SECT	PAGE			
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								POLE MOUNTED PLANT POLE TRANSFORMERS SCHEMATICS - EARTHING SURGE ARRESTERS & OTHER METALWORK		DWN	A.MCCOOK	FILE:		

# 11kV MAINS CONNECTION

MAINS



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ORIGINAL ISSUE	DATE	APP'D	CKD	DRN	LLC to trident stirrup middle ph amended
1	28-7-09	RENGISH	John Tunney	John Tunney	



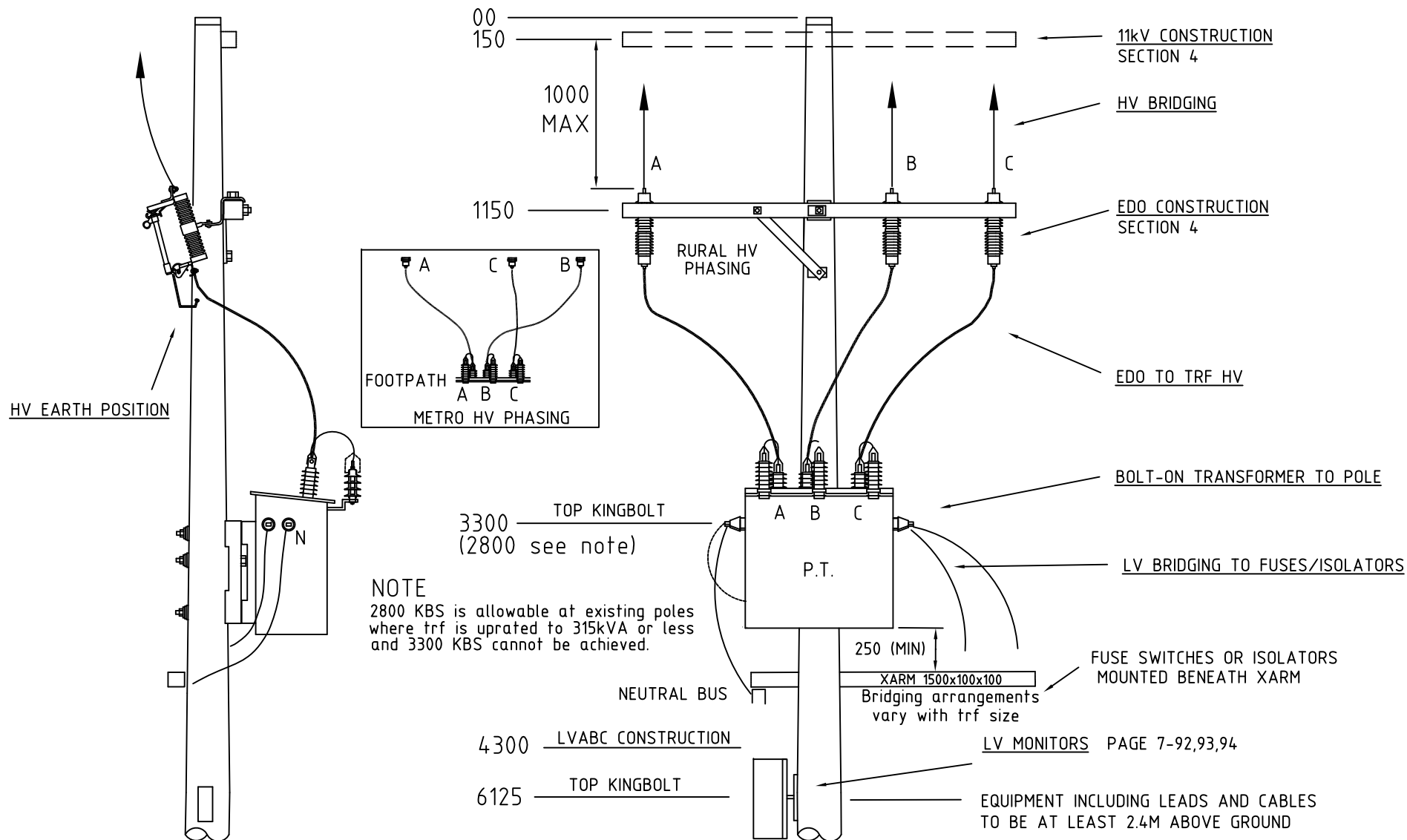
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## OVERHEAD CONSTRUCTION MANUAL

### POLE MOUNTED PLANT TRANSFORMER HV BRIDGING GENERAL ARRANGEMENTS

APP'D	C.LEE	TECH STDS	AUTOCAD
DATE	29-10-2007	4920-A4	1
REC'D	J.TUNNEY	SECT	PAGE
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ORIGINAL ISSUE	DATE 30/07/2013	APP'D CLEE	CKD R.ELF	DRN J.CHUNG	LV MONITORING UPDATED		 <p>© COPYRIGHT 2013 ENERGEX</p> <p>This drawing must not be reproduced in part or whole without written permission from ENERGEX</p>	OVERHEAD CONSTRUCTION MANUAL		APP'D	K.BALL	Tech Stds		AUTOCAD
J								POLE MOUNTED PLANT		DATE	2-12-92	4920-A4		J
								PT GENERAL LAYOUT		REC'D		SECT		PAGE
								KINGBOLT SPACINGS		CKD		7		3
								SUPPLY TO LVABC		DWN	M.WELSH	SHEET 1 OF 1		
										FILE:				




MATERIAL LIST -		11PT/25B	
CU CODES		11PT/25WA	
MATERIAL	DESCRIPTION	QTY	QTY

PAGE7-55-	BAIL & LLC TO EDO	AR	AR
11ED02	EDO CONSTRUCTION 1ph - SECTION 4		
11ED03	EDO CONSTRUCTION 3ph - SECTION 4		
14228	EDO FUSE LINK - 8A	2	3
PAGE7-54-3	EDO TO TRF HV	2	3
SET250-12	BOLT-ON BRACKET FOR 25kVA TRF	1	1
15641	LUG AT TRF NEUTRAL PALM (95sqmm Al)	1	1
PAGE7-81-16	LV PHASE BRIDGE TRF TO FUSEHOLDER	1	3
17000	NEUTRAL BLOCK	1	1
22520	CAP (95sqmm)	1	1
SET1-2	1PH FUSEHOLDER BRACKET TO POLE	1	
SET2-1	3PH FUSEHOLDER BRACKET TO POLE		1
19910	100A FUSEHOLDER (6-95sqmm)	1	3
04451	80A FUSE	1	3

11PT/25B - 25kVA (1Ph) HV OPEN WIRE, LV SERVICE  
 11PT/25WA-25kVA (3Ph) HV OPEN WIRE, LV SERVICE

A	ORIGINAL ISSUE		APPD	F.ZAINI	CKD	P.Relf	DRN	P.Relf	Updated SC6616 with SC22520
	DATE	27-05-2014							



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OVERHEAD CONSTRUCTION MANUAL

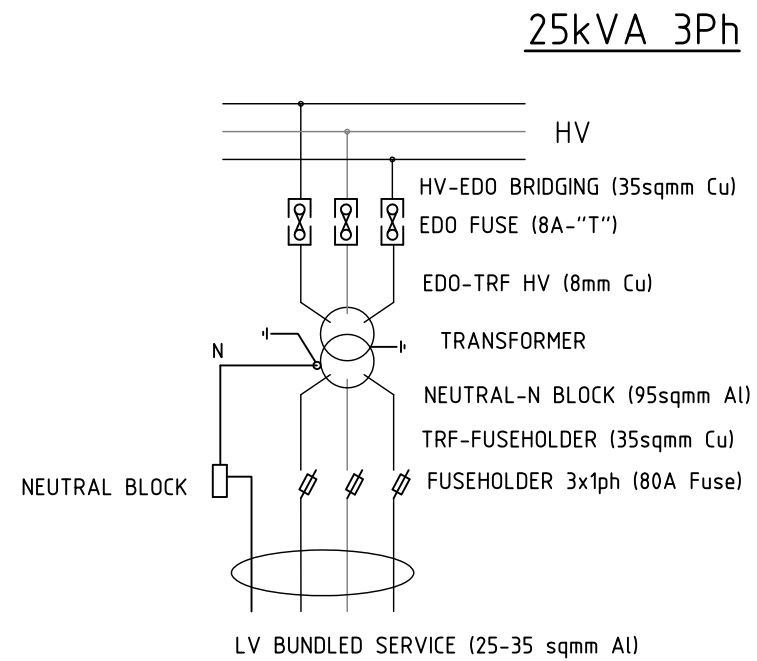
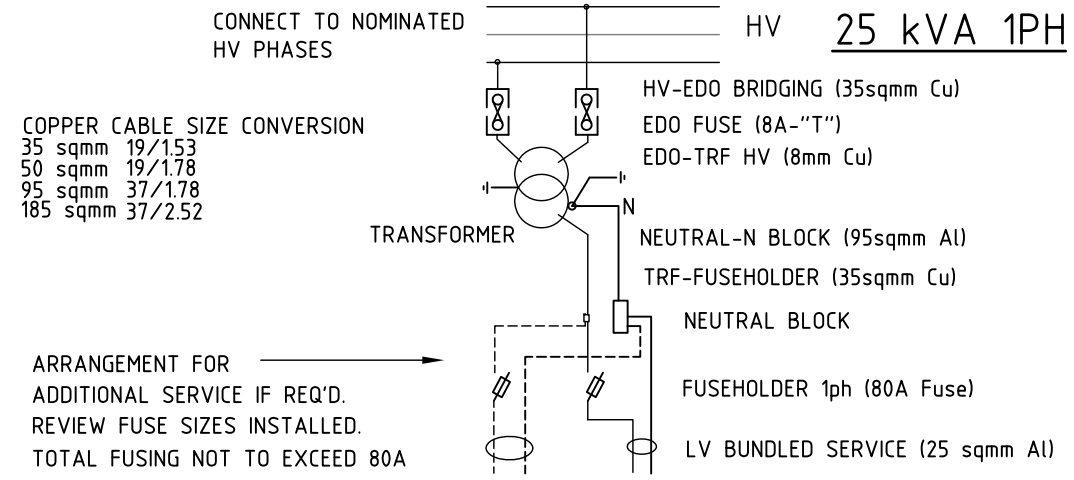
POLE MOUNTED PLANT

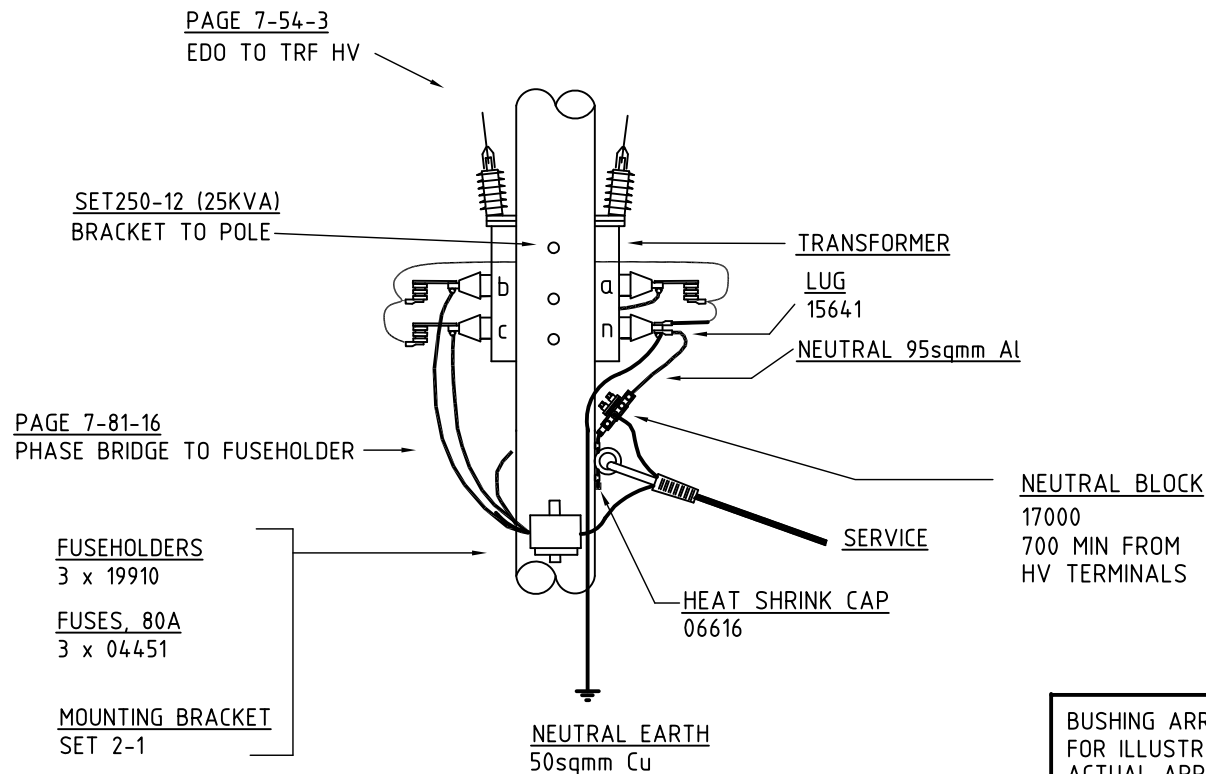
25 kVA

SINGLE & 3 PHASE 11kV POLE TRANSFORMERS

SUPPLY TO SERVICE

APP'D	KEVIN BALL	TECH STDS		AUTOCAD
DATE	02-12-92	4920-A4		J
REC'D		SECT	PAGE	
		7	5	
CKD		SHEET 1 OF 1		
DWN	M.WELSH	FILE:		






BUSHING ARRANGEMENT SHOWN IS FOR ILLUSTRATIVE PURPOSES ONLY. ACTUAL ARRANGEMENT MAY VARY DEPENDING UPON MANUFACTURER.

TRANSFORMERS ARE SUPPLIED WITH SURGE ARRESTERS FITTED AND WIRED. ACTUAL ARRANGEMENT MAY VARY SLIGHTLY TO DRAWING.

## 25kVA 3Ph - BRIDGING TO SERVICE

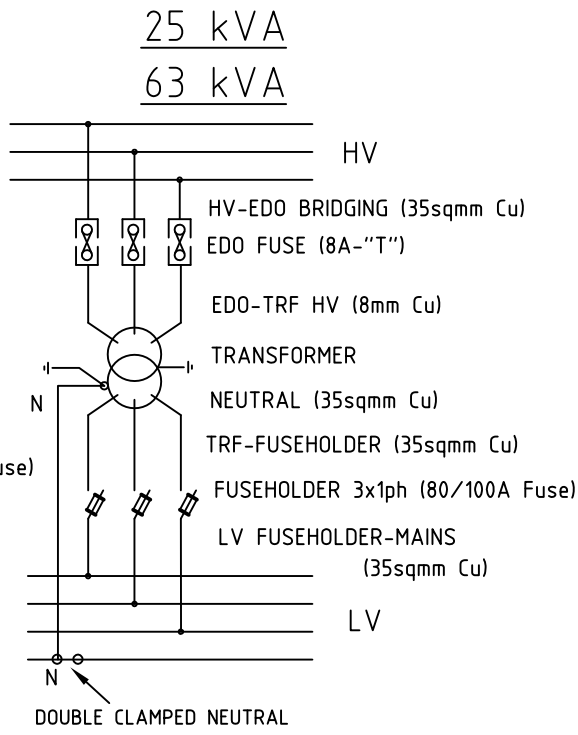
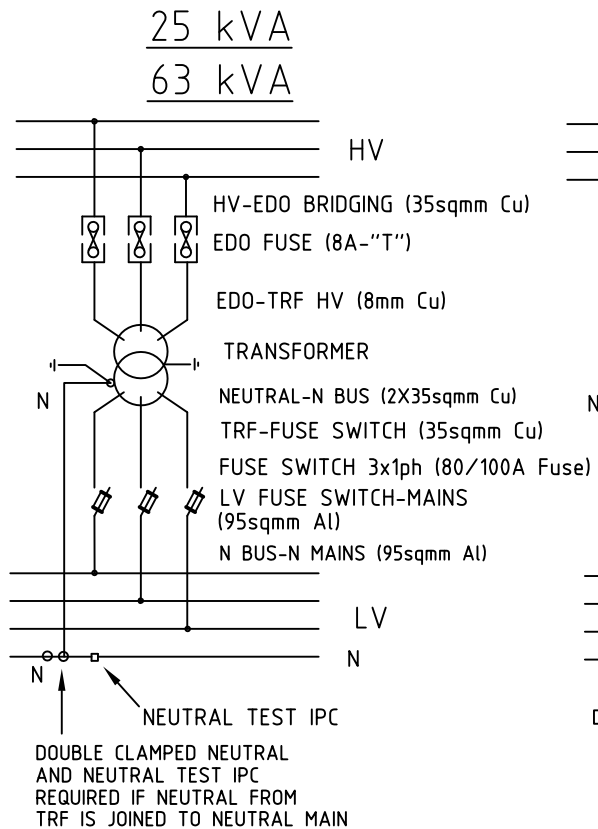
A	ORIGINAL ISSUE	DATE	17-03-2011	APPD	Roy English	CKD	J.Tunney	DRN	J.Tunney	Updated for new pole mounting bracket.		 ©COPYRIGHT 2011 ENERGEX This drawing must not be reproduced in part or whole without written permission from ENERGEX	OVERHEAD CONSTRUCTION MANUAL		APP'D	K.BALL	TECH STDS		AUTOCAD	
	POLE MOUNTED PLANT												DATE	2-12-2002	4920-A4		G			
	25 kVA												REC'D		SECT	PAGE				
	SINGLE & 3 PHASE 11kV POLE TRANSFORMERS SUPPLY TO SERVICE												CKD		7	6				
													DWN	M.WELSH	SHEET 1 OF 1					
															FILE:					

MATERIAL LIST - 11PT/25ABC  
11PT/25  
CU CODES 11PT/63WA  
11PT/63

11PT/25ABC  
11PT/25  
11PT/63WA  
11PT/63

COPPER CABLE SIZE CONVERSION  
35 sqmm 19/1.53  
50 sqmm 19/1.78  
95 sqmm 37/1.78  
185 sqmm 37/2.52

MATERIAL	DESCRIPTION	QTY	QTY	QTY	QTY
PAGE7-55-	BAIL & LLC TO EDO	AR	AR	AR	AR
11ED03	EDO CONSTRUCTION 3ph - SECTION 4				
14228	EDO FUSE LINK - 8A	3	3	3	3
PAGE7-54-3	EDO TO TRF HV	3	3	3	3
SET250-12	BOLT ON TRANSFORMER BRACKET (25kVA)	1	1		
SET250-1	BOLT ON TRANSFORMER BRACKET (63kVA)			1	1
PAGE7-81-11	LV PHASE BRIDGE TRF TO 1PH FUSE SWITCH	3		3	
PAGE7-79-11	NEUTRAL BRIDGE TRF TO N-BUS	1		1	
PAGE7-74-3	XARM, 3x1PH FUSE SWITCHES & N-BUS	1		1	
04458	100A FUSES FOR FUSE SWITCHES			3	
21281	80A FUSES FOR FUSE SWITCHES	3			
PAGE7-80-16	BRIDGES - FUSE SWITCHES & N-BUS TO MAINS	1		1	
20849	NEUTRAL TEST IPC	1		1	
PAGE7-81-16	LV PHASE BRIDGE TRF TO FUSEHOLDER		3		3
SET2-1	3PH FUSEHOLDER BRACKET TO POLE		1		1
19910	100A FUSEHOLDER (6-95sqmm)		3		3
12454	100A FUSE FOR FUSEHOLDER				3
04451	80A FUSE FOR FUSEHOLDER		3		
PAGE7-80-11	LV PHASE BRIDGE FUSEHOLDER TO MAINS (0W)		3		3
PAGE7-79-11	NEUTRAL BRIDGE TRF TO MAINS (0W)		1		1



11PT/25ABC - 25kVA HV OPEN WIRE, LVABC  
11PT/25 - 25kVA HV OPEN WIRE, LV OPEN WIRE  
11PT/63WA - 63kVA HV OPEN WIRE, LVABC  
11PT/63 - 63kVA HV OPEN WIRE, LV OPEN WIRE

LVABC

OPEN WIRE

BUSHING ARRANGEMENT SHOWN IS FOR ILLUSTRATIVE PURPOSES ONLY. ACTUAL ARRANGEMENT MAY VARY DEPENDING UPON MANUFACTURER.

TRANSFORMERS ARE SUPPLIED WITH SURGE ARRESTERS FITTED AND WIRED. ACTUAL ARRANGEMENT MAY VARY SLIGHTLY TO DRAWING.

PAGE 7-54-3  
EDO TO TRF HV

SET250-12 (25kVA)  
SET250-1 (63kVA)  
BRACKET TO POLE

PAGE 7-81-11  
PHASE BRIDGE  
1x35mm<sup>2</sup> Cu

SPIRAL WRAP  
SC 10490

PAGE 7-79-11  
NEUTRAL-N BUS  
2x35mm<sup>2</sup> Cu

PAGE 7-74-3  
XARM, FUSES, & N-BUS  
80A (25kVA)  
100A (63kVA)

B & C PHASES MAINS TAILS  
BRIDGING OMITTED FOR CLARITY

NEUTRAL BUS

NEUTRAL TAIL

LV CONSTRUCTION

NEUTRAL EARTH  
50mm<sup>2</sup> Cu

PAGE 7-54-3  
EDO TO TRF HV

SET250-12 (25kVA)  
SET250-1 (63kVA)  
BRACKET TO POLE

PAGE 7-81-16  
PHASE BRIDGING  
TO FUSEHOLDER  
35mm<sup>2</sup> Cu

PAGE 7-79-11  
NEUTRAL 35mm<sup>2</sup> Cu

PAGE 7-80-11  
PHASE BRIDGING  
TO MAINS  
35mm<sup>2</sup> Cu

SET2-1  
3Φ PHASE BRACKET  
FUSEHOLDERS  
19910

FUSES 80A (25kVA)  
04451  
FUSES 100A (63kVA)  
12454

LV CONSTRUCTION

NEUTRAL EARTH  
50mm<sup>2</sup> Cu

25kVA  
63kVA - BRIDGING TO LVABC MAINS

25kVA  
63kVA - BRIDGING TO OPEN WIRE MAINS

ORIGINAL ISSUE	DATE	APP'D	DATE	CKD	P. RELF	P. RELF
A	K	APP'D F. ZAINI	25/9/18	CKD	P. RELF	P. RELF
Updated LV neutral and earth for LVABC						



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## OVERHEAD CONSTRUCTION MANUAL

### POLE MOUNTED PLANT

25 & 63 kVA

3 PHASE 11kV POLE TRANSFORMERS

SUPPLY TO LVABC AND OPEN WIRE WOOD POLE

APP'D	Kevin Ball	TECH STDS	AUTOCAD
DATE	02-12-92	4920-A4	K
REC'D		SECT	PAGE
CKD		7	8
DWN	M.Welsh	SHEET	1 OF 1
FILE:			



MATERIAL LIST -

CU CODES    11PT/100WA  
                  11PT/100AAL  
                  11PT/100

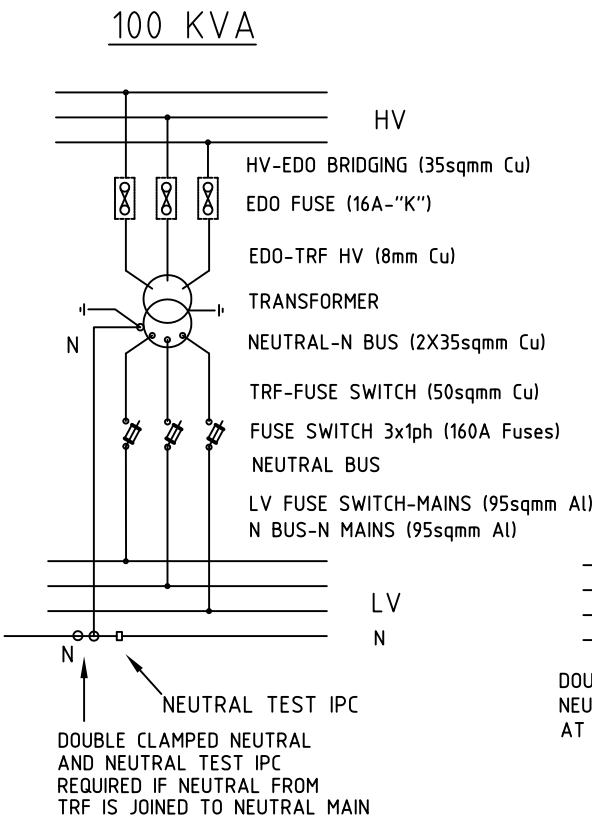
11PT/100WA  
11PT/100AAL  
11PT/100

COPPER CABLE SIZE CONVERSION

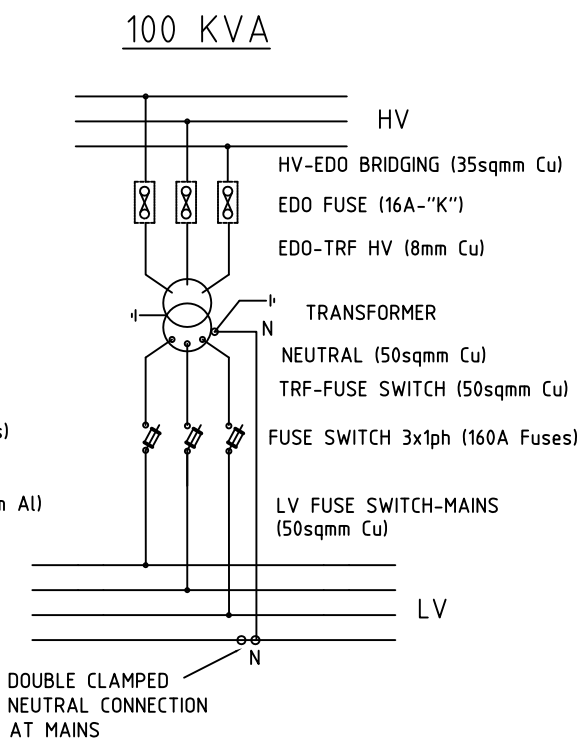
35 sqmm	19/1.53
50 sqmm	19/1.78
95 sqmm	37/1.78
185 sqmm	37/2.52

MATERIAL	DESCRIPTION	QTY	QTY	QTY
PAGE7-55-	BAIL & LLC TO EDO	AR		AR
PAGE7-55-1	BAR STIRRUP ASSY & LLC TO EDO (HVABC)		3	
11ED03	EDO CONSTRUCTION - SECTION 4			
14231	EDO FUSE LINK - 16A "K"	3	3	3
PAGE7-54-3	EDO TO TRF HV	3	3	3
SET250-15	BOLT ON TRANSFORMER TO POLE	1	1	1
PAGE7-81-12	LV PHASE BRIDGE TRF TO 1PH FUSE SWITCH	3	3	3
PAGE7-79-12	NEUTRAL BRIDGE TRF TO N-BUS	1	1	
PAGE7-74-3	XARM, 3x1PH FUSE SWITCHES & N-BUS	1	1	
04465	160A FUSES FOR FUSE SWITCHES	3	3	3
PAGE7-80-17	BRIDGES - FUSE SWITCHES & N-BUS TO MAINS	1	1	
20849	NEUTRAL TEST IPC	1	1	
PAGE7-79-17	NEUTRAL BRIDGE TRF TO MAINS NEUTRAL			1
SET3-2	L.V 1PH 630A FUSE SWITCH TO X-ARM			3
PAGE7-80-12	LV PHASE BRIDGE 1PH FUSE SWITCH TO MAINS			3

11PT/100WA - 100kVA HV OPEN WIRE, LVABC  
11PT/100AAL - 100kVA HVABC, LVABC  
11PT/100 - 100kVA HV OPEN WIRE, LV OPEN WIRE



LV ABC  
1x100 kVA CIRCUIT



LV OPEN WIRE

Note: Transformers are supplied with surge arresters fitted and wired.  
Actual arrangement may vary slightly to drawing.

PAGE 7-54-3

EDO TO TRF HV

SET 250-1

BRACKET TO POLE

PAGE 7-81-2

PHASE BRIDGE  
1x50mm<sup>2</sup> Cu

PAGE 7-74-3

XARM, FUSES, & N-BUS  
160A

SPIRAL WRAP  
SC 10490

PAGE 7-79-12  
NEUTRAL-N BUS  
2x35mm<sup>2</sup> Cu

NEUTRAL BUS

NEUTRAL TAIL

LV CONSTRUCTION

NEUTRAL EARTH  
50mm<sup>2</sup> Cu

B & C PHASES MAINS  
BRIDGING OMITTED FOR CLARITY

100kVA - BRIDGING TO LVABC MAINS - 1x100kVA CIRCUIT

PAGE 7-54-3

EDO TO TRF HV

PAGE 7-81-12

PHASE BRIDGE  
1x50mm<sup>2</sup> Cu

SECTION 3  
LV CONSTRUCTION

PAGE 7-80-12  
50mm<sup>2</sup> Cu BRIDGE TO MAIN

SET 250-1  
BRACKET TO POLE

EARTH  
50mm<sup>2</sup> Cu


SPIRAL WRAP  
SC 10490

PAGE 7-79-17  
NEUTRAL BRIDGE  
1x50mm<sup>2</sup> Cu

SET 3-2  
1ph 630A FUSE  
SWITCH TO X-ARM

NEUTRAL EARTH  
50mm<sup>2</sup> Cu

100kVA - BRIDGING TO OPEN MAINS (3Ø)

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	G	DATE										25/9/18	DATE	02-11-92	4920-A4				G
	REC'D											SECT		PAGE					
	CKD											7		10					
	DWN											SHEET		1 OF 1					
												DWN	M.WELSH	FILE:					
												POLE MOUNTED PLANT							
												100 KVA							
												3 PHASE 11 kV POLE TRANSFORMERS							
												SUPPLY TO LVABC AND OPEN WIRE - WOOD POLE							



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MATERIAL LIST -

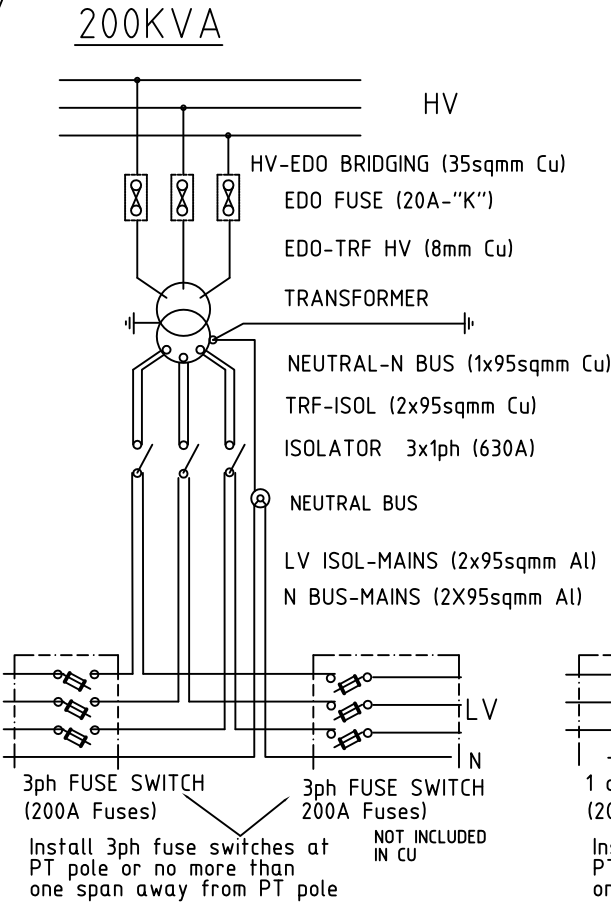
CU CODES            11PT/200WA  
                             11PT/200AAL  
                             11PT/200

COPPER CABLE SIZE CONVERSION

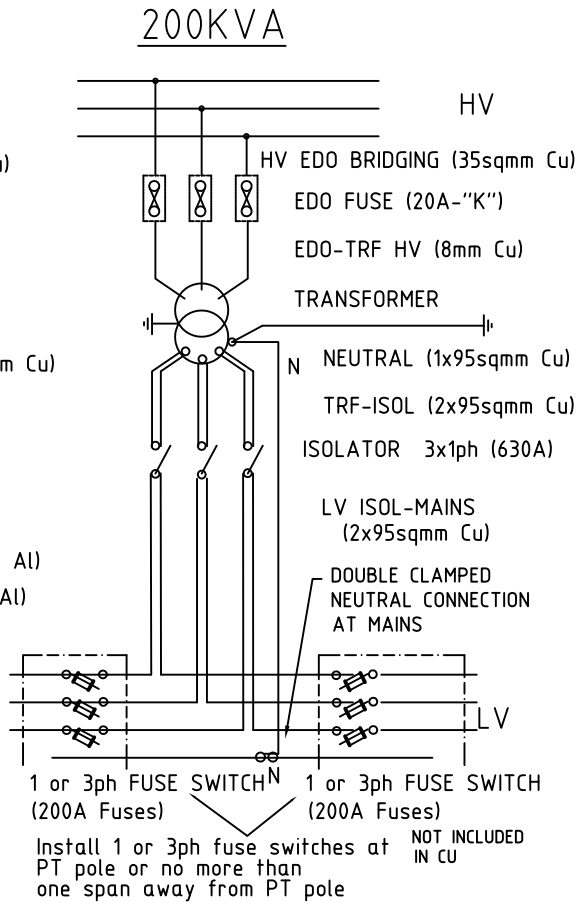
35 sqmm	19/1.53
50 sqmm	19/1.78
95 sqmm	37/1.78
120sqmm	37/2.03
185 sqmm	37/2.52

MATERIAL	DESCRIPTION	QTY	QTY	QTY
PAGE7-53-	LLC TO EDO	AR		AR
PAGE7-55-1	BAR STIRRUP ASSY & LLC TO EDO (HVABC)		3	
11ED03	EDO CONSTRUCTION - SECTION 4			
13405	EDO FUSE LINK - 20A "K"	3	3	3
PAGE7-54-3	EDO TO TRF HV	3	3	3
SET250-15	BOLT ON TRANSFORMER TO POLE	1	1	1
PAGE7-81-13	LV PHASE BRIDGE TRF TO 1PH ISOLATOR	3	3	
PAGE7-79-13	NEUTRAL BRIDGE TRF TO NEUTRAL BUS	1	1	
PAGE7-74-1	XARM & 3x1Ph 630A ISOLATORS & N-BUS	1	1	
PAGE7-80-18	BRIDGES - TRF ISOLS & N-BUS TO 3PH ISOLS	1	1	
PAGE7-81-13	LV PHASE BRIDGE TRF TO 1PH FUSE SWITCH			3
PAGE7-79-18	NEUTRAL BRIDGE TRF TO MAINS (0W)			1
SET57-1	L.V 1PH 630A ISOLATOR TO X-ARM			3
PAGE7-80-13	L.V PHASE BRIDGE 1PH ISOL SWITCH TO MAINS			3

11PT/200WA - 200kVA HV OPEN WIRE, LVABC  
11PT/200AAL - 200kVA HVABC, LVABC  
11PT/200 - 200kVA HV OPEN WIRE, LV OPEN WIRE



LVABC  
2x100kVA CIRCUITS



OPEN WIRE

Note: Transformers are supplied with surge arresters fitted and wired.  
Actual arrangement may vary slightly to drawing.

PAGE 7-54-3

EDO TO TRF HV

SET 250-1

BRACKET TO POLE

PAGE 7-81-13

PHASE BRIDGE  
2x95mm<sup>2</sup> Cu

SPIRAL WRAP  
SC 10490

PAGE 7-79-13

NEUTRAL-N BUS  
2x50mm<sup>2</sup> Cu

NEUTRAL BUS

NEUTRAL TAILS

PHASE BRIDGING TO  
MAINS VIA FUSED  
3PH ISOLATORS  
AT THIS POLE OR  
ADJACENT POLE(S)

LV CONSTRUCTION

PAGE 7-74-1

XARM, ISOLATORS, & N-BUS

B & C PHASES MAINS  
BRIDGING OMITTED FOR CLARITY

NEUTRAL EARTH  
50mm<sup>2</sup> Cu

PAGE 7-54-3

EDO TO TRF HV

SET 250-1

BRACKET TO POLE

PAGE 7-81-13

PHASE BRIDGE  
2x95mm<sup>2</sup> Cu

SPIRAL WRAP  
SC 10490

PAGE 7-79-18

NEUTRAL BRIDGE  
1x95mm<sup>2</sup> Cu

SET 57-1

630A ISOLATOR  
TO X-ARM

NEUTRAL EARTH  
50mm<sup>2</sup> Cu

PAGE 7-80-13

2x95mm<sup>2</sup> Cu BRIDGE TO MAINS

SECTION 3

LV CONSTRUCTION

200kVA - BRIDGING TO LVABC MAINS - 2x100kVA CIRCUITS

200kVA - BRIDGING TO OPEN MAINS (3φ)

ORIGINAL ISSUE	DATE	APP'D	F. ZAINI	P. RELF	P. RELF	Updated LV neutral and earth for LVABC
A	E	APP'D	F. ZAINI	CKD	DRN	
		DATE	25/9/18			



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## OVERHEAD CONSTRUCTION MANUAL

### POLE MOUNTED PLANT

200 kVA

3 PHASE 11 kV POLE TRANSFORMERS

SUPPLY TO LVABC AND OPEN WIRE - WOOD POLE

APP'D	C.LEE	TECH STDS	AUTOCAD
DATE	29-10-2007	4920-A4	E
REC'D		SECT	PAGE
CKD	J.TUNNEY	7	12
DWN	J.TUNNEY	SHEET	1 OF 1
FILE:			

MATERIAL LIST -

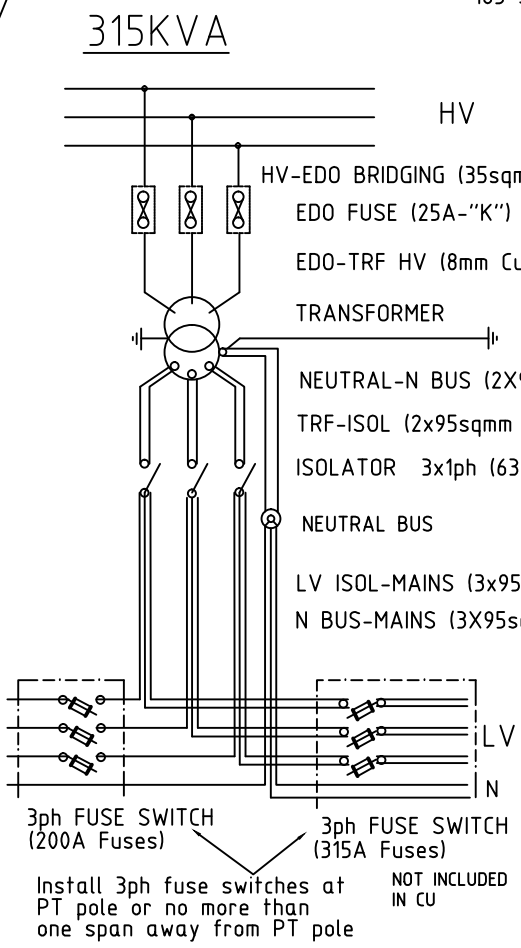
CU CODES      11PT/315WA  
                     11PT/315AAL  
                     11PT/315

COPPER CABLE SIZE CONVERSION

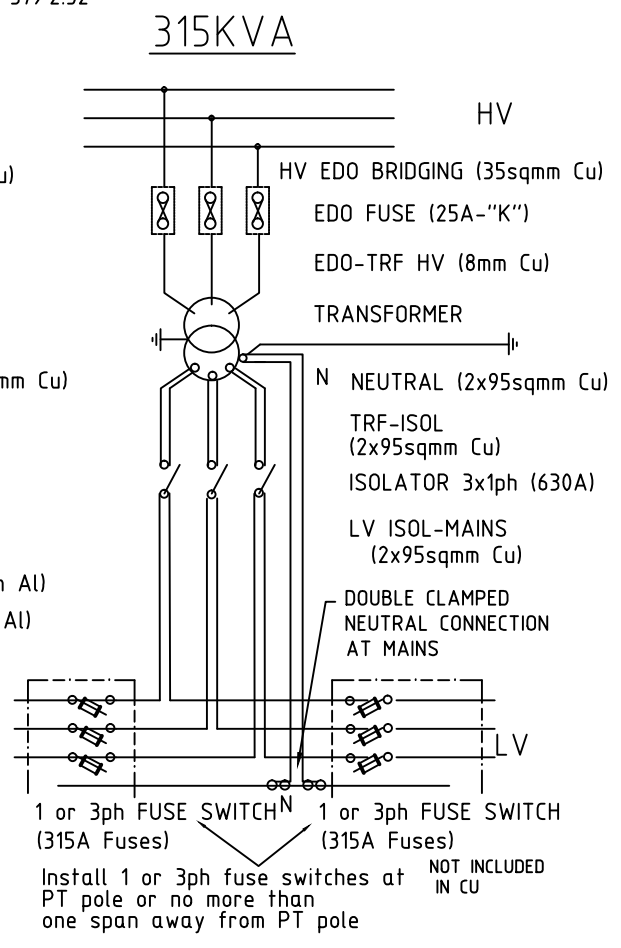
35 sqmm	19/1.53
50 sqmm	19/1.78
95 sqmm	37/1.78
120sqmm	37/2.03
185 sqmm	37/2.52

MATERIAL	DESCRIPTION	QTY	QTY	QTY
PAGE7-53-	LLC TO EDO	AR		AR
PAGE7-55-1	BAR STIRRUP ASSY & LLC TO EDO (HVABC)		3	
11ED03	EDO CONSTRUCTION - SECTION 4			
13730	EDO FUSE LINK - 25A "K"	3	3	3
PAGE7-54-3	EDO TO TRF HV	3	3	3
SET250-15	BOLT ON TRANSFORMER TO POLE	1	1	1
PAGE7-81-14	LV PHASE BRIDGE TRF TO 1PH ISOL	3	3	
PAGE7-79-14	NEUTRAL BRIDGE TRF TO NEUTRAL BUS	1	1	
PAGE7-74-1	XARM & 3x1Ph 630A ISOLATORS & N-BUS	1	1	
PAGE7-80-19	BRIDGES - TRF ISOLS & N-BUS TO 3PH ISOLS	1	1	
PAGE7-81-14	LV PHASE BRIDGE TRF TO 1PH FUSE SWITCH			3
PAGE7-79-19	NEUTRAL BRIDGE TRF TO MAINS (0W)			1
SET57-1	L.V 1PH 630A ISOLATOR TO X-ARM			3
PAGE7-80-14	L.V PHASE BRIDGE FUSE SWITCH-MAINS			3

11PT/315WA - 315kVA HV OPEN WIRE, LVABC  
11PT/315AAL - 315kVA HVABC, LVABC  
11PT/315 - 315kVA HV OPEN WIRE, LV OPEN WIRE



LVABC  
3x100kVA CIRCUITS



OPEN WIRE

Note: Transformers are supplied with surge arresters fitted and wired.  
Actual arrangement may vary slightly to drawing.

PAGE 7-54-3  
EDO TO TRF HV

SET 250-1  
BRACKET TO POLE

PAGE 7-81-14  
PHASE BRIDGE  
2x95mm<sup>2</sup> Cu

SPIRAL WRAP  
SC 10490

PAGE 7-79-14  
NEUTRAL-N BUS  
2x95mm<sup>2</sup> Cu

NEUTRAL BUS  
NEUTRAL TAILS

PAGE 7-74-1  
XARM, ISOLATORS & N-BUS

PHASE BRIDGING TO  
MAINS VIA FUSED  
3PH ISOLATORS  
AT THIS POLE OR  
ADJACENT POLE(S)  
LV CONSTRUCTION

B & C PHASES MAINS  
BRIDGING OMITTED FOR CLARITY

NEUTRAL EARTH  
50mm<sup>2</sup> Cu

315kVA - BRIDGING TO LVABC MAINS - 3x100kVA CIRCUITS

PAGE 7-54-3  
EDO TO TRF HV

SET 250-1  
BRACKET TO POLE

PAGE 7-81-14  
PHASE BRIDGE  
2x95mm<sup>2</sup> Cu

SPIRAL WRAP  
SC 10490

PAGE 7-79-19  
NEUTRAL BRIDGE  
2x95mm<sup>2</sup> Cu


PAGE 7-80-14  
2x95mm<sup>2</sup> Cu BRIDGE TO MAINS

SECTION 3  
LV CONSTRUCTION

SET57-1  
630A ISOLATOR  
TO X-ARM

NEUTRAL EARTH  
50mm<sup>2</sup> Cu

315kVA - BRIDGING TO OPEN MAINS (3Φ)

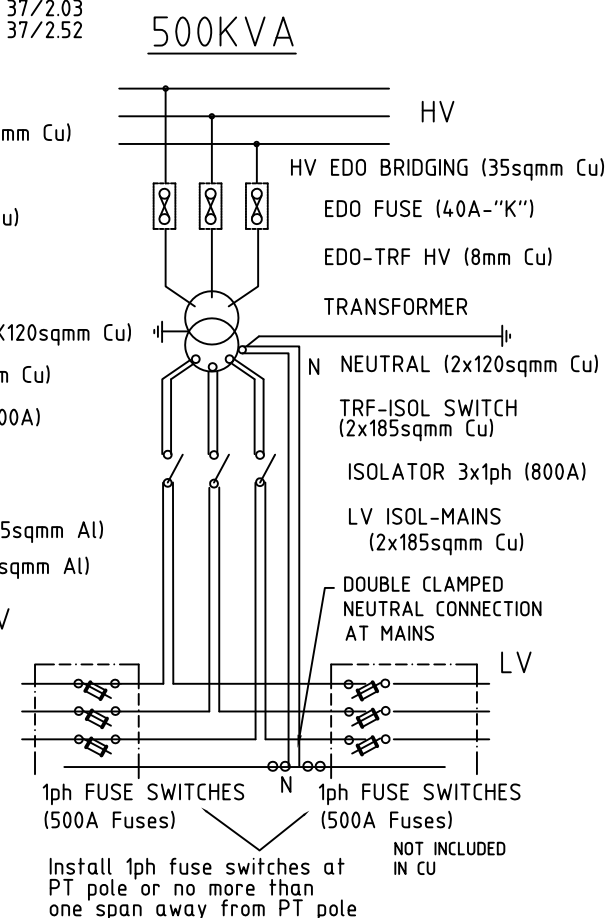
A	ORIGINAL ISSUE		E	DATE	25/9/18	APPD F. ZAINI	P. RELF	DRN P. RELF	Updated LV neutral and earth for LVABC		 © COPYRIGHT 2018 ENERGEX This drawing must not be reproduced in part or whole without written permission from ENERGEX	OVERHEAD CONSTRUCTION MANUAL		APP'D	C.LEE	TECH STDS		AUTOCAD	
	DATE			29-10-2007	4920-A4							E							
	REC'D			SECT								PAGE							
	CKD			J.Tunney	7							14							
	DWN			J.Tunney	SHEET							1 OF 1							
												POLE MOUNTED PLANT							
												315 kVA							
												3 PHASE 11 kV POLE TRANSFORMERS							
												SUPPLT TO LVABC AND OPEN WIRE - WOOD POLE							

11PT/500WA  
11PT/500AAL  
11PT/500  
11PTM/500

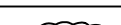
11PT/500WA  
11PT/500AAL  
11PT/500  
11PTM/500

500kVA PT on existing concrete pole - Brisbane metro area

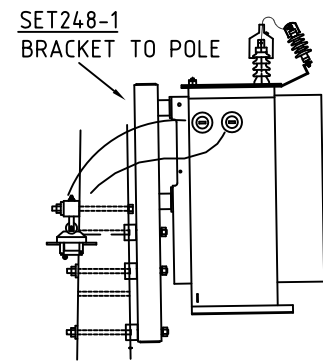
35 sqmm	19/1.53
50 sqmm	19/1.78
70 sqmm	19/2.14
95 sqmm	37/1.78
120sqmm	37/2.03
185 sqmm	37/2.52



OPEN WIRE

A	ORIGINAL ISSUE					 © COPYRIGHT 2018 ENERGEX This drawing must not be reproduced in part or whole without written permission from ENERGEX	OVERHEAD CONSTRUCTION MANUAL			APP'D	C.LEE	TECH STDS		AUTOCAD
	E	DATE	25/9/18	F. ZAINI	P. RELF		P. RELF	DATE	29-10-2007	4920-A4		E		
	APPD							REC'D		SECT	PAGE			
	CKD							CKD	J.Tunney	7	15			
	DRN							DWN	J.Tunney	SHEET 1 OF 1		FILE:		
			Updated LV neutral and earth for LVABC											

Note: Transformers are supplied with surge arresters fitted and wired. Actual arrangement may vary slightly to drawing.



PTM500 - END VIEW

PAGE 7-54-3

EDO TO TRF HV

SET 250-15

BRACKET TO POLE

PAGE 7-81-15

PHASE BRIDGE

2x185mm<sup>2</sup> Cu

SPIRAL WRAP  
SC 10490

PAGE 7-79-15

NEUTRAL-N BUS

2x120mm<sup>2</sup> Cu

NEUTRAL BUS

NEUTRAL TAILS

PHASE BRIDGING TO  
MAINS VIA FUSED  
3PH ISOLATORS  
AT THIS POLE OR  
ADJACENT POLE(S)

NEUTRAL EARTH  
50mm<sup>2</sup> Cu

PAGE 7-74-2

XARM, ISOLATORS & N-BUS

B & C PHASES MAINS  
BRIDGING OMITTED FOR CLARITY

PAGE 7-54-3

EDO TO TRF HV

SET 250-15

BRACKET TO POLE

PAGE 7-81-15

PHASE BRIDGE

2x185mm<sup>2</sup> Cu

SPIRAL WRAP  
SC 10490

PAGE 7-79-20

NEUTRAL BRIDGE

2x120mm<sup>2</sup> Cu

SET 57-2

800A ISOLATOR  
TO X-ARM

NEUTRAL EARTH  
50mm<sup>2</sup> Cu

PAGE 7-80-15

2x185mm<sup>2</sup> Cu BRIDGE TO MAINS

SECTION 3

LV CONSTRUCTION

500kVA - BRIDGING TO LVABC MAINS - 4x100kVA CIRCUITS

500kVA - BRIDGING TO OPEN MAINS (3Φ)

ORIGINAL ISSUE	DATE	APP'D	CKD	DRN	Updated LV neutral and earth for LVABC
E	25/9/18	F. ZAINI	P. RELF	P. RELF	



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## OVERHEAD CONSTRUCTION MANUAL

### POLE MOUNTED PLANT

500 kVA

3 PHASE 11 kV POLE TRANSFORMERS

SUPPLY TO LVABC AND OPEN WIRE - WOOD POLE

APP'D	C.LEE	TECH STDS	AUTOCAD
DATE	29-10-2007	4920-A4	E
REC'D		SECT	PAGE
CKD	J.TUNNEY	7	16
DWN	J.TUNNEY	SHEET	1 OF 1
FILE:			

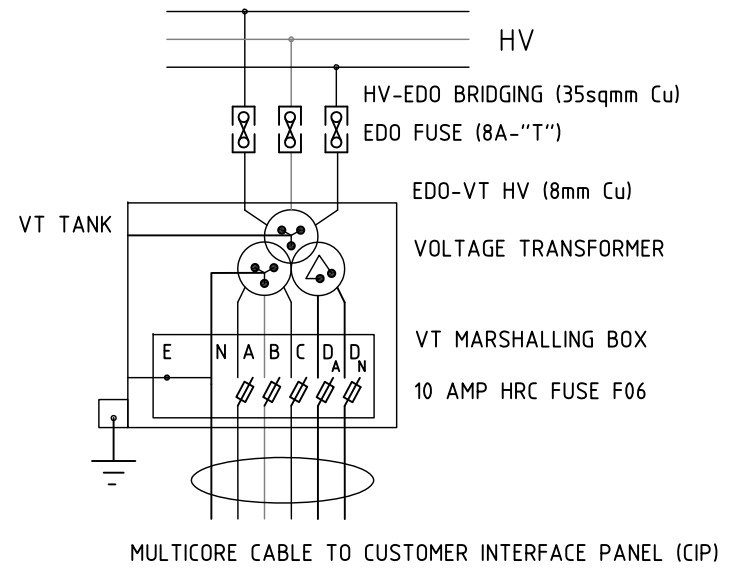


MATERIAL LIST -

CU CODES 11VT

MATERIAL	DESCRIPTION	QTY
PAGE7-55-	BAIL & LLC TO EDO	AR
11ED03	EDO CONSTRUCTION 3ph - SECTION 4	1
14228	EDO FUSE LINK - 8A	3
PAGE7-54-3D	EDO TO VT HV	3
SET250-12	BOLT-ON BRACKET FOR 25kVA TRF	1
20750	SURGE ARRESTOR	3
23889	12kV 3PH VOLTAGE TRANSFORMER	1
07211	MULTICORE CABLE	AR

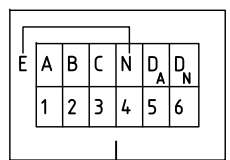
CONNECTION DIAGRAM



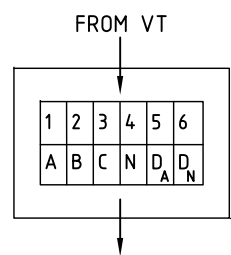
WIRING DIAGRAM

VT MARSHALLING BOX

CUSTOMER INTERFACE PANEL



VT SECONDARY TERMINALS  
WIRING LABEL ON MULTICORE  
CABLE (SC 07211)



WIRING LABEL ON MULTICORE  
CABLE

ENERGEX - CUSTOMER  
INTERFACE BOUNDARY

PAGE 7-54-3D

STOCK CODE	QTY.
00408	1
01052	2
01080	1
01403	3
03639	2
17270	1
06142	1

TUBING 16mm  
03639

BAR, 8mm Cu  
01403

CONNECTOR - 06142

M10 WASHERS  
01080 & 01052

BOLT & NUT M10x45 SS  
00408

PHASE BUSHING

WILDLIFE PROTECTION HOODS  
17270

20750

EDO TO VT HV

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OVERHEAD CONSTRUCTION MANUAL

POLE MOUNTED PLANT

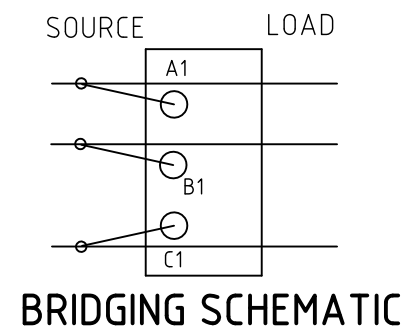
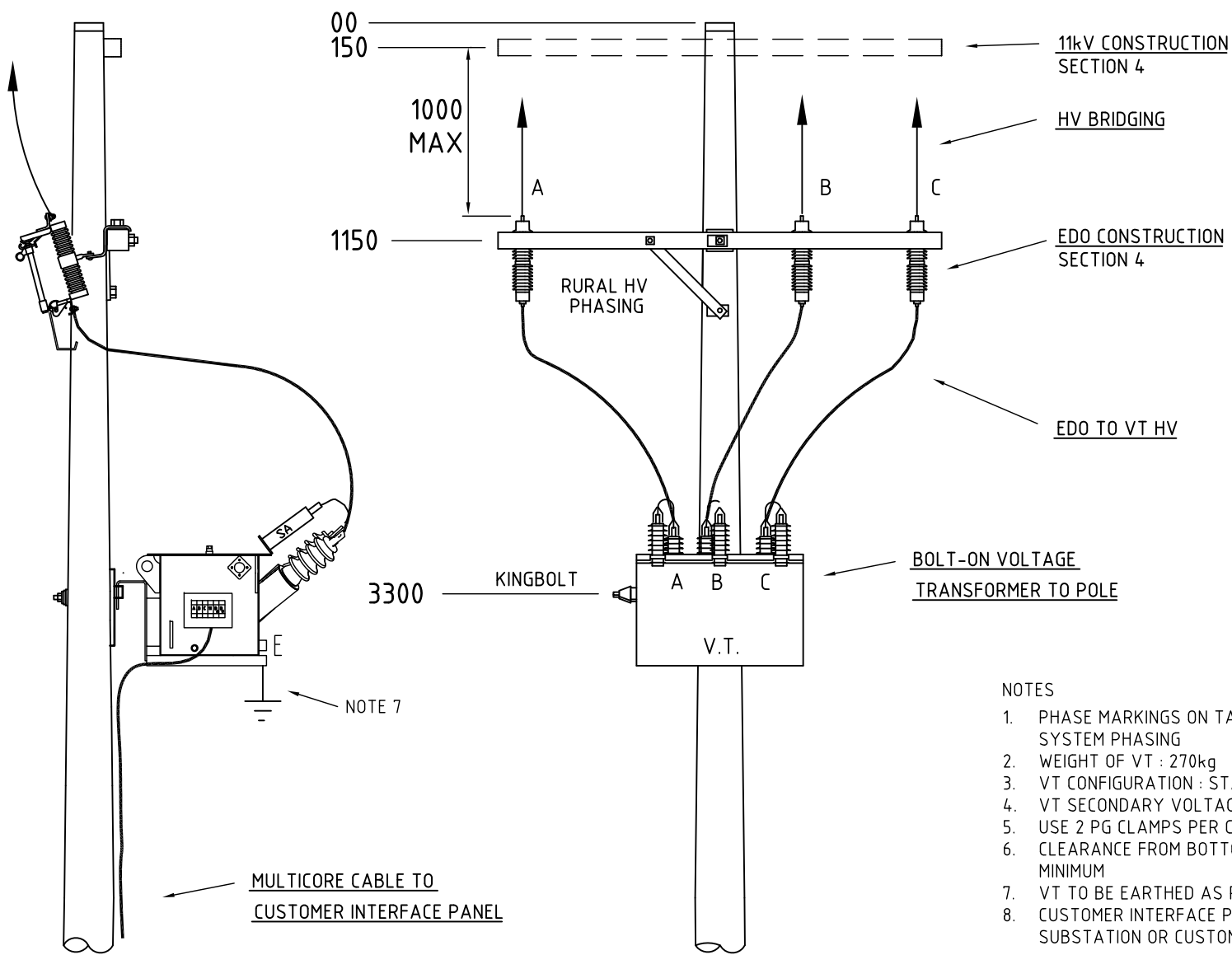
11VT

11kV VOLTAGE TRANSFORMER (WOOD POLE)

APP'D	C.LEE	TECH STDS	AUTOCAD
DATE	05/09/2014	4920-A4	A
REC'D		SECT	PAGE
CKD	A. ANAND	7	31
DWN	P. RELF	SHEET	1 OF 1
FILE:			

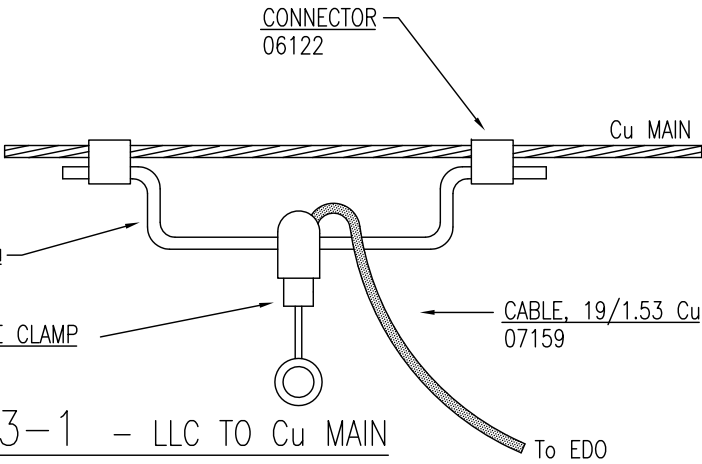
ORIGINAL ISSUE

A



- NOTES
1. PHASE MARKINGS ON TANK MAY NOT BE INDICATIVE OF ACTUAL SYSTEM PHASING
  2. WEIGHT OF VT : 270kg
  3. VT CONFIGURATION : STAR/STAR/OPEN DELTA
  4. VT SECONDARY VOLTAGE : 110V
  5. USE 2 PG CLAMPS PER CONNECTION ON A, B & C PHASES
  6. CLEARANCE FROM BOTTOM OF TANK TO SUBCIRCUIT IS 1.5 METRES MINIMUM
  7. VT TO BE EARTHED AS PER OHCM 7/605
  8. CUSTOMER INTERFACE PANEL TO BE WALL MOUNTED ON ENERGEX SUBSTATION OR CUSTOMER ELECTRICAL ROOM IN VICINITY OF VT

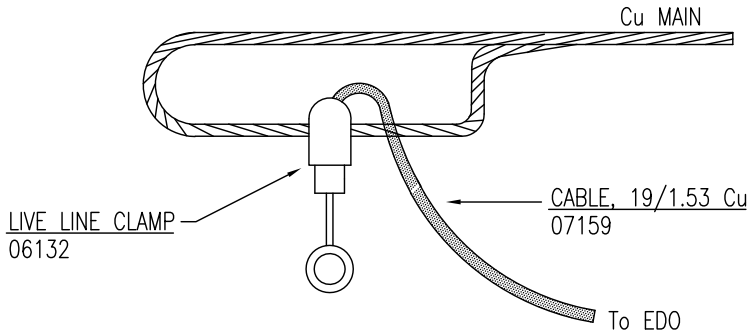
MATERIAL	-53-1	-53-5
I.I.No.		
01403	0.5	0.5
06122	1	
06132	1	1
07159	1.5	1.5
23302		2



PAGE 7-53-1 - LLC TO Cu MAIN

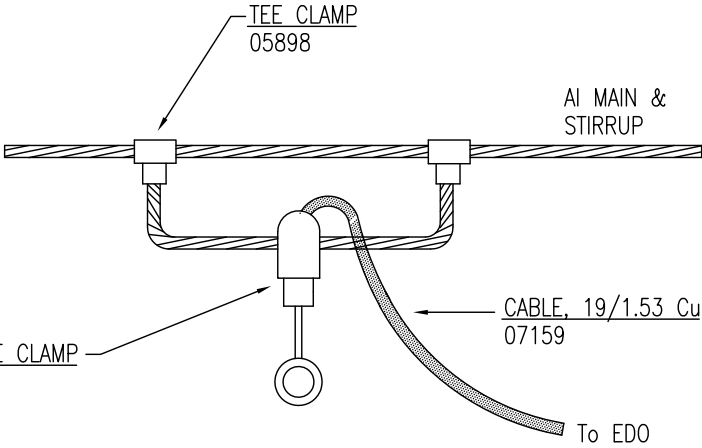
PAGE 7-53-5 - LLC TO 3/12 Steel MAIN

MATERIAL	
I.I.No.	QTY.
06132	1
07159	1.5



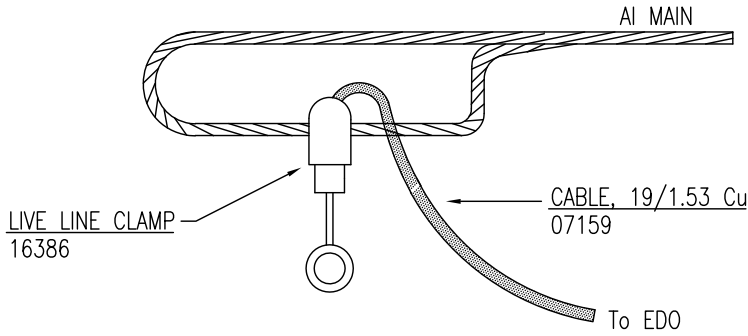
PAGE 7-53-2 - LLC TO Cu STIRRUP

MATERIAL	
I.I.No.	QTY.
05898	1
06132	1
07159	1.5



PAGE 7-53-3 - LLC TO AI MAIN & STIRRUP

MATERIAL	
I.I.No.	QTY.
07159	1.5
16386	1



PAGE 7-53-4 - LLC TO AI STIRRUP

ORIGINAL ISSUE	DATE	30/07/13	APP'D	F. ZAINI	CKD	P. RELF	DRN	P. RELF
B	D							

CU Page 7-53-5 ADDED  
TITLE BLOCK UPDATED

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OVERHEAD CONSTRUCTION MANUAL

POLE MOUNTED PLANT

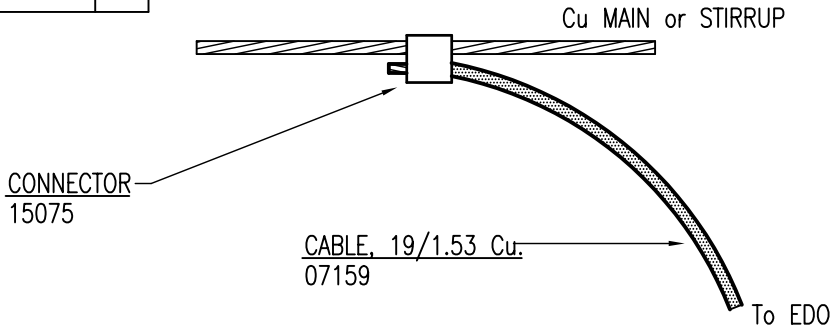
TRANSFORMER HV BRIDGING

SETS (OPEN WIRE)

APP'D	K.B.	TECH STDS	AUTOCAD
DATE	2-12-92	4920-A4	D
REC'D		SECT	PAGE
CKD		7	53
DWN	M.W.	SHEET	1 OF 1
		FILE:	

# MATERIAL

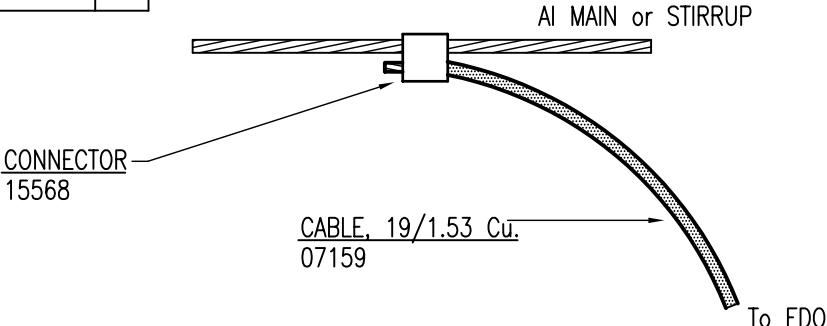
STOCK CODE	QTY.
07159	1.5
15075	1



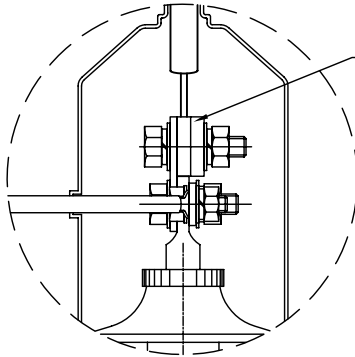
PAGE 7-54-1 - CONNECTOR TO Cu MAIN or STIRRUP

# MATERIAL

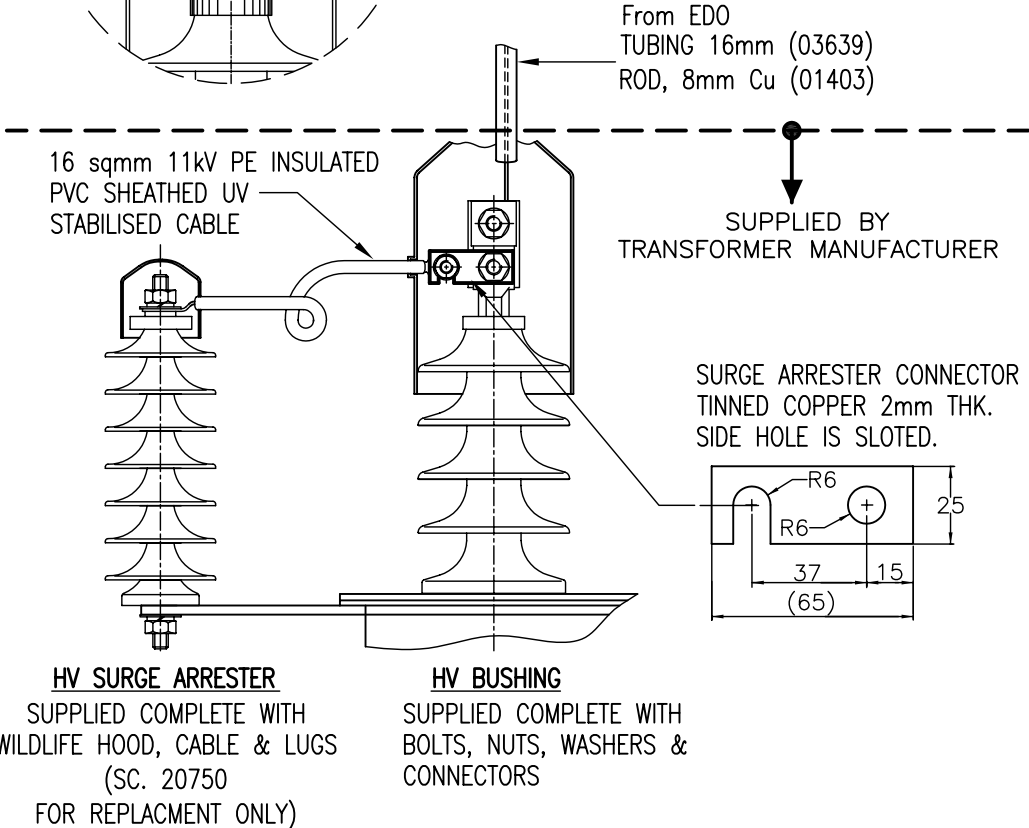
STOCK CODE	QTY.
07159	1.5
15568	1



PAGE 7-54-2 - CONNECTOR TO Al MAIN or STIRRUP



PALM TO ROD CONNECTOR  
(SINGLE ROD TO FLAT; COPPER ALLOY  
SOLDERLESS; 11mm HOLE; SUPPLIED BY  
TRANSFORMER MANUFACTURER;  
PATTERN STYLE TO BE AS AGREED BETWEEN  
MANUFACTURER AND ENERGEX. REFER  
DRAWING 141-A4).



PAGE 7-54-3 - HV BUSHING

ORIGINAL ISSUE	DATE	R. English	J. Tunney	Josip Sokac	HV SURGE ARRESTER AND BUSHING AMENDED.
A	E	APPD	CKD	DRN	

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OVERHEAD CONSTRUCTION MANUAL

POLE MOUNTED PLANT

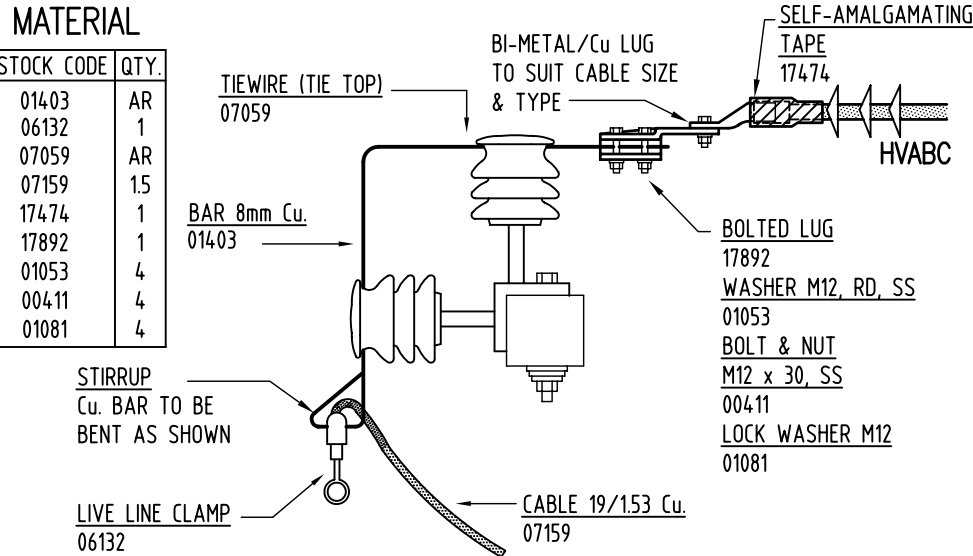
TRANSFORMER HV BRIDGING

SETS (OPEN WIRE)

APP'D	K.B.	S&SD	AUTOCAD
DATE	2-12-92	4920-A4	E
REC'D		SECT	PAGE
CKD		7	54
DWN	M.Welsh	SHEET	1 OF 1
FILE:DWG_OH\4920A4\57\pmp7-54.DWG			

# MATERIAL

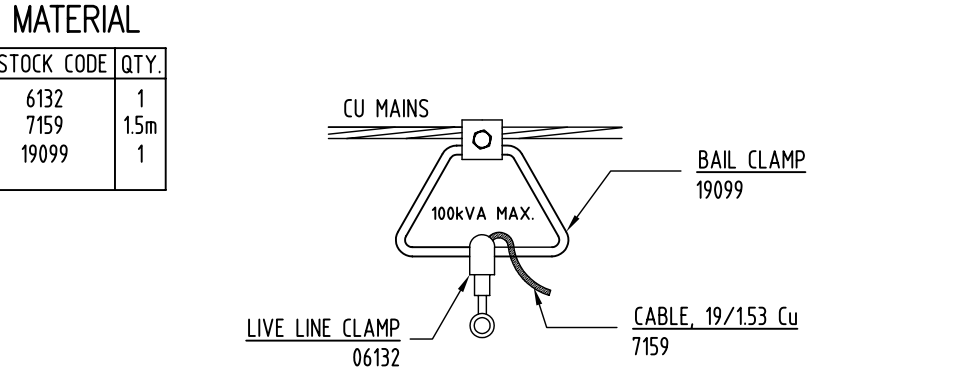
STOCK CODE	QTY.
01403	AR
06132	1
07059	AR
07159	1.5
17474	1
17892	1
01053	4
00411	4
01081	4



PAGE7-55-1 - LLC TO Cu BAR STIRRUP (HVABC)

# MATERIAL

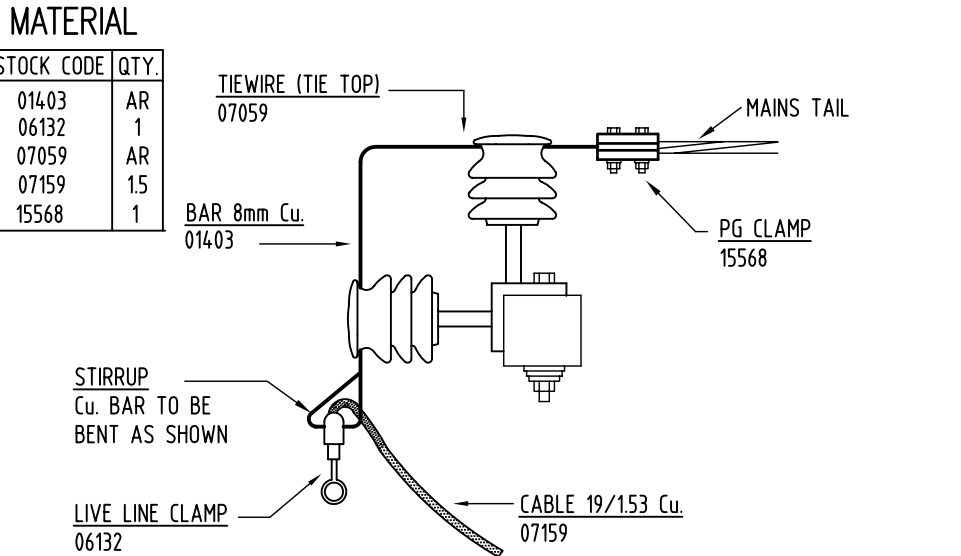
STOCK CODE	QTY.
6132	1
7159	1.5m
19099	1



PAGE7-55-3 - LLC TO BAIL (CU MAINS)

# MATERIAL

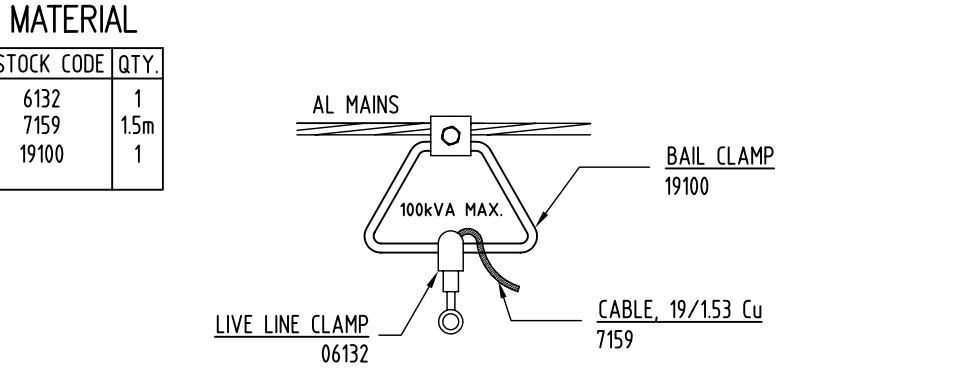
STOCK CODE	QTY.
01403	AR
06132	1
07059	AR
07159	1.5
15568	1



PAGE7-55-2 - LLC TO Cu BAR STIRRUP (OPEN WIRE)

# MATERIAL

STOCK CODE	QTY.
6132	1
7159	1.5m
19100	1



PAGE7-55-4 - LLC TO BAIL (AL MAINS)

MATERIAL LIST - 11BP

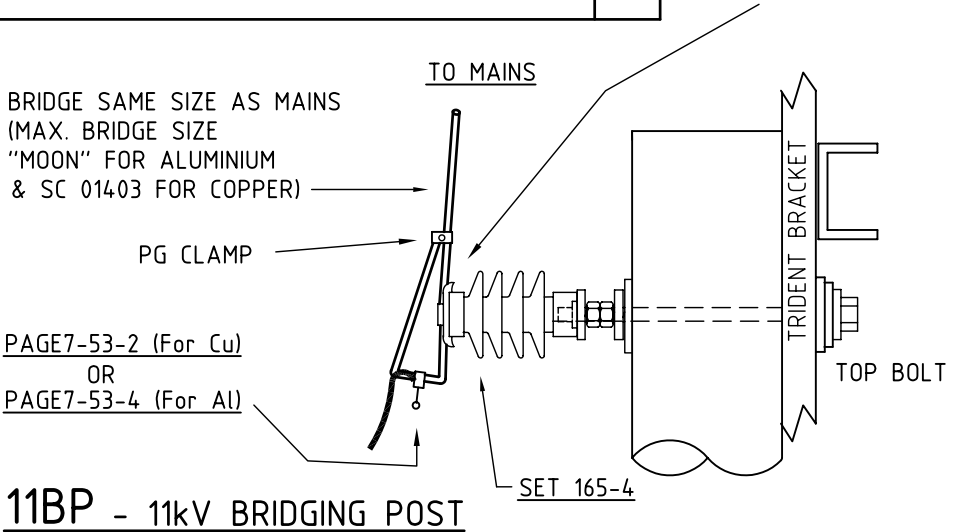
SET	STOCK CODE	DESCRIPTION	QTY
<u>11kV BRIDGING INSULATOR TO POLE</u>			
165-4	00614	NUT, M20	1
	01046	WASHER, M20, RD	1
	02601	NAIL PLATE	1
	08521	WASHER, M20, SQ	3
	10447	WASHER, M20, VOLUTE	1
	16384	11kV POST INSULATOR	1
	-	BOLT & NUT, M20 x AR	1
	16385	TRUNNION CLAMP Cu	AR
PAGE7-53-4	-	PG CLAMP (To suit bridging)	AR
	01403	Cu ROD 8mm	AR
OR			
PAGE7-53-2	LLC TO Cu STIRRUP		AR

16385  
TRUNNION CLAMP  
If Cu rod


BRIDGE SAME SIZE AS MAINS  
(MAX. BRIDGE SIZE  
"MOON" FOR ALUMINIUM  
& SC 01403 FOR COPPER)

PAGE7-53-2 (For Cu)  
OR  
PAGE7-53-4 (For Al)

11BP - 11kV BRIDGING POST



ORIGINAL ISSUE	DATE	RENGISH	John Tunney	John Tunney
A	27-7-09	APPD	CKD	DRN
MATERIAL LIST UPDATED 11BP AMENDED TO SHOW INSULATOR ATTACHES TO TOP TRIDENT BOLT				



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OVERHEAD CONSTRUCTION MANUAL

POLE MOUNTED CLAMP  
TRANSFORMER HV BRIDGING  
TRIDENT

APP'D	APPD	TECH STDS		AUTOCAD
DATE	DATE	4920-A4		H
REC'D	RECD	SECT	PAGE	
CKD	CKD	7	63	
DWN	DWN	SHEET 1 OF 1		
		FILE:		

## CU LIST -

	PAGE7-74-1	PAGE7-74-2	PAGE7-74-3	PAGE7-74-4
SET51-1	1	1	1	1
SET53-1	1	1	1	1
SET57-1	3			
SET57-2		3		
PAGE7-80-6	1	1	1	1
SET3-2			3	
SET58-2				3
21306 (xarm)	1	1	1	1

SET57-1630A ISOL TO X-ARM  
ORSET57-2800A ISOL TO X-ARM  
ORSET3-2630A FUSE SWITCH TO X-ARM  
ORSET58-2

800A FUSE SWITCH TO X-ARM

PAGE7-74-1

LV XARM, 630A ISOLATORS, &amp; N-BUS

PAGE7-74-2

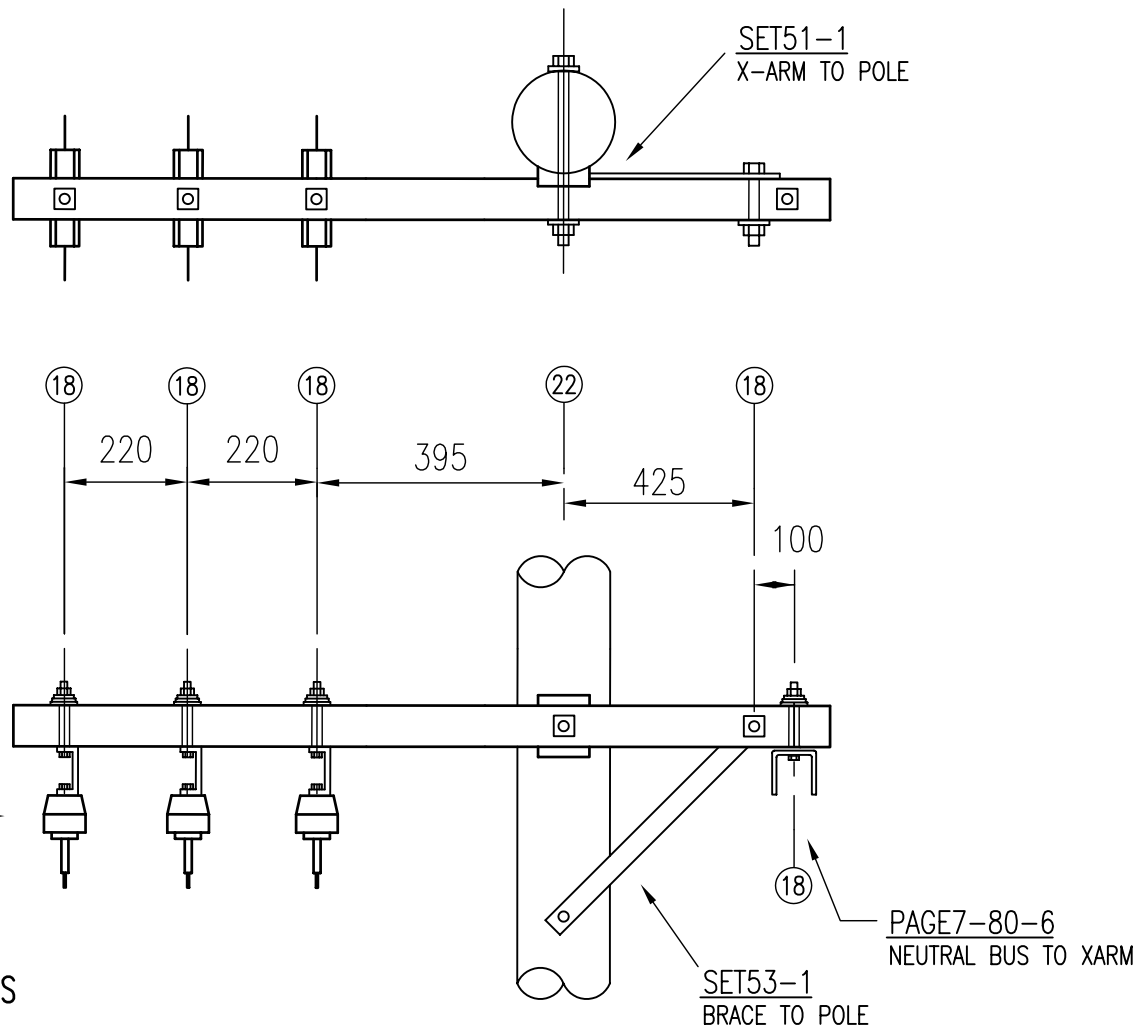
LV XARM, 800A ISOLATORS, &amp; N-BUS

PAGE7-74-3

LV XARM, 630A FUSE SWITCHES, &amp; N-BUS

PAGE7-74-4

LV XARM, 800A FUSE SWITCHES, &amp; N-BUS

XARM 21306  
100x100x1500

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## OVERHEAD CONSTRUCTION MANUAL

## POLE MOUNTED PLANT

## 25-500 KVA TRANSFORMERS

TRANSFORMER LV ISOLATION & NEUTRAL BUS  
SUPPLY TO LVABC - WOOD POLE

APP'D C.LEE

DATE 29-10-2007

REC'D

CKD J.TUNNEY

DWN J.TUNNEY

TECH STDS AUTOCAD

4920-A4 B

SECT

7

PAGE

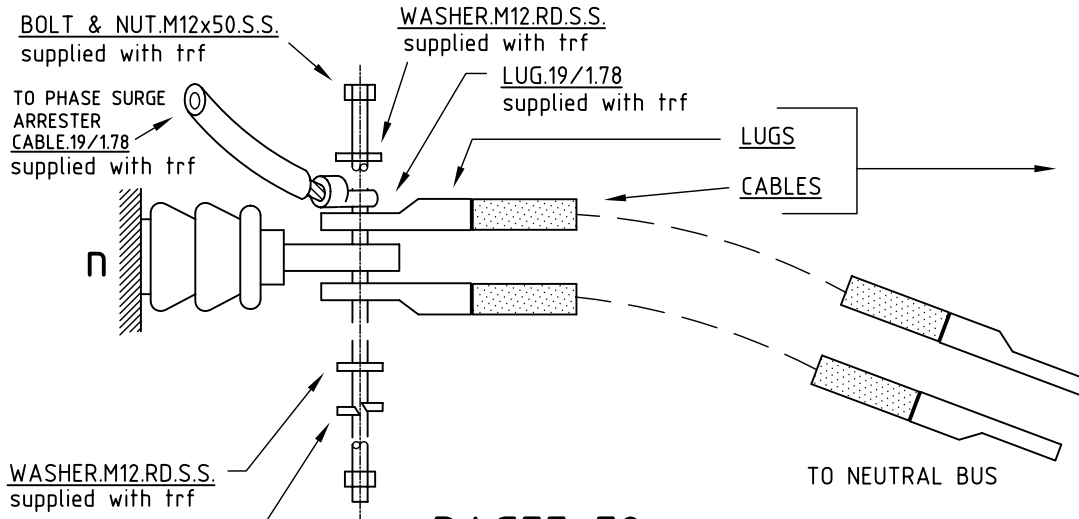
74

SHEET 1 OF 1

FILE:

ORIGINAL ISSUE	DATE	RENGUSH	John Tunney	John Tunney
A	B	APPD	CKD	DRN

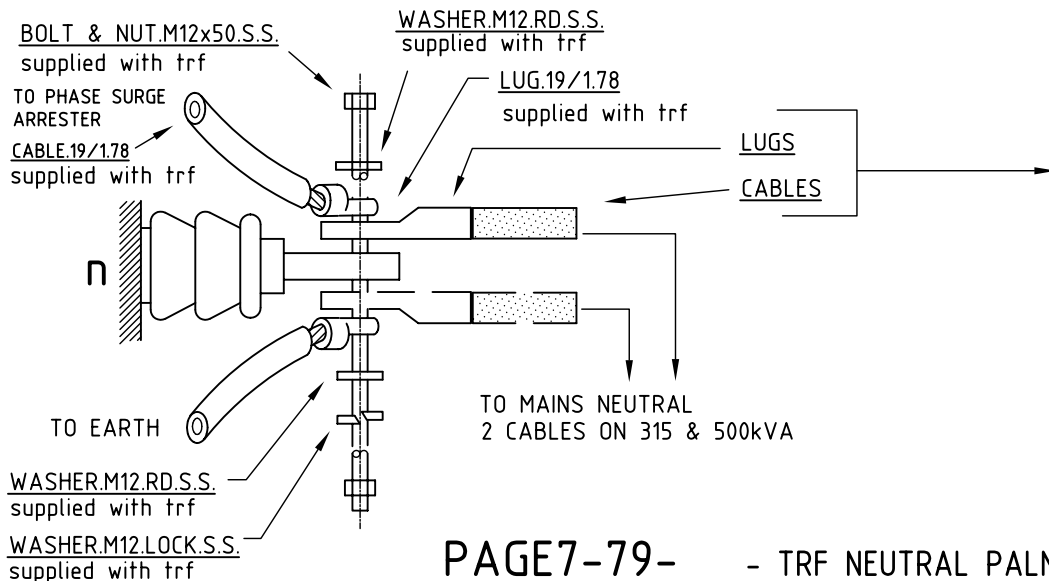
Updated for composite  
xarm & 800A fuse  
switches



PAGE7-79-

- TRF NEUTRAL PALM BRIDGING TO NEUTRAL BUS - LVABC NETWORK

PAGE7-79-11	25 & 63kVA	SC	QTY
	CABLE 2x35sqmm 19/1.53 Cu	07159	4
	LUGS 35sqmm 19/1.53 Cu	06257	4
PAGE7-79-12	100kVA		
	CABLE 2x35sqmm 19/1.53 Cu	07159	4
	LUGS 35sqmm 19/1.53 Cu	06257	4
PAGE7-79-13	200kVA		
	CABLE 2x50sqmm 19/1.78 Cu	07164	4
	LUGS 50sqmm 19/1.78 Cu	06259	4
PAGE7-79-14	315kVA		
	CABLE 2x95sqmm 37/1.78 Cu	07173	4
	LUGS 95sqmm 37/1.78 Cu	06263	4
PAGE7-79-15	500kVA		
	CABLE 2x120sqmm 37/2.03 Cu	07177	4
	LUGS 120sqmm 37/2.03 Cu	06265	4

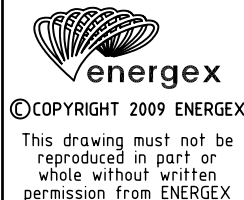


PAGE7-79-

- TRF NEUTRAL PALM BRIDGING TO MAINS NEUTRAL - OPEN WIRE NETWORK

PAGE7-79-16	25 & 63kVA	SC	QTY
	CABLE 1x35sqmm 19/1.53 Cu	07159	3
	LUGS 35sqmm 19/1.53 Cu	06257	1
PAGE7-79-17	100kVA		
	CABLE 1x50sqmm 19/1.78 Cu	07164	3
	LUGS 50sqmm 19/1.78 Cu	06259	1
PAGE7-79-18	200kVA		
	CABLE 1x95sqmm 37/1.78 Cu	07173	3
	LUGS 95sqmm 37/1.78 Cu	06263	2
PAGE7-79-19	315kVA		
	CABLE 2x95sqmm 37/1.78 Cu	07173	6
	LUGS 95sqmm 37/1.78 Cu	06263	2
PAGE7-79-20	500kVA		
	CABLE 2x120sqmm 37/2.03 Cu	07177	6
	LUGS 120sqmm 37/2.03 Cu	06265	2

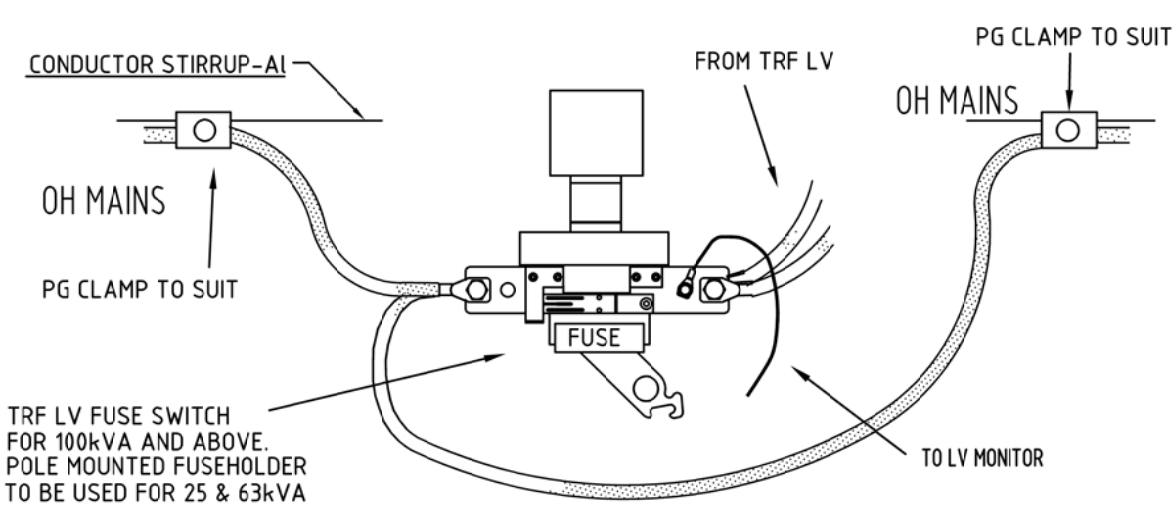
ORIGINAL ISSUE	DATE	REVISION	APP'D	CKD	DRN	25kVA trf added
A	23-7-09	RENGISH	John Tunney	John Tunney		
F						



OVERHEAD CONSTRUCTION MANUAL  
POLE MOUNTED PLANT  
NEUTRAL BRIDGING  
FROM TRANSFORMER NEUTRAL BUSHING PALM

APP'D	K.BALL	TECH STDS		AUTOCAD
DATE	02-12-92	4920-A4		F
REC'D		SECT	PAGE	
CKD		7	79	
DWN	M.WELSH	SHEET 1 OF 1		FILE:





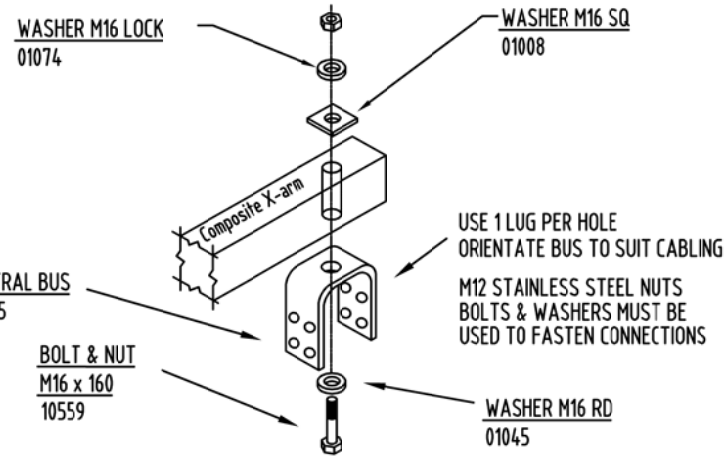
TRF LV FUSE SWITCH  
FOR 100kVA AND ABOVE.  
POLE MOUNTED FUSEHOLDER  
TO BE USED FOR 25 & 63kVA

PAGE7-80-11	25 & 63kVA (From Fuseholder)	SC	QTY
	CABLE 1x35sqmm 19/1.53 Cu	07159	1
PAGE7-80-12	100kVA		
	CABLE 1x50sqmm 19/1.78 Cu	07164	1
	LUG 50sqmm 19/1.78 Cu	06259	1
PAGE7-80-13	200kVA		
	CABLE 1x95sqmm 37/1.78 Cu	07173	1
	LUG 95sqmm 37/1.78 Cu	06263	1
PAGE7-80-14	315kVA		
	CABLE 2x95sqmm 37/1.78 Cu	07173	2
	LUGS 95sqmm 37/1.78 Cu	06263	2
PAGE7-80-15	500kVA		
	CABLE 2x185sqmm 37/2.52 Cu	07181	2
	LUGS 185sqmm 37/2.52 Cu	06266	2

## PAGE7-80 - - PHASE BRIDGING FROM FUSE-SWITCH TO OPEN WIRE MAINS

### MATERIAL

STOCK CODE	QTY
10559	1
01045	1
25075	1
01008	1
01074	1



## PAGE7-80-6 - NEUTRAL BUS 25-500kVA (LVABC)

LVABC

PAGE7-80-16	25 & 63kVA (Ph & Neutral to mains)	SC	QTY
	CABLES 4x95sqmm Al	-	AR
PAGE7-80-17	100kVA (Ph & Neutral to mains)		
	CABLES 4x95sqmm Al	-	AR
PAGE7-80-18	200kVA (Phases to circuit isolators)		
	CABLES 8x95sqmm Al	-	AR
PAGE7-80-19	315kVA (Phases to circuit isolators)		
	CABLES 12x95sqmm Al	-	AR
PAGE7-80-20	500kVA (Phases to circuit isolators)		
	CABLES 16x95sqmm Al	-	AR

## PAGE7-80 - PHASE & NEUTRAL BRIDGING FROM TRF ISOLATORS & N-BUS TO LVABC MAINS/CIRCUIT ISOLATORS

ORIGINAL ISSUE	DATE	APPD	CKD	DRN	PAGE7-80-6 UPDATED
M	05/10/2017	F. ZAINI	P. RELF	P. RELF	M-Bus updated from SC21249 to SC25075

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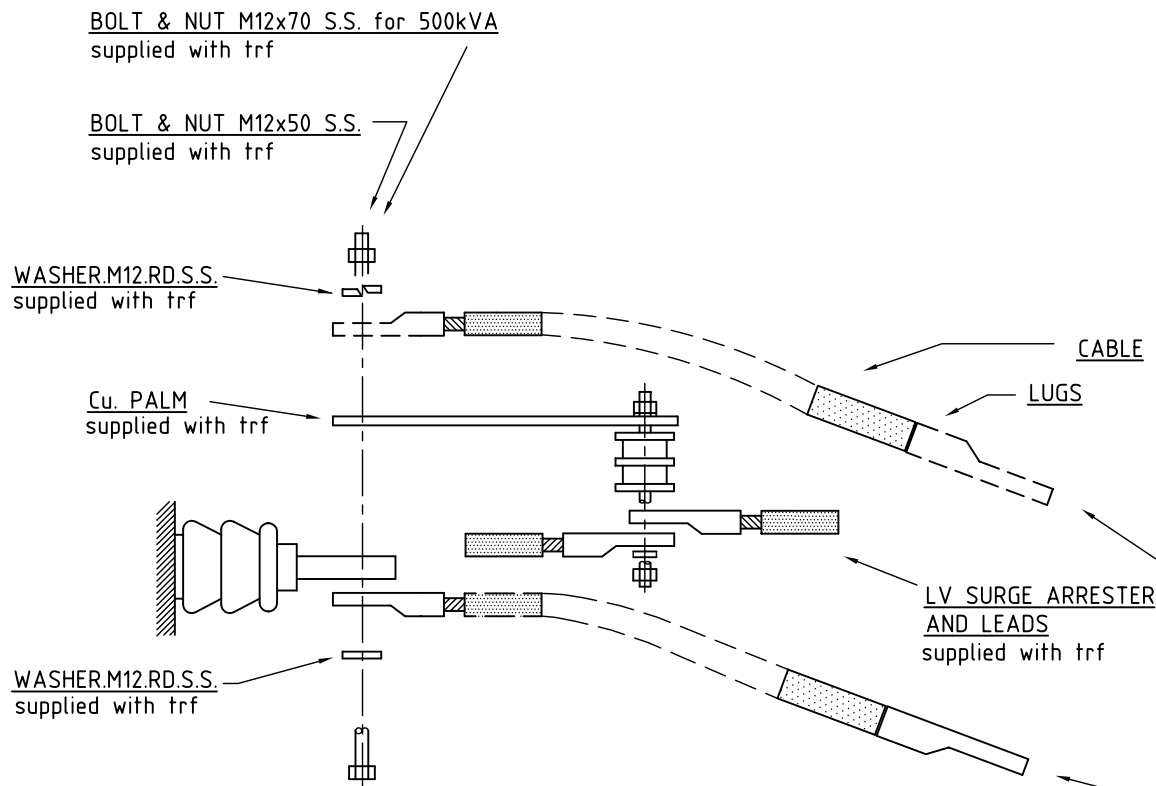
## OVERHEAD CONSTRUCTION MANUAL

### POLE MOUNTED PLANT

### PHASE BRIDGING AND NEUTRAL BUS BRIDGING FROM TRF ISOLATORS/FUSES TO MAINS

### NEUTRAL BUS TO CROSSARM (LVABC)

APP'D	K.BALL	TECH STDS	AUTOCAD
DATE	02-12-92	4920-A4	M
REC'D		SECT	PAGE
CKD		7	80
DWN	M.WELSH	SHEET	1 OF 1
		FILE:	




Note: Transformers are supplied with  
surge arresters fitted and wired.  
Actual arrangement may vary  
slightly to drawing.

PAGE7-81-11	25 & 63kVA LVABC	SC	QTY
	CABLE 1x35sqmm 19/1.53 Cu	07159	3
	LUGS 35sqmm 19/1.53 Cu	06257	2
PAGE7-81-12	100kVA OW & LVABC		
	CABLE 1x50sqmm 19/1.78 Cu	07164	3
	LUGS 50sqmm 19/1.78 Cu	06259	2
PAGE7-81-13	200kVA OW & LVABC		
	CABLE 2x95sqmm 37/1.78 Cu	07173	6
	LUGS 95sqmm 37/1.78 Cu	06263	4
PAGE7-81-14	315kVA OW & LVABC		
	CABLE 2x95sqmm 37/1.78 Cu	07173	6
	LUGS 95sqmm 37/1.78 Cu	06263	4
PAGE7-81-15	500kVA OW & LVABC		
	CABLE 2x185sqmm 37/2.52 Cu	07181	6
	LUGS 185sqmm 37/2.52 Cu	06266	4
PAGE7-81-16	25 & 63kVA OW & SERVICE		
	CABLE 1x35sqmm 19/1.53 Cu	07159	3
	LUGS 35sqmm 19/1.53 Cu	06257	1

TO 1PH ISOLATOR OR FUSEHOLDER/FUSE SWITCH  
2 CABLES PER PHASE ON 200kVA AND ABOVE

## PAGE 7-81- - TRF PHASE PALM TO ISOLATOR OR FUSE HOLDERS/FUSE SWITCH - OPEN WIRE AND LVABC NETWORK

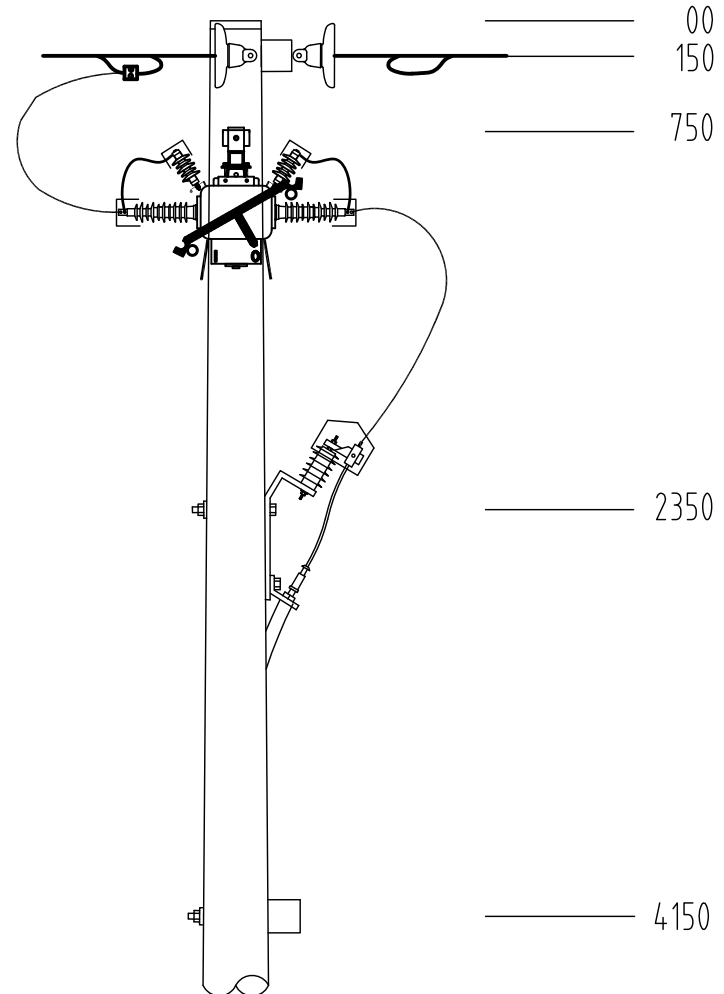
A	ORIGINAL ISSUE	DATE	29-04-2010	APPD	Roy English	CKD	John Tunney	DRN	John Tunney	LV arrester position revised. Note added.		<div><p>energex</p><p>© COPYRIGHT2010 ENERGEX</p><p>This drawing must not be reproduced in part or whole without written permission from ENERGEX</p></div>	OVERHEAD CONSTRUCTION MANUAL	APP'D	K.BALL	TECH STDS		AUTOCAD
													DATE	02-12-92	4920-A4		1	
													REC'D		SECT	PAGE		
													CKD		7	81		
													DWN	M.WELSH	SHEET OF OF			
													POLE MOUNTED PLANT	FILE:				
													PHASE BRIDGING					
													FROM TRANSFORMER PHASE BUSHING PALM					

11kV CONSTRUCTION

11LBSMPFF

11kV U.G. TERMINATION

L.V. CONSTRUCTION



NOTE:

1. 11LBSMPFFIS 7-100 FOR MORE DETAIL
2. 11kV U.G. POLE TERMINATION 4-28 FOR MORE DETAIL
3. UG CABLE ON OPPOSITE SIDE OF POLE TO SWITCH

ORIGINAL ISSUE

A



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OVERHEAD CONSTRUCTION MANUAL

11kV CONSTRUCTION

11LBSMP/UG POLE TERMINATION

APP'D R. ENGLISH

DATE 09/02/11

REC'D

CKD J. TUNNEY

DWN P. RELF

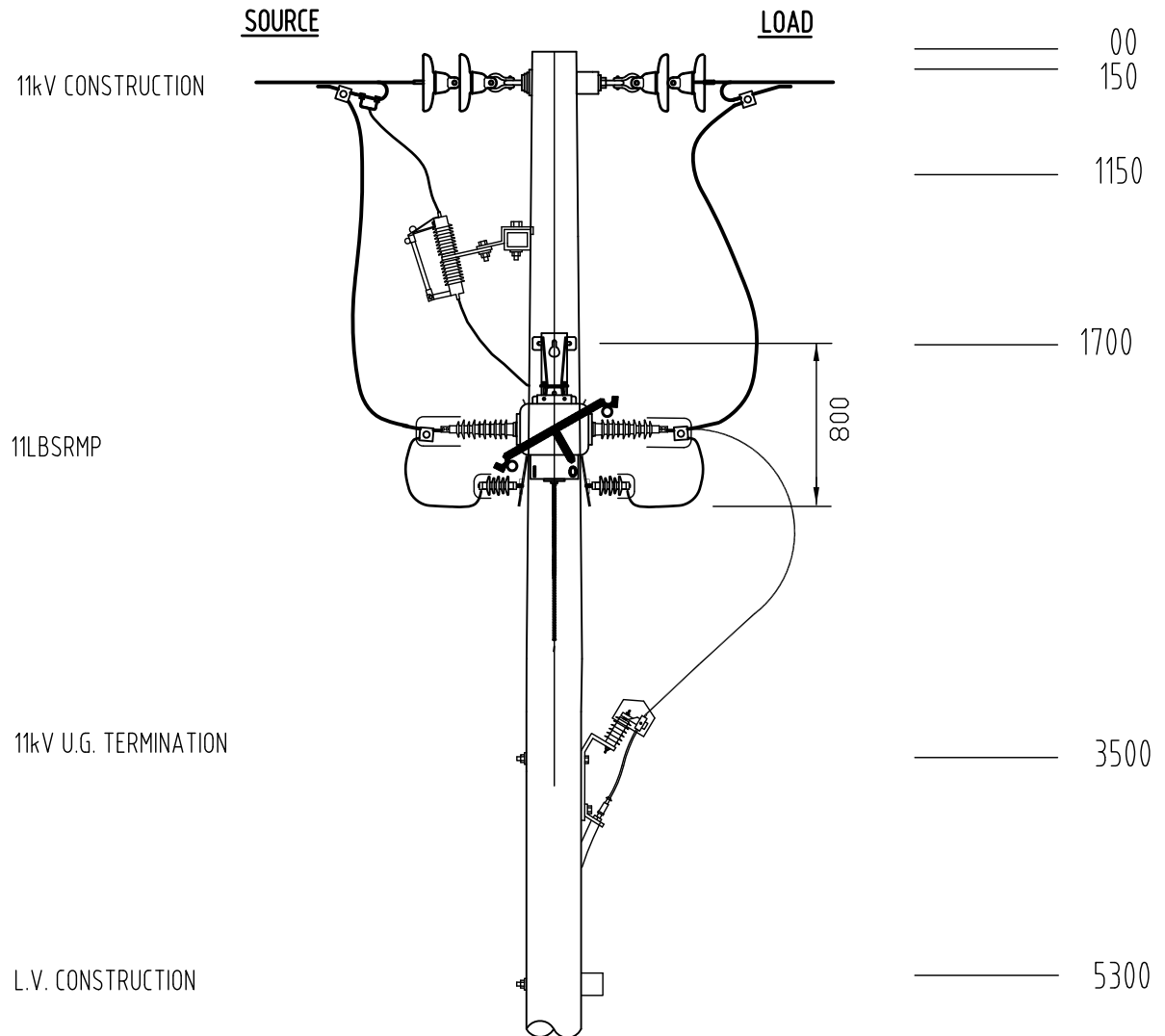
TECH STDS AUTOCAD

4920-A4 A

SECT 7 PAGE 82


SHEET 1 OF 1

FILE:



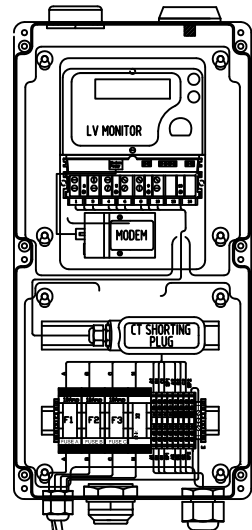
**NOTE:**

1. 11LBSRMP 7-402 FOR MORE DETAIL
2. 11kV U.G. POLE TERMINATION 4-28 FOR MORE DETAIL
3. UG CABLE ON OPPOSITE SIDE OF POLE TO SWITCH

A		ORIGINAL ISSUE		<div> energex</div> <div>©COPYRIGHT 2017 ENERGEX</div> <div>This drawing must not be reproduced in part or whole without written permission from ENERGEX</div>		OVERHEAD CONSTRUCTION MANUAL				APP'D		F. ZAINI		TECH STDS		AUTOCAD	
B		DATE				08/05/17		DATE				15/07/2016		4920-A4		B	
APPD		F. ZAINI						REC'D				F. PUTZOLU		SECT		PAGE	
CKD		P. RELF						CKD				P. RELF		7		83	
DRN		P. RELF						DWN				P. RELF		SHEET		1 OF 1	
UPDATED SWITCH TO 11LBSRMP AS PER ORIGINAL REQUIREMENT												FILE:					

# CU LIST -

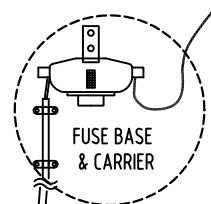
	LVFM	LVFMA
SET2-1	1	1
SET265-1	1	1
SET265-2A		1
22110	1	1
24208	1	1
21086	3	3
22313	3	3



MOUNT FUSES TO POLE AS NEAR AS POSSIBLE TO UNDERSIDE OF CROSSARM TO SUIT SPACE AND OPERATIONAL REQUIREMENTS

SET2-1 3 PH SERVICE FUSE BRACKET  
FUSE BASE & CARRIER 21086  
FUSE 20A 22313

VOLTAGE LEAD	PHASE
1 Rib <----->	A
2 Rib <----->	B
3 Rib <----->	C
Fully Ribbed = Neutral	



4C VOLTAGE LEADS

To Bracket Earth

1C EARTH LEAD

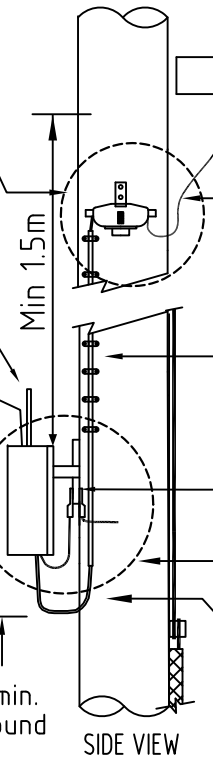
MOUNT MONITOR BOX AWAY FROM TRAFFIC SIDE OF POLE AS SPACE PERMITS

TOP OF MONITOR BRACKET AT LEAST 1.5m BELOW X-ARM TO ALLOW FOR SAFE ACCESS TO LV AND FUTURE BROADBAND CABLE.

MONITOR BOX SUPPLIED WITH EARTH LEADS TO BE CUT TO REQUIRED LENGTH AND LUGGED TO BRACKET EARTH

OPTIONAL ANTENNA  
SET265-2A

VOLTAGE MONITOR BOX  
SC 24208



To LV Mains  
Voltage Cable  
16sqmm Cu

Voltage Cable (NOTE 1)  
6sqmm Cu 4C in 25mm  
corrugated conduit 22110

SET265-1  
BRACKET TO POLE

Earthing (NOTES 2 & 3)

Any excess cable to be  
coiled in 300 mm loops &  
secured to mounting bracket

## NOTES:

1. Voltage cable supplied with Monitor Box.
2. Bracket to be connected to LV earth - refer to drawings 3-251 and 3-252 for earthing
3. If Voltage monitor is used on poles with existing HV plant, refer to drawings 7-601 and 7-602 for earthing
4. Refer to Work Practice WP1007 for installation & commissioning procedures
5. Bracket - refer to drawing 1-265

ORIGINAL ISSUE	DATE	APP'D	CKD	DRN	Updated service cable to 16mm
A	23/03/2016	J. LANSLEY	I. KAPLAN	P. RELF	



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## OVERHEAD CONSTRUCTION MANUAL

### POLE MOUNTED PLANT

LVFM, LVFMA  
LOW VOLTAGE FEEDER MONITOR  
(WOOD POLE)

APP'D	F. ZAINI	TECH STDS		AUTOCAD
DATE	17/09/15	4920-A4		C
REC'D	P.SCHRADER	SECT	PAGE	
		7	90	
CKD	I.KAPLAN	SHEET 1 OF 1		
DWN	P.RELF	FILE:		

MATERIAL LIST – MDIW

SET	I.I.No.	DESCRIPTION	QTY
MDI TO WOOD POLE			
57-4	00684	COACHSCREW, M12 x 90	2
	05055	BRACKET, MOUNTING MDI	1
	05063	INDICATOR, MAXIMUM DEMAND	1
WIRING CONNECTION TO C.T.			
	04574	CT, 800/300/200/5	3
	04691	CABLE, GLAND	1
	04927	SADDLE, CONDUIT, 16mm	5
	06271	TERMINAL LUG, 2.5mm <sup>2</sup>	10
	06486	CABLE TIES	AR
	07111	CABLE, 2.5mm <sup>2</sup> 4c	8
	09867	TERMINAL LUG, 2.5mm <sup>2</sup>	4
	10490	SPIRAL WRAP TUBING	2
	11430	NAIL, 30mm LONG	AR

NOTES :

1. In the CT Connection of the following transformer sizes, one is made the common connection and the other the active connection.

63kVA – S2,S3 = 100/5 Ratio

100kVA – S1,S2 = 200/5 Ratio

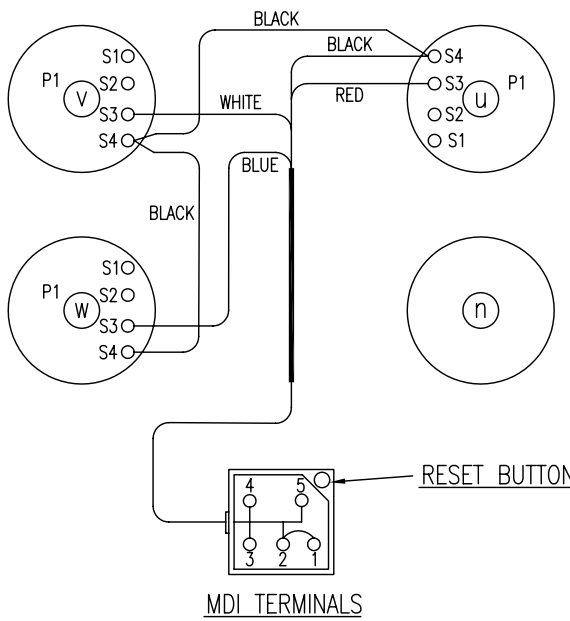
200kVA – S1,S3 = 300/5 Ratio

315kVA – S3,S4 = 500/5 Ratio

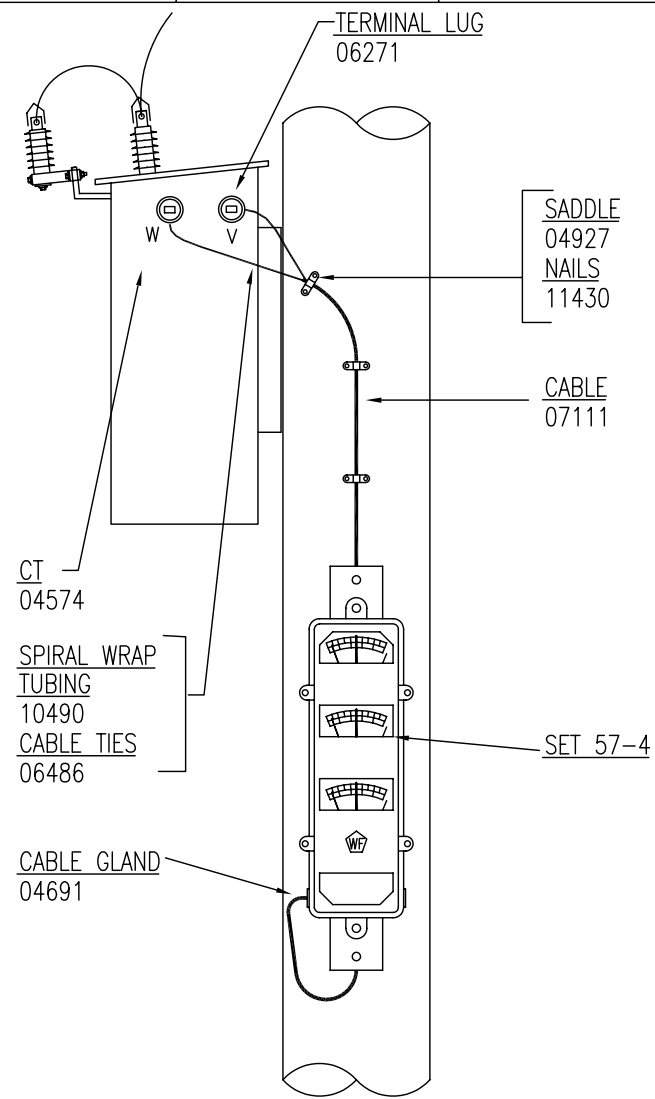
500kVA – S1,S4 = 800/5 Ratio

CONNECTION  
FOR  
315kVA TRANSFORMER  
SHOWN (NOTE 1)

WIRING SCHEMATIC



- TERMINAL CONNECTIONS
- 1 & 2 – NORMAL BRIDGE
  - 2 – COMMON (BLACK)
  - 3 – 'a' PHASE (RED)
  - 4 – 'b' PHASE (WHITE)
  - 5 – 'c' PHASE (BLUE)



A	ORIGINAL ISSUE		
B	DATE	31-5-94	
	APP'D	P. Pearl.	
	CKD	R. Walker.	
315kVA WAS 300kVA SURGE ARRESTER AMENDED			
C	DATE	31/5/96	
	APP'D	P. Rainbird	
	CKD	G. Dowling	
Material list amended. Drawing now shows Bolt-on Transformer.			

**SEQEB**

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SEQEB OVERHEAD CONSTRUCTION MANUAL

**POLE MOUNTED PLANT**

MDIW (WOOD POLE)

MDI CONSTRUCTION & CONNECTION

APP'D	K.B.	P&SD. C.A.D.	
DATE	2-12-92	4920-A4	
REC'D			
CHK			
DWN	M.WELSH.		
SECT		PAGE	
7		91	

# IMPORTANT NOTE:

1. ENSURE Voltage Leads are connected so that it is on the SAME phase that the CT is measuring.  
( REGARDLESS of phase configuration )

VOLTAGE LEAD      CT LEAD      LV BUSHING

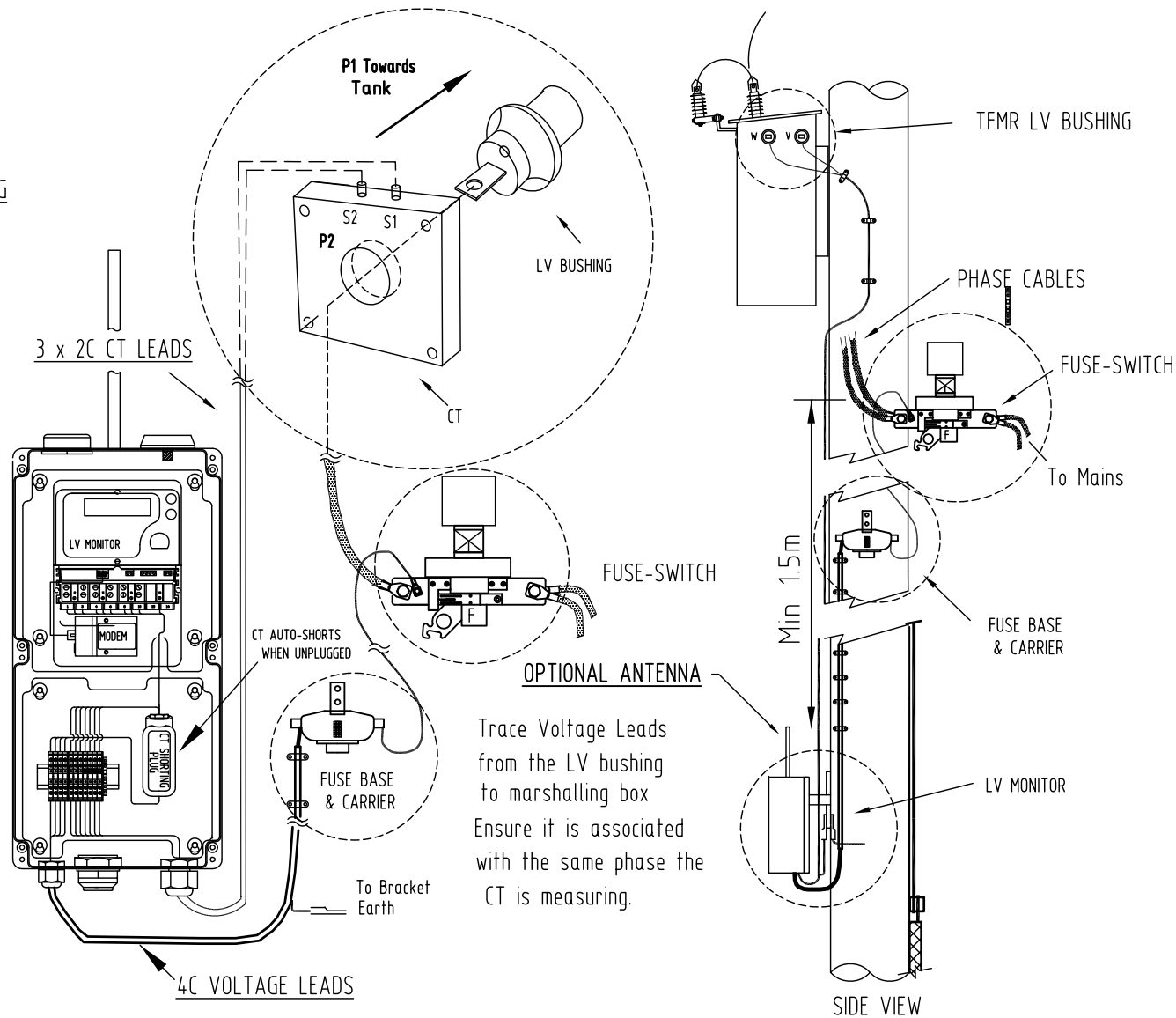
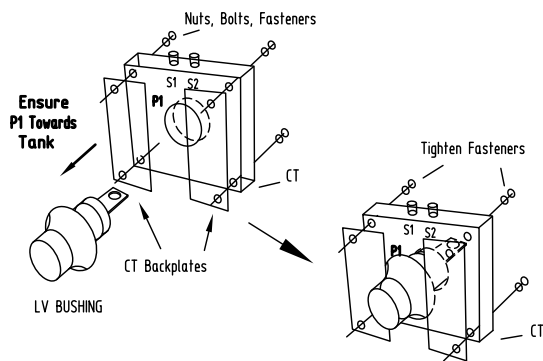
- |       |               |                |
|-------|---------------|----------------|
| 1 Rib | <-----> RED   | <-----> U or A |
| 2 Rib | <-----> WHITE | <-----> V or B |
| 3 Rib | <-----> BLUE  | <-----> W or C |

2. Fully Ribbed = Neutral

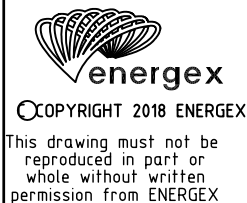
3. Refer To 7-93 for Construction Details

4. Refer to Work Practice WP1007 for  
installation & commissioning procedures

5. DWG 26806-A3 for Monitor Box details



ORIGINAL ISSUE	DATE	APPD	CKD	DRN	INTERNAL ARRANGEMENT CHANGED TO MATCH 2017 MODEL MONITORS TITLE BLOCK UPDATED
A	D	APPD	CKD	DRN	
		F Zaimi		L Burton	



## OVERHEAD CONSTRUCTION MANUAL

### POLE MOUNTED PLANT

### LV TRANSFORMER MONITOR

### CT WIRING ARRANGEMENT

### SINGLE BOX VERSION (2017)

APP'D	C.LEE	TECH STDS	AUTOCAD
DATE	02/08/13	4920-A4	D
REC'D		SECT	PAGE
CKD	P.RELF	7	92
DWN	J.CHUNG	SHEET	1 OF 1
		FILE:	

# PT STATION MONITOR CU LIST

	NEW PT	RETROFIT PT		
	All Sizes	25-63kVA	100-315kVA	500kVA
Wood Pole	PTSMNW500	PTSMRW63	PTSMRW200	PTSMRW500
Concrete Pole	PTSMNC500	PTSMRC63	PTSMRC200	PTSMRC500

## DETAIL CU LIST

		New Wood	New Concr	Wood Retrofit			Concrete Retrofit		
		PTSMNW500	PTSMNC500	PTSMRW63	PTSMRW200	PTSMRW500	PTSMRC63	PTSMRC200	PTSMRC500
Bracket	SET265-1	1		1	1	1			
	SET265-1C		1				1	1	1
	SET265-2	1	1	1	1	1	1	1	1
Pole accessories	SET94-1	1	1	1	1	1	1	1	1
	04930	30		30	30	30			
	23001		6				6	6	6
	08540		20				20	20	20
	06271			6	6	6	6	6	6
	06486			AR	AR	AR	AR	AR	AR
	11430	AR		AR	AR	AR			
	20707		AR				AR	AR	AR
Monitor Kits	23344	Included with New Transformer		1			1		
	22995				1			1	
	22996					1			1

SET94-1 required on all types

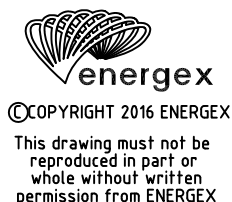
	SET94-1
SET2-1	1
00184	3
01044	3
06247	1
15125	3
21086	3
22313	3
22110	5 (m)

All monitor kits include 3 sets of CTs

### SC FOR INDIVIDUAL CT ONLY

23015	100/5 45mm Hole - suits 25-63kVA
21716	800/5 45mm Hole - suits 100kVA Wilson
23014	800/5 60mm Hole - suits 100-315KVA
23016	800/5 90mm Hole - suits 500KVA

A	ORIGINAL ISSUE	DATE	17/03/2016
	APP'D	J. LANSLEY	
	CKD	I. KAPLAN	
	DRN	P. RELF	
VOLTAGE CABLE FROM LINKS TO FUSES CHANGED TO 16mm			



OVERHEAD CONSTRUCTION MANUAL  
POLE MOUNTED PLANT  
PTSM  
PT STATION MONITOR 2013 CU LIST

APP'D	R. ENGLISH	TECH STDS	AUTOCAD
DATE	16/02/11	4920-A4	1
REC'D		SECT	PAGE
CKD	J. TUNNEY	7	93
DWN	P. RELF	SHEET	1 OF 1
FILE:			





## CU LIST -

11LBSPTFF

SET256-1	1
22437	1
22438	1
00411	1
01053	1
01081	1
22559	2
PG Clamps	AR

Mass of switch (fully fitted): 103 kg  
 Mass of bracket : 30 kg  
 Max Load Break : 630A @ 0.7 pf  
 APPROVED ISOLATION POINT

## EARTHING (NOT INCLUDED IN 11LBSPTFF)

**HVE** : SEPARATE EARTH SYSTEM (SEE PAGE 605)  
**HVEC** : COMMON EARTH SYSTEM (SEE PAGE 605)

Surge Arresters (supplied)

Rear Pointer

Insulated Copper Bridging (supplied)  
 (125 sqmm Cu)

PG CLAMPS  
 to suit mains  
 Refer Sect 8

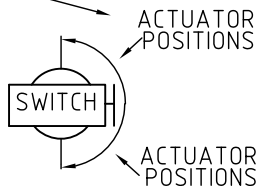
22559

WILDLIFE GUARD  
 Install each side of switch  
 on middle phase insulator/s  
 to manufacturer's instructions

Pole Earth Downlead  
 19/1.78 Cu PVC

Connecting rod guide  
 (Install 1/2 way between switch  
 & actuator )

INSTALL ACTUATOR TO  
 ALLOW SAFE OPERATION  
 FROM FOOTPATH



Remove "J" Bolts & Straps and return  
 to local depot store.

22437  
 LOAD BREAK SWITCH

FOOTPATH SIDE

## Earth Connection

(Actual fitment is to RHS side of switch)

**BOLT & NUT M12x30**  
 00411  
**WASHER M12 RD**  
 01053  
**WASHER M12 LOCK**  
 01081

SET256-1

SWITCH TO BRACKET TO POLE (includes actuator coupling)

Pre-fitted switch earth downlead.  
 (Actual fitment is to RHS side of bracket)

Connect pole downlead to switch earth downlead  
 (Remove/replace ex nut and washers for connection)

Actuator connecting rod (insulated)  
 Supplied as 5m length  
 (Cut rod to desired length if required)  
 Refer SET256-1 for connection diagram



CMEN area connection  
 if available

22438 REMOTE ACTUATOR + 5m ROD  
 Link stick operated  
 Refer installation instructions  
 Min. mounting height 4m

Actuator may be mounted up to 90 degrees  
 in either direction around pole provided rod  
 does not interfere with other pole equipment  
 or hardware and switch can be operated freely.

ORIGINAL ISSUE	DATE	22-12-2011	APPD	RENGISH	CKD	J.TUNNEY	DRN	J.TUNNEY	PG clamps now "AR"	Bracket now supplied with earth lead
A	C									



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## OVERHEAD CONSTRUCTION MANUAL

## POLE MOUNTED PLANT

11LBSPTFF

11kV MANUALLY OPERATED LOAD BREAK SWITCH  
 POLE TOP MOUNTED - NGK FULLY FITTED

APP'D ROY ENGLISH

DATE 11-08-2011

REC'D

CKD J.TUNNEY

DWN John Tunney

TECH STDS AUTOCAD

4920-A4 C

SECT PAGE

7 95

SHEET 1 OF 1

FILE:

## CU LIST -

11LBSMPFF

SET256-2	1
22437	1
22438	1
PG Clamps	AR

SWITCH MAY BE FITTED TO  
FOOTPATH OR ROAD SIDE  
TO SUIT SITE AND OPERATOR  
REQUIREMENTS

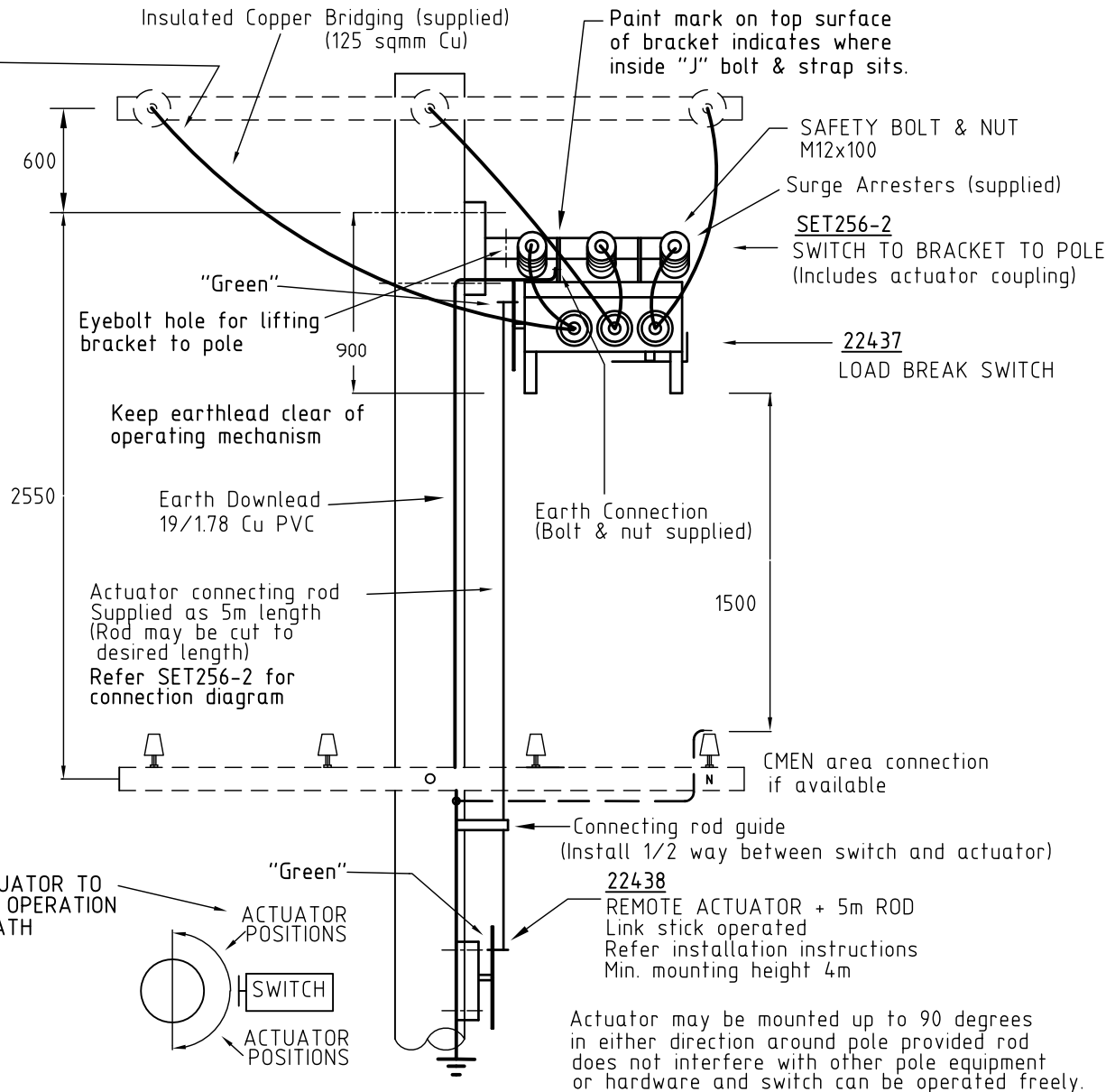
Mid pole actuator mechanism  
is included with material  
issue for this construction but  
should only be used if switch  
is mounted beyond reach  
of link stick.  
Unused actuator mechanisms  
must be returned to store.  
Mid pole actuator: sc 22438

Mass of Switch (fully fitted): 103 kg  
Mass of Bracket : 18 kg  
Max Load Break : 630A @ 0.7 pf  
APPROVED ISOLATION POINT

EARTHING (NOT INCLUDED IN 11LBSMPFF)

HVE : SEPARATE EARTH SYSTEM (SEE PAGE 605)  
HVEC : COMMON EARTH SYSTEM (SEE PAGE 605)

PG CLAMPS  
to suit mains  
Refer Sect 8



ORIGINAL ISSUE	DATE	22-12-2011	APPD	RENGISH	CKD	J.TUNNEY	DRN	J.TUNNEY	PG clamps now "AR" KBS was 2400, now 2550
A	C								



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## OVERHEAD CONSTRUCTION MANUAL

## POLE MOUNTED PLANT

## 11LBSMPFF

11kV MANUALLY OPERATED LOAD BREAK SWITCH  
MID POLE MOUNTED - NGK FULLY FITTED

APP'D ROY ENGLISH

DATE 11-08-2011

REC'D

CKD J.TUNNEY

DWN John Tunney

TECH STDS AUTOCAD

4920-A4 C

SECT PAGE

7 96

SHEET 1 OF 1

FILE:

## CU LIST -

11LBSPT

SET270-3 1

SET272-2 1

19920 1

20279 12m

19938 1

00412 6

01081 6

09945 6

05893 6

00190 1

SWITCH MAY BE FITTED TO  
FOOTPATH OR ROAD SIDE  
TO SUIT SITE AND OPERATOR  
REQUIREMENTS.

NORMAL FITMENT IS  
SWITCH TO FOOTPATH SIDE

Eyebolt hole for lifting  
bracket to pole

Earth Connector

Earth Lead  
19/1.78 Cu PVC

20279  
CCT BRIDGING

05893  
PG CLAMP  
to suit Al mains  
otherwise refer  
sect 8 page 33

Resting plate

IN AREAS WHERE CCT MAINS EXIST  
AND PG CLAMP IS NOT REQUIRED  
STRIP SMALL SECTION OF CCT ON  
EACH PHASE TO ALLOW FOR PHASING OUT

Paint mark on top surface  
of bracket indicates where  
inside "U" bolt sits.

SET270-3  
POLE TOP MOUNTING BKT

00190

SAFETY BOLT & NUT M12x100

19920

LOAD BREAK SWITCH

00412

BOLT & NUT M12x40

01081

LOCK WASHER M12

09945

TERMINAL LUG 120sqmm

Surge arrester leads  
to be connected to  
inside hole of  
switch palms

Mass of switch : 75 kg  
Mass of bracket : 35 kg  
Max Load Break : 630A @ 0.7 pf  
APPROVED ISOLATION POINT

Connecting rod guide  
(Install 1/2 way between switch  
& actuator )

INSTALL ACTUATOR TO  
ALLOW SAFE OPERATION  
FROM FOOTPATH

Earth Connector

Earth Downlead  
19/1.78 Cu PVC

Actuator connecting rod (insulated)  
Supplied as 6m length  
(Cut rod to desired length if required)



CMEN area connection  
if available

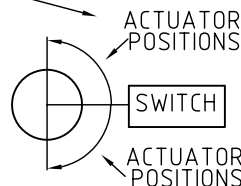
19938 MID POLE ACTUATOR + 6m ROD  
Link stick operated  
Refer installation instructions  
Min. mounting height 4m

Actuator may be mounted up to 90  
degrees in either direction around pole  
provided rod does not interfere with  
other pole equipment or hardware.

EARTHING (NOT INCLUDED IN 11LBSPT)

HVE : SEPARATE EARTH SYSTEM (SEE PAGE 605)

HVEC : COMMON EARTH SYSTEM (SEE PAGE 605)



A	ORIGINAL ISSUE	
	DATE	30-6-2010
C	APPD	RENGISH
	CKKD	J.TUNNEY
	DRN	J.TUNNEY
Note added regarding position of actuator for safe operation		

Note added regarding  
position of actuator  
for safe operation



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## OVERHEAD CONSTRUCTION MANUAL

## POLE MOUNTED PLANT

## 11LBSPT

11kV MANUALLY OPERATED LOAD BREAK SWITCH  
POLE TOP MOUNTED - NGK

APP'D	R. ENGLISH	TECH STDS		AUTOCAD
DATE	30-01-2008	4920-A4		C
REC'D		SECT	PAGE	
		7	97	
CKD	J. TUNNEY	SHEET 1 OF 1		
DWN	GJ	FILE:		

## CU LIST -

11LBSMP

SET270-4	1
SET272-2	1
19920	1
20279	12m
21269	1
00412	6
01081	6
09945	6
05893	6
00190	1

IN AREAS WHERE CCT MAINS EXIST  
AND PG CLAMP IS NOT REQUIRED  
STRIP SMALL SECTION OF CCT ON  
EACH PHASE TO ALLOW FOR PHASING OUT

SWITCH MAY BE FITTED TO  
FOOTPATH OR ROAD SIDE  
TO SUIT SITE AND OPERATOR  
REQUIREMENTS

Mid pole actuator mechanism  
is included with material  
issue for this construction but  
should only be used if switch  
is mounted beyond reach  
of link stick.  
Unused actuator mechanisms  
must be returned to store.  
Mid pole actuator: sc 21269

Mass of Switch : 75 kg  
Mass of Bracket : 18 kg  
Max Load Break : 630A @ 0.7 pf  
APPROVED ISOLATION POINT

EARTHING (NOT INCLUDED IN 11LBSMP)

HVE : SEPARATE EARTH SYSTEM (SEE PAGE 605)  
HVEC : COMMON EARTH SYSTEM (SEE PAGE 605)

05893  
PG CLAMP  
to suit AI mains  
otherwise refer  
sect 8 page 33

20279  
CCT BRIDGING

Paint mark on top surface  
of bracket indicates where  
inside "U" bolt sits.

00190  
SAFETY BOLT & NUT  
M12x100

SET270-4  
MID POLE BKT TO POLE

19920  
LOAD BREAK SWITCH

00412  
BOLT & NUT M12x40  
01081  
LOCK WASHER M12  
09945  
TERMINAL LUG 120sqmm

Surge arrester leads  
to be connected to  
inside hole of  
switch palms

CMEN area connection  
if available

Connecting rod guide  
(Install 1/2 way between switch and actuator)

21269  
MID POLE ACTUATOR + 4m ROD  
Link stick operated  
Refer installation instructions  
Min. mounting height 4m

Actuator may be mounted up to 90  
degrees in either direction around pole  
provided rod does not interfere with  
other pole equipment or hardware.

450

2900

1500

S/S cable tie

Eyebolt hole for lifting  
bracket to pole

Keep earthlead clear of  
operating mechanism

Earth Downlead  
19/1.78 Cu PVC

Actuator connecting rod  
Supplied as 4m length  
(Rod may be cut to  
desired length)

INSTALL ACTUATOR TO  
ALLOW SAFE OPERATION  
FROM FOOTPATH

ACTUATOR  
POSITIONS

SWITCH

ACTUATOR  
POSITIONS



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## OVERHEAD CONSTRUCTION MANUAL

POLE MOUNTED PLANT

## 11LBSMP

11kV MANUALLY OPERATED LOAD BREAK SWITCH  
MID POLE MOUNTED - NGK

APP'D	R.ENGISH	TECH STDS	AUTOCAD
DATE	30-01-2008	4920-A4	D
REC'D		SECT	PAGE
CKD	J.TUNNEY	7	98
DWN	GJ	SHEET	1 OF 1
		FILE:	

## CU LIST -

11LBSP TFFIS

SET266-1	1
23483	1
23484	1
00411	1
01053	1
01081	1
22559	2
PG Clamps	AR

Mass of switch (fully fitted): 118 kg  
 Mass of bracket : 28 kg  
 Max Load Break : 630A @ 0.7 pf

APPROVED ISOLATION POINT  
 WHEN ACTUATOR IS ATTACHED

EARTHING (NOT INCLUDED IN 11LBSP TFFIS)

HVE : SEPARATE EARTH SYSTEM (SEE PAGE 605)

HVEC : COMMON EARTH SYSTEM (SEE PAGE 605)

Surge Arresters (supplied)

Insulated Aluminium Bridging (supplied)  
 (120 sqmm Al)

PG CLAMPS  
 to suit mains  
 Refer Sect 8

22559

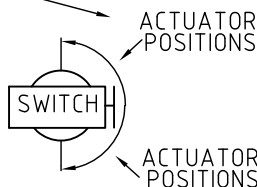
WILDLIFE GUARD

Install each side of switch  
 on middle phase insulator/s  
 to manufacturer's instructions

Pole Earth Downlead  
 19/1.78 Cu PVC

Connecting rod guide  
 (Install 1/2 way between switch  
 & actuator if required)

INSTALL ACTUATOR TO  
 ALLOW SAFE OPERATION  
 FROM FOOTPATH



Remove "J" Bolts & Straps and return  
 to local depot store.

23483  
 LOAD BREAK SWITCH

FOOTPATH SIDE

Earth Connection

(Actual fitment is to RHS side of switch)

BOLT & NUT M12x30

00411

WASHER M12 RD

01053

WASHER M12 LOCK

01081

SET266-1

SWITCH TO BRACKET TO POLE (includes actuator coupling)

Pre-fitted switch earth downlead.  
 (Actual fitment is to RHS side of bracket)

Connect pole downlead to switch earth downlead  
 (Remove/replace ex nut and washers for connection)

Actuator connecting rod (insulated)  
 Supplied as 5m length  
 (Cut rod to desired length if required)  
 Refer SET266-1 for connection diagram



CMEN area connection  
 if available

23484

REMOTE ACTUATOR + 5m ROD  
 Link stick operated  
 Refer installation instructions  
 Min. mounting height 4m

Actuator may be mounted up to 90 degrees  
 in either direction around pole provided rod  
 does not interfere with other pole equipment  
 or hardware and switch can be operated freely.  
 Where twin steel arms or LV below switch move  
 actuator around pole to ensure clear of obstructions.

ORIGINAL ISSUE	DATE	10/08/2017	APPD	F.ZAINI	CKD	P.RELF	DRN	P.RELF	Updated APPROVED ISOLATION POINT note
A	F								



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## OVERHEAD CONSTRUCTION MANUAL

### POLE MOUNTED PLANT

11LBSP TFFIS

11kV MANUALLY OPERATED LOAD BREAK SWITCH

POLE TOP MOUNTED - ILJIN FULLY FITTED

APP'D ROY ENGLISH

DATE 09-02-2011

REC'D

CKD J.TUNNEY

DWN P.RELF

TECH STDS AUTOCAD

4920-A4 F

SECT PAGE

7 99

SHEET 1 OF 1

FILE:

# CU LIST -

11LBSMPFFIS

SET266-2	1
23483	1
23484	1
PG Clamps	AR

SWITCH MAY BE FITTED TO FOOTPATH OR ROAD SIDE TO SUIT SITE AND OPERATOR REQUIREMENTS

Mid pole actuator mechanism is included with material issue for this construction.

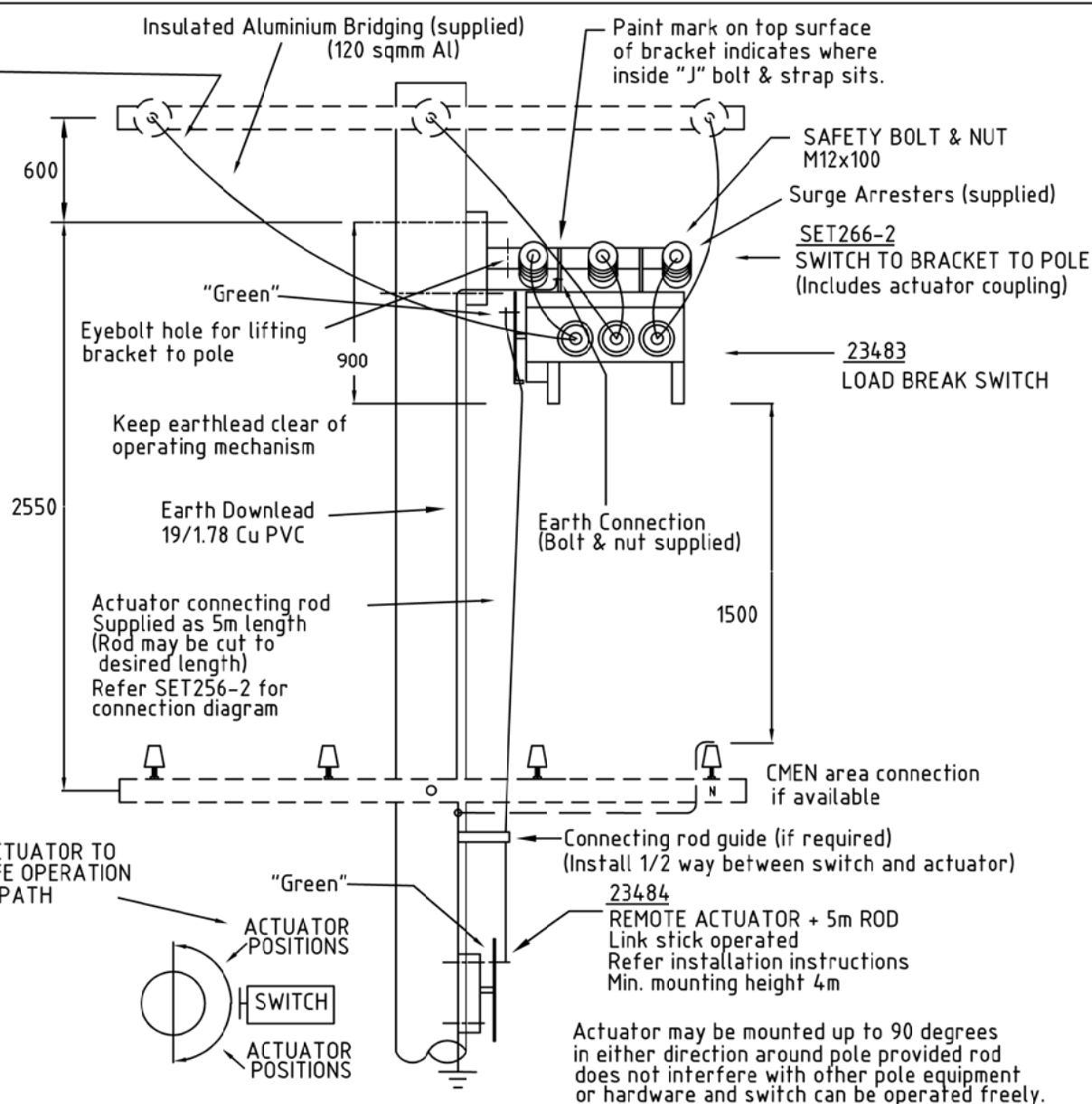
Actuator must be installed with LBS  
To retrofit actuator to existing Iljun LBS use SC 23484

Mass of Switch (fully fitted): 118 kg  
Mass of Bracket : 18 kg  
Max Load Break : 630A @ 0.7 pf  
APPROVED ISOLATION POINT WHEN ACTUATOR IS ATTACHED

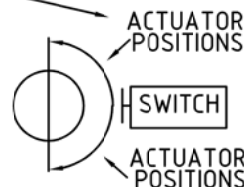
## EARTHING (NOT INCLUDED IN 11LBSMPFF)

HVE : SEPARATE EARTH SYSTEM (SEE PAGE 605)  
HVEC : COMMON EARTH SYSTEM (SEE PAGE 605)

PG CLAMPS  
to suit mains  
Refer Sect 8



INSTALL ACTUATOR TO ALLOW SAFE OPERATION FROM FOOTPATH



ORIGINAL ISSUE	DATE	APP'D F. ZANI	CKD	DRN	Updated Actuator information and APPROVED ISOLATION POINT note
A	E	05/10/2017	P.PREF	P.PREF	



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## OVERHEAD CONSTRUCTION MANUAL

### POLE MOUNTED PLANT

11LBSMPFFIS

11kV MANUALLY OPERATED LOAD BREAK SWITCH  
MID POLE MOUNTED - ILJIN FULLY FITTED

APP'D A. SMITH DE PEREZ

DATE 11-12-2013

REC'D

CKD P. JUDGE

DWN J LANSLEY

TECH STDS

4920-A4 E

SECT PAGE

7 100

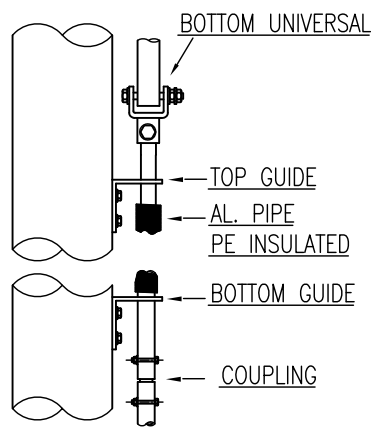
SHEET 1 OF 1

FILE:

## CU LIST -

11ABSUMPLP

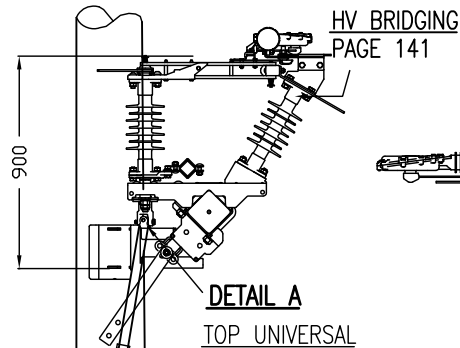
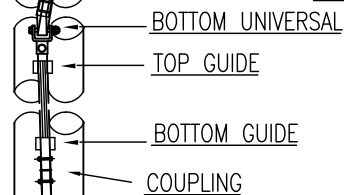
SET258-4	1
23835	1
00690	2



DETAIL B

EARTHING BRAIDS  
CONNECT BETWEEN DOWNROD  
COUPLING, BRACKET & HANDLE

EARTHING  
PAGES 603 & 604

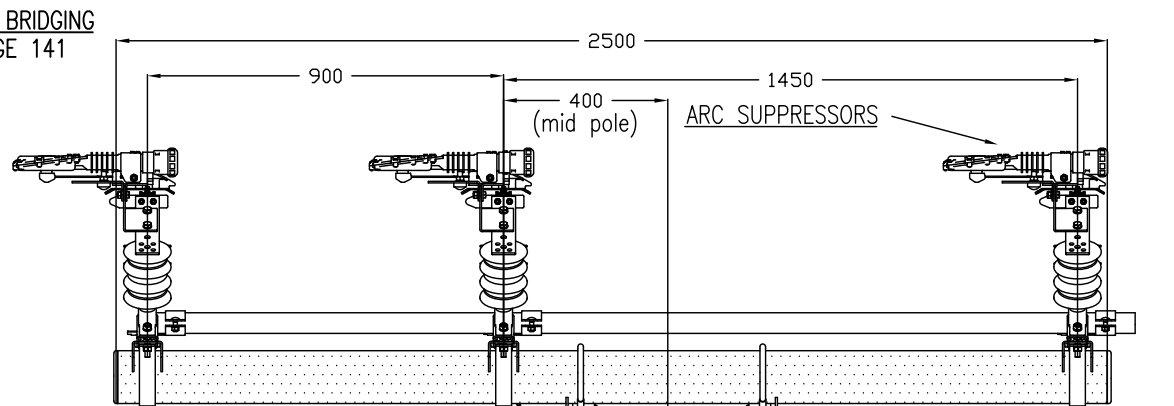
DETAIL A  
TOP UNIVERSAL

DETAIL B

ALUMINIUM EXTENSIBLE DOWNROD

COUPLING  
00690  
COACH SCREWS  
M16x130

1200



23835  
11kV AIR BREAK SWITCH

DETAIL A

— 00 (if pole top)  
— M12 x 75 SCREW  
(in kit)  
— 150

11kV CONSTRUCTION

— 510

— 810

SET258-4  
11kV AIR BREAK SWITCH  
TO WOOD POLE

## NOTE:

1 MEASURE POLE TOP DIAMETER  
AND ADJUST BRACE ACCORDINGLY

Mass of Switch : 70 kg  
Mass of Bracket : 25 kg  
Max Load Break : 150A @ 0.7 pf  
APPROVED ISOLATION POINT

ORIGINAL ISSUE	DATE	APP'D	CKD	DRN	EARTH ADDED TO HANDLE
A	23/12/2014	F.ZAINI	P.RELF	J.LANSLEY	
G					



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## OVERHEAD CONSTRUCTION MANUAL

## POLE MOUNTED PLANT

## 11ABSUMPLP

11kV AIR BREAK SWITCH - MID or TOP MOUNTING  
WOOD POLE - PLP

APP'D	Kevin Ball	TECH STDS	AUTOCAD
DATE	02-12-92	4920-A4	G
REC'D		SECT	PAGE
CKD		7	101
DWN	M. Welsh	SHEET	1 OF 1
		FILE:	



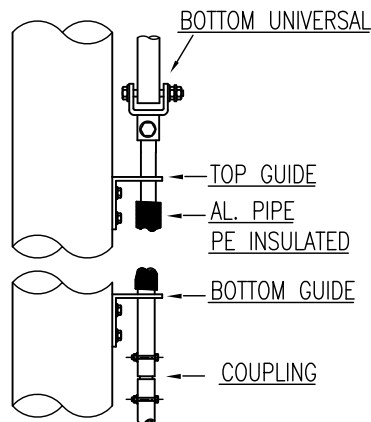
## CU LIST -

33ABSUMPLP

SET258-4 1

23836 1

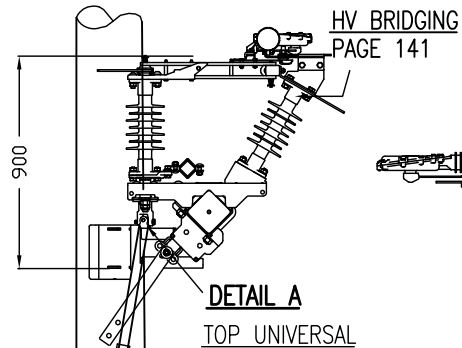
00690 2



## DETAIL B

EARTHING BRAIDS  
CONNECT BETWEEN DOWNROD  
COUPLING, BRACKET & HANDLE

EARTHING  
PAGES 603 & 604



## DETAIL A

TOP UNIVERSAL

BOTTOM UNIVERSAL

TOP GUIDE

BOTTOM GUIDE

COUPLING

## DETAIL B

23836

33kV AIR BREAK SWITCH

ALUMINIUM EXTENSIBLE DOWNROD

COUPLING

00690

COACH SCREWS  
M16x130

1200



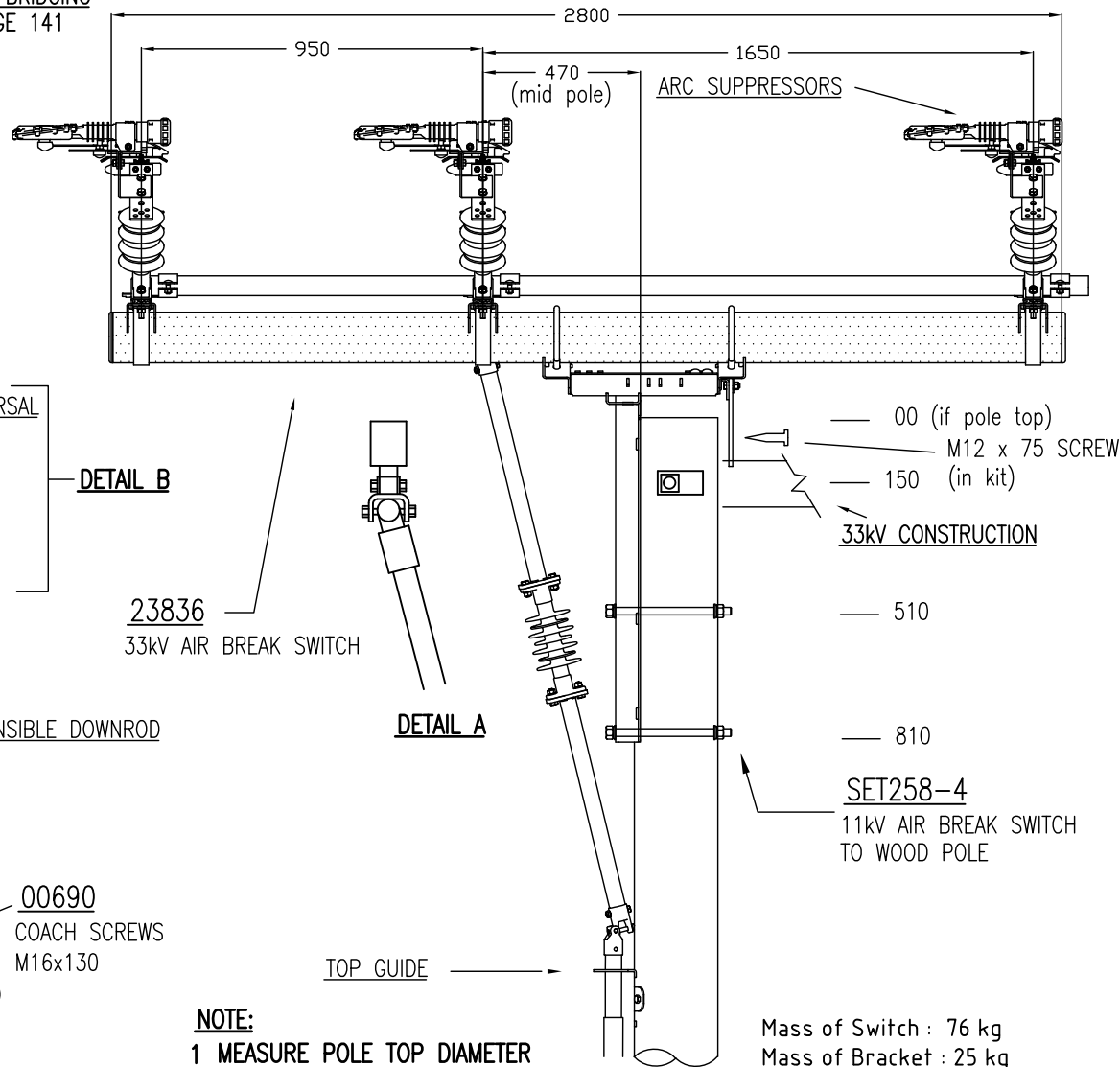
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## OVERHEAD CONSTRUCTION MANUAL

## POLE MOUNTED PLANT

33ABSUMPLP

33kV AIR BREAK SWITCH - MID or TOP MOUNTING  
WOOD POLE - PLP

## NOTE:

1 MEASURE POLE TOP DIAMETER  
AND ADJUST BRACE ACCORDINGLY

Mass of Switch : 76 kg  
Mass of Bracket : 25 kg  
Max Load Break : 150A @ 0.7 pf  
APPROVED ISOLATION POINT

ORIGINAL ISSUE	DATE	APP'D	CKD	DRN	ADDED EARTH TO HANDLE
A	23/12/2014	F.ZAINI	P.PELF	J.LANSLEY	
H					

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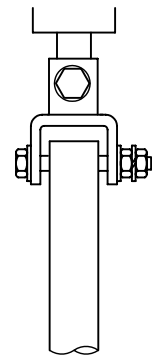
OVERHEAD CONSTRUCTION MANUAL

POLE MOUNTED PLANT

33ABSUMPLP

33kV AIR BREAK SWITCH - MID or TOP MOUNTING  
WOOD POLE - PLP

APP'D	Kevin Ball	TECH STDS	AUTOCAD
DATE	02-12-92	4920-A4	H
REC'D		SECT	PAGE
CKD		7	102
DWN	M. Welsh	SHEET	1 OF 1
		FILE:	



DETAIL A

DETAIL A  
TOP UNIVERSAL

EARTHING BRAID

BOTTOM  
COUPLING

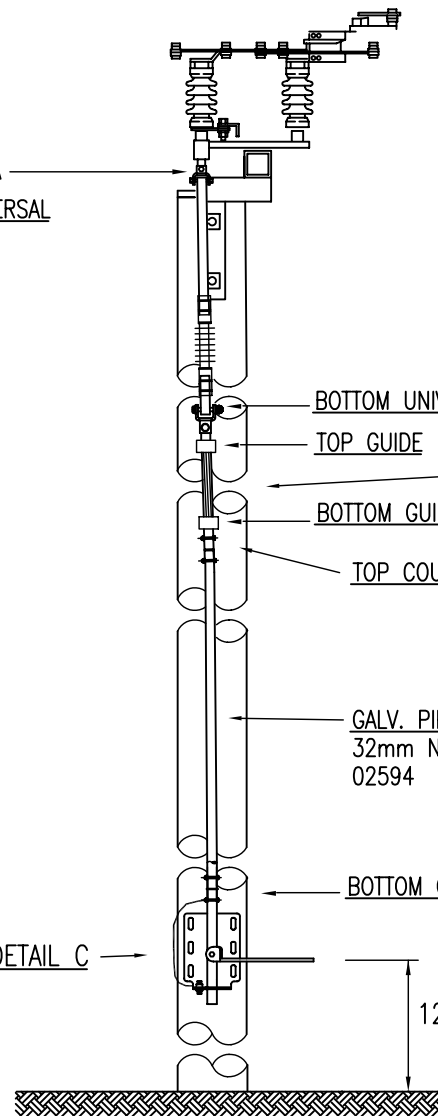
COACH SCREWS  
00690

DETAIL C

EARTHING

PAGES 603 & 604

DETAIL C



DETAIL B

BOTTOM UNIVERSAL

TOP GUIDE

GALV. PIPE  
PE INSULATED

BOTTOM GUIDE

TOP  
COUPLING

DETAIL B



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## OVERHEAD CONSTRUCTION MANUAL

### POLE MOUNTED PLANT

11kV & 33kV UNITISED ABS - NGK  
POLE TOP SWITCH OPERATING ROD ASSEMBLY

APP'D Kevin Ball

DATE 02-12-92

REC'D

CKD Greg Dowling

DWN M. Welsh

**TECH STDS** AUTOCAD

**4920-A4** D

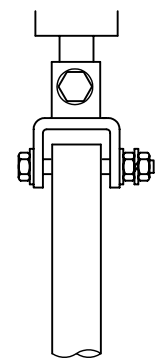
SECT PAGE

7 121

SHEET 1 OF 1

FILE:

ORIGINAL ISSUE	DATE 30-01-2008	APPD R.English	CKD J.TUNNEY	DRN G.JAYAWERA	REDESIGN FOR NGK UNIT
A	D				



DETAIL A

DETAIL A  
TOP UNIVERSAL

EARTHING BRAID

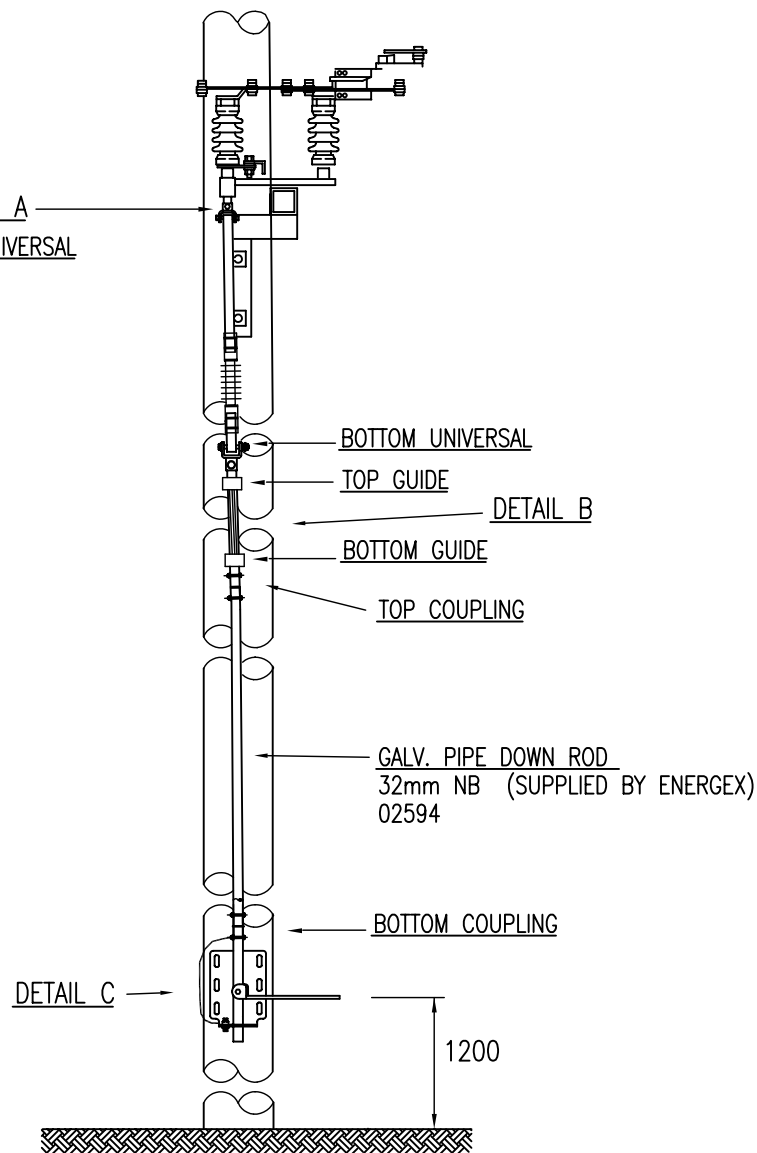
BOTTOM  
COUPLING

COACH SCREWS  
00690

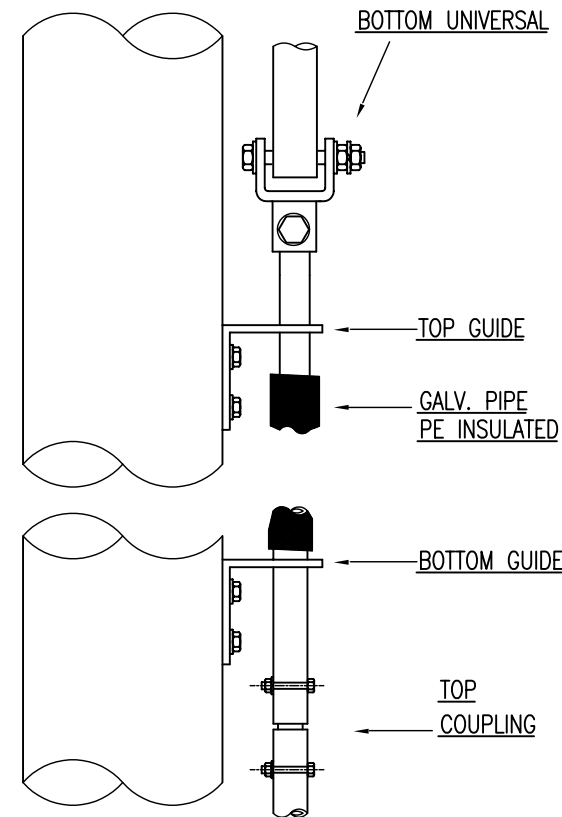
DETAIL C

EARTHING

PAGES 603 & 604



DETAIL C



DETAIL B

A	ORIGINAL ISSUE		APPD	RENGISH	CKD	J.TUNNEY	DRN	G.GAYAWEERA	REDESIGN FOR NGK UNIT
	DATE	30-01-2008							
E									



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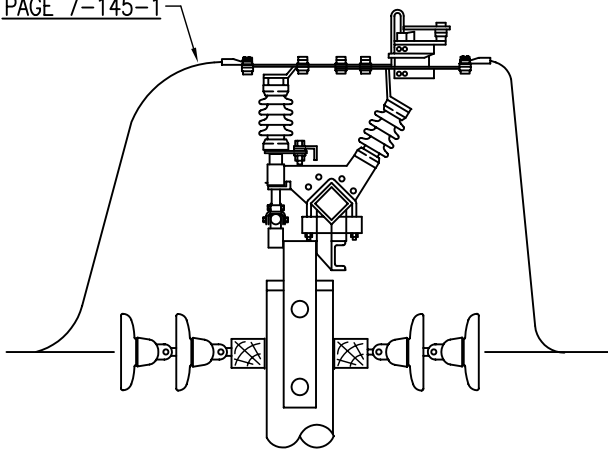
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## OVERHEAD CONSTRUCTION MANUAL

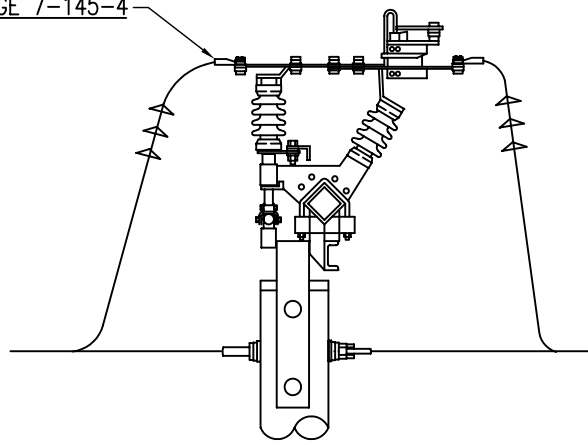
### POLE MOUNTED PLANT

11kV & 33kV UNITISED ABS - NGK  
MID POLE SWITCH OPERATING ROD ASSEMBLY

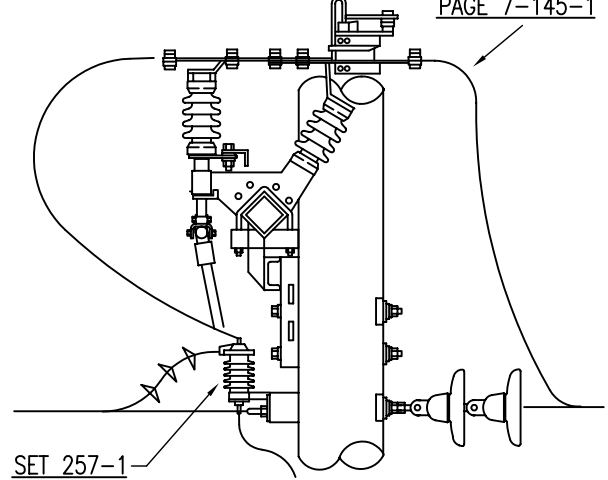
APP'D	Kevin Ball	TECH STDS		AUTOCAD
DATE	02-12-92	4920-A4		E
REC'D		SECT	PAGE	
		7	122	
CKD	Greg Dowling	SHEET 1 OF 1		
DWN	M. Welsh	FILE:		



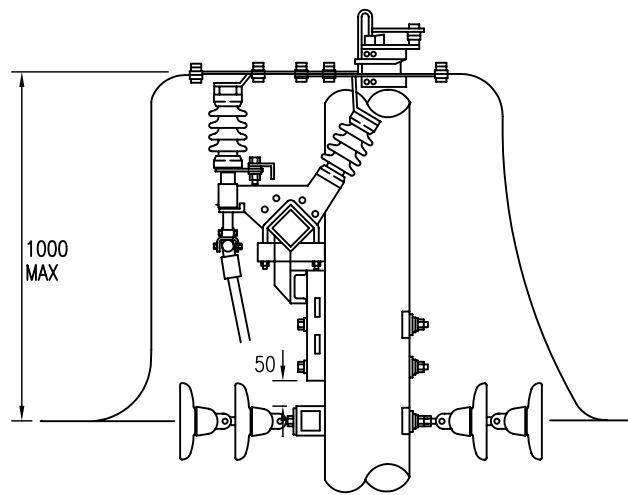
OPEN WIRE BRIDGING- POLE TOP



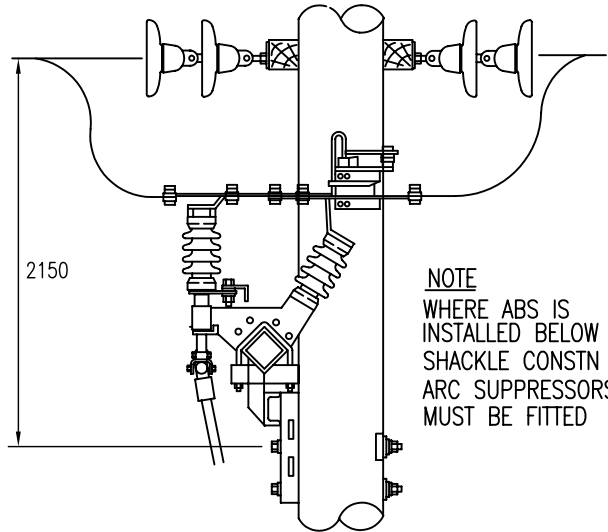
HVABC BRIDGING- POLE TOP



HVABC TO OPEN WIRE BRIDGE - UNITISED

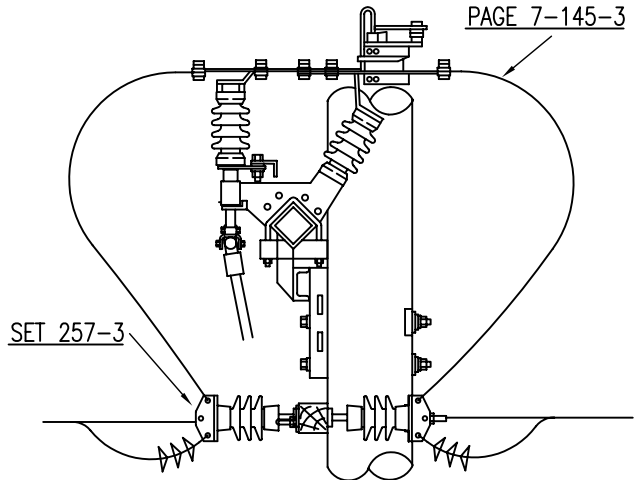


OPEN WIRE BRIDGING-MID POLE UNITISED




NOTE  
WHERE ABS IS  
INSTALLED BELOW  
SHACKLE CONSTN  
ARC SUPPRESSORS  
MUST BE FITTED

OPEN WIRE BRIDGING-MID POLE UNITISED



HVABC BRIDGING - MID POLE UNITISED

A	ORIGINAL ISSUE		APPD	RENG	CKD	J.TUNNEY	DRN	G.JAYAWERA	NOTE UPDATED
	DATE	30-01-2008							
E									



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OVERHEAD CONSTRUCTION MANUAL

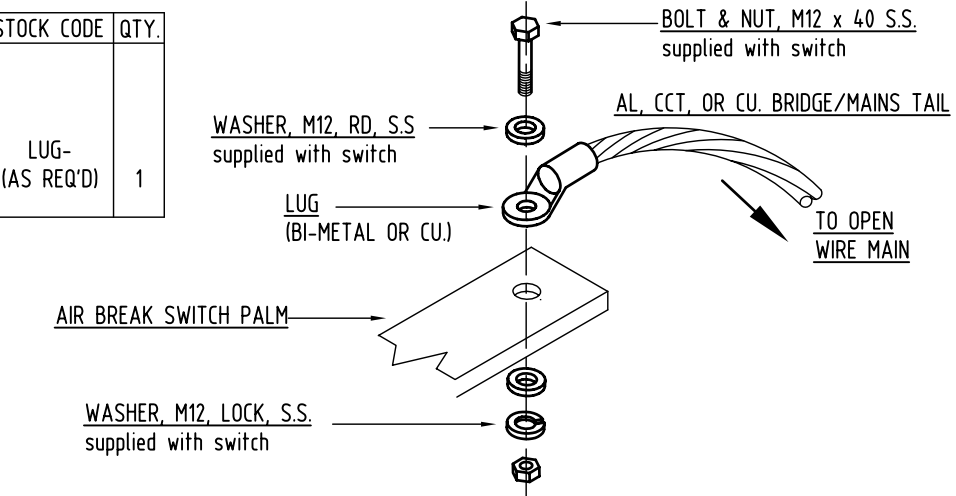
POLE MOUNTED PLANT

AIR BREAK SWITCH  
BRIDGING ARRANGEMENTS

APP'D	Kevin Ball	TECH STDS		AUTOCAD
DATE	02-12-92	4920-A4		E
REC'D		SECT	PAGE	
		7	141	
CKD	Greg Dowling	SHEET 1 OF 1		
DWN	M. Welsh	FILE:		

MATERIAL

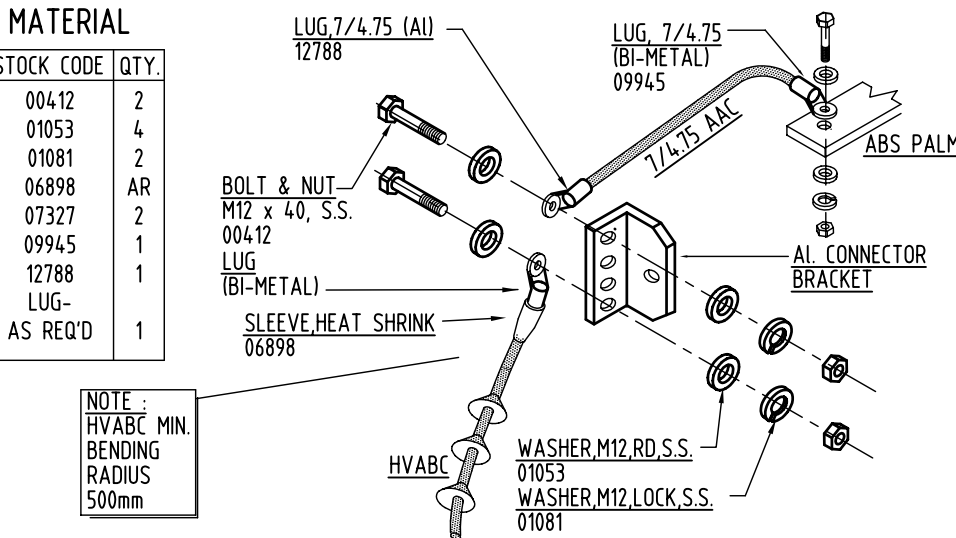
STOCK CODE	QTY.
LUG- (AS REQ'D)	1



PAGE 7-145-1 OPEN WIRE TO ABS PALM

MATERIAL

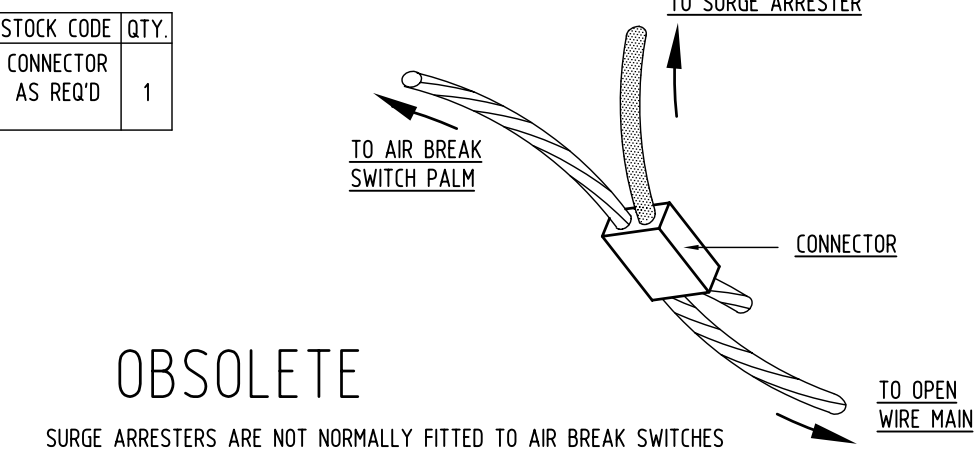
STOCK CODE	QTY.
00412	2
01053	4
01081	2
06898	AR
07327	2
09945	1
12788	1
LUG- AS REQ'D	1



PAGE 7-145-3 HVABC TO CONNECTOR BRACKET & PALM

MATERIAL

STOCK CODE	QTY.
CONNECTOR AS REQ'D	1



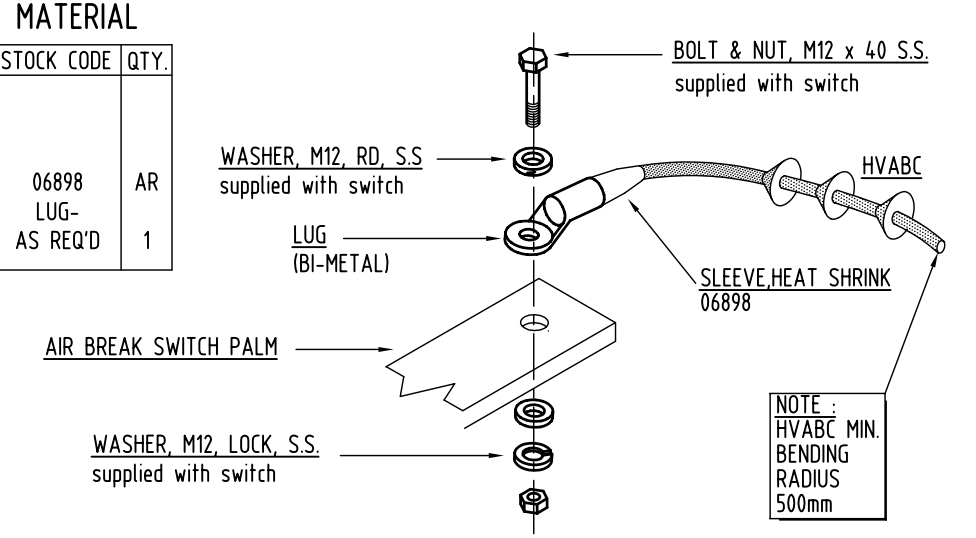
OBSOLETE

SURGE ARRESTERS ARE NOT NORMALLY FITTED TO AIR BREAK SWITCHES

PAGE 7-145-2 CONNECTOR TO SURGE ARRESTER TAIL

MATERIAL

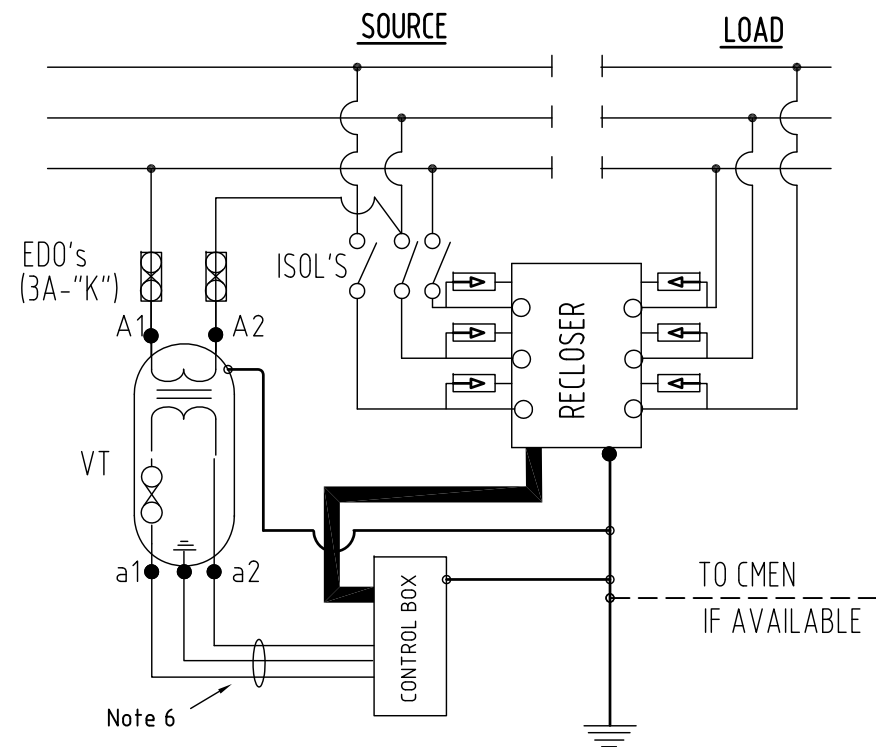
STOCK CODE	QTY.
06898	AR
LUG- AS REQ'D	1



PAGE 7-145-4 HVABC TO ABS PALM

## CU LIST - 11REC/NOJA

CU LIST - 11REC/NOJA		11REC/NOJA	11REC/NOJAFF
SET165-1	ISOLATOR SWITCH	3	3
SET254-1	EDO FUSE SWITCH	2	2
SET151-1	X-ARM TO POLE	1	1
SET155-2	POST TO X-ARM	3	3
SET257-2	RECLOSER TO POLE	1	1
SET271-3A	ARRESTER TO TANK	6	
SET274-1	VT TO POLE	1	1
SET260-1	C/BOX BKT TO POLE	1	1
SET274-2	ANTENNA TO XARM	1	1
SET152-1	BRACE TO POLE	1	1
08368	(Tape)	AR	AR
14693	(Arrester PG clamps)	6	
21058	Recloser, VT, CONTROL BOX	1	
23406	Recloser FF, VT, CONTROL BOX		1
	Mains PG CONNECTORS	AR	AR
20279	CCT 120sqmm	15m	6m
17799	Polymeric Side Tie	3	3
11067	xarm 3m 100x100mm	1	1
13401	EDO Fuses 3A-"K"	2	2




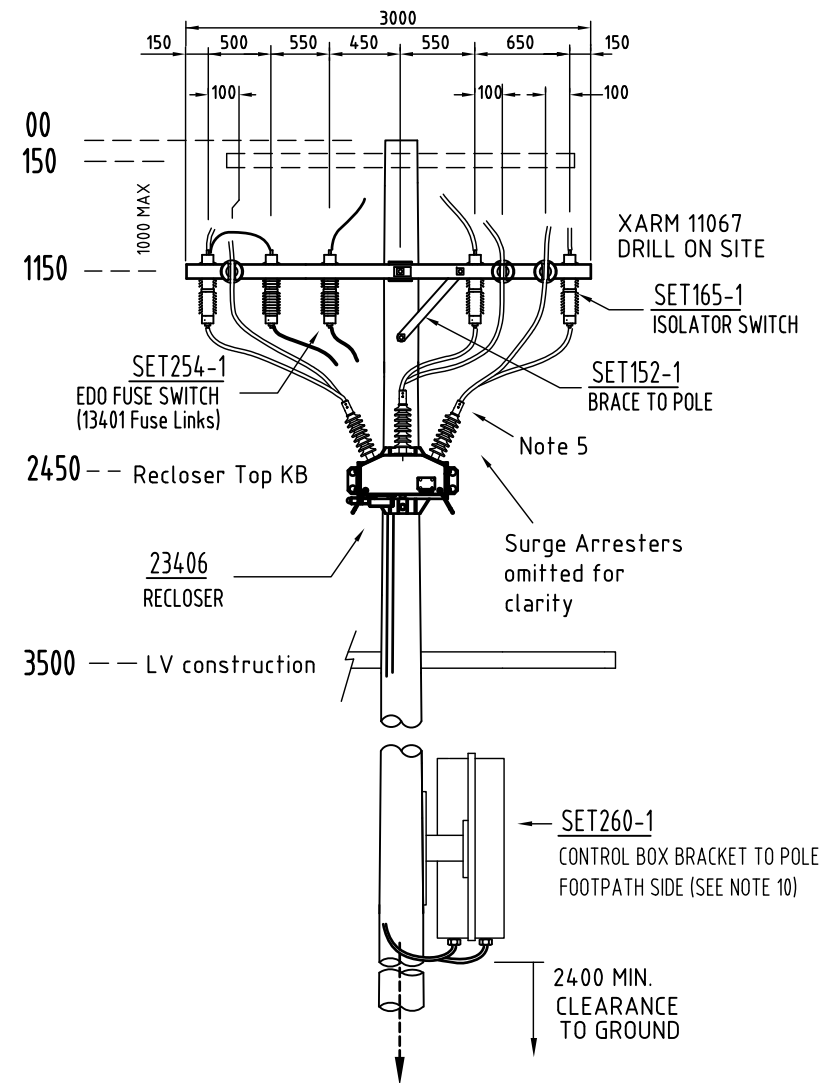
HV SCHEMATIC

## NOTES

1. Maintain minimum separation of 150mm between earthing cables and any other equipment cables.
2. Ensure wildlife proofing insulating hoods (supplied with recloser and VT) installed over all bushings and surge arresters.
3. 11REC/NOJAF comes fully fitted with surge arrestors and leads from factory.
4. Refer OCM sect 7 page 606,607 for equipment earthing detail.
5. For older style tunnel connections use torque wrench with 8mm allen key @ 30N-m for HV connections to switch.

6. VT secondary cable supplied with VT. Cover the entire length of the secondary cable with 25mm conduit from VT and terminating at the control box.
7. Stock code for replacement VT secondary 2A HRC fuse is 19537.
8. Mass of bare recloser : 107kg Mass of fully fitted recloser : 135kg
9. In areas where CCT mains exist, strip small section of CCT near top xarm on each phase to allow for phasing out.
10. Control Box to be mounted for access from footpath side of pole or as determined on site in difficult terrain.
11. Construction limited to 400A. Switch rated at 800A

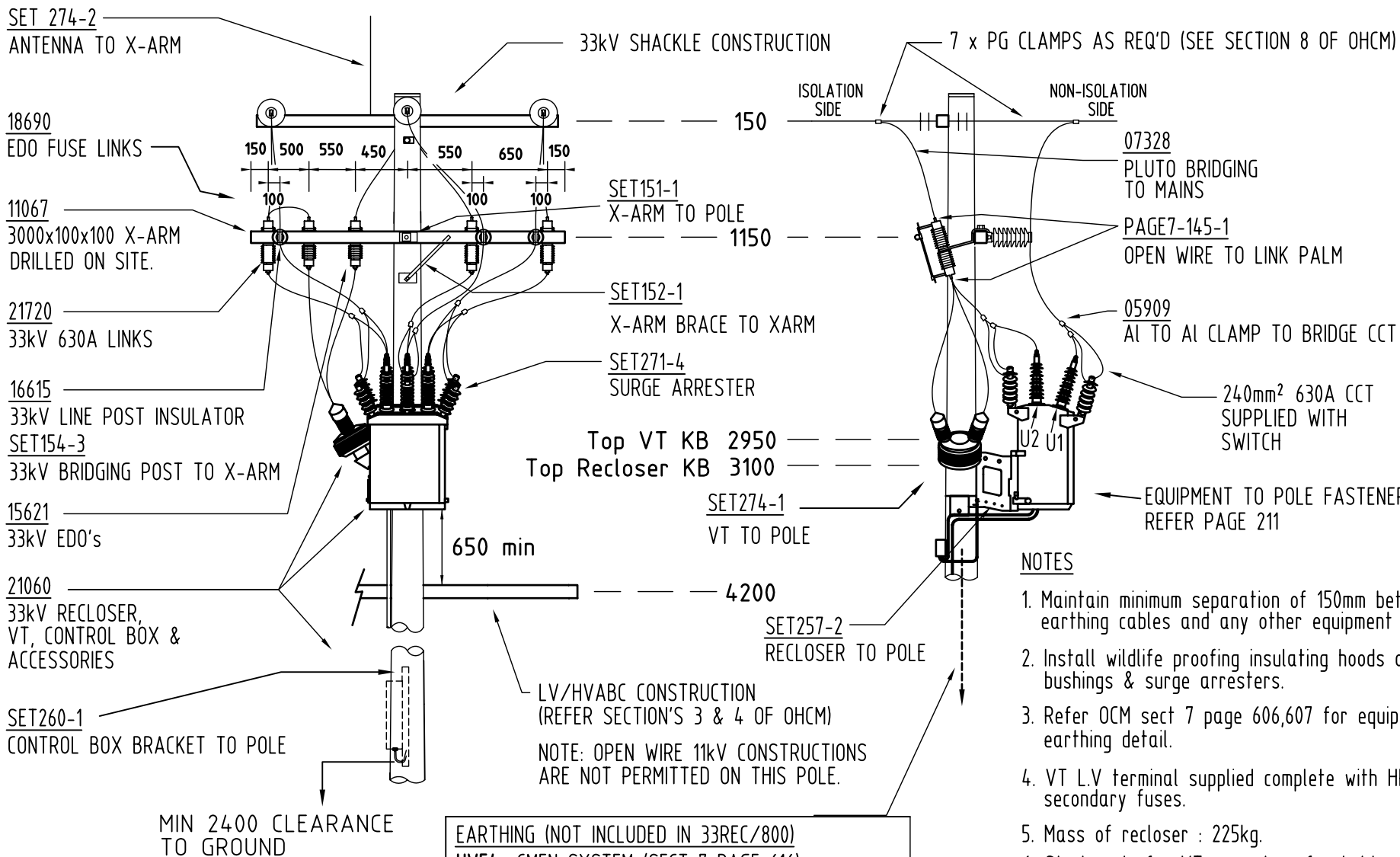
A	ORIGINAL ISSUE		THIS PAGE TO BE READ WITH PAGE 206	 ©COPYRIGHT 2015 ENERGEX This drawing must not be reproduced in part or whole without written permission from ENERGEX	OVERHEAD CONSTRUCTION MANUAL  <u>POLE MOUNTED PLANT</u> 11REC/NOJA, 11REC/NOJAFF 11kV 400A REMOTE CONTROLLED RECLOSER CONSTRUCTION - NOJA	APP'D	K.B.	TECH STDS		AUTOCAD
	F	DATE				05-01-2015	4920-A4		F	
	APPD	F. ZAINI				SECT	PAGE			
	CKD	P. RELF				7	205			
	DRN	P. JUDGE				SHEET 1 OF 1				
Updated Notes 2, 5, 8 for clarity			FILE:							



**HVE1** : SEPERATE EARTH SYSTEM (SEE PAGE 606)






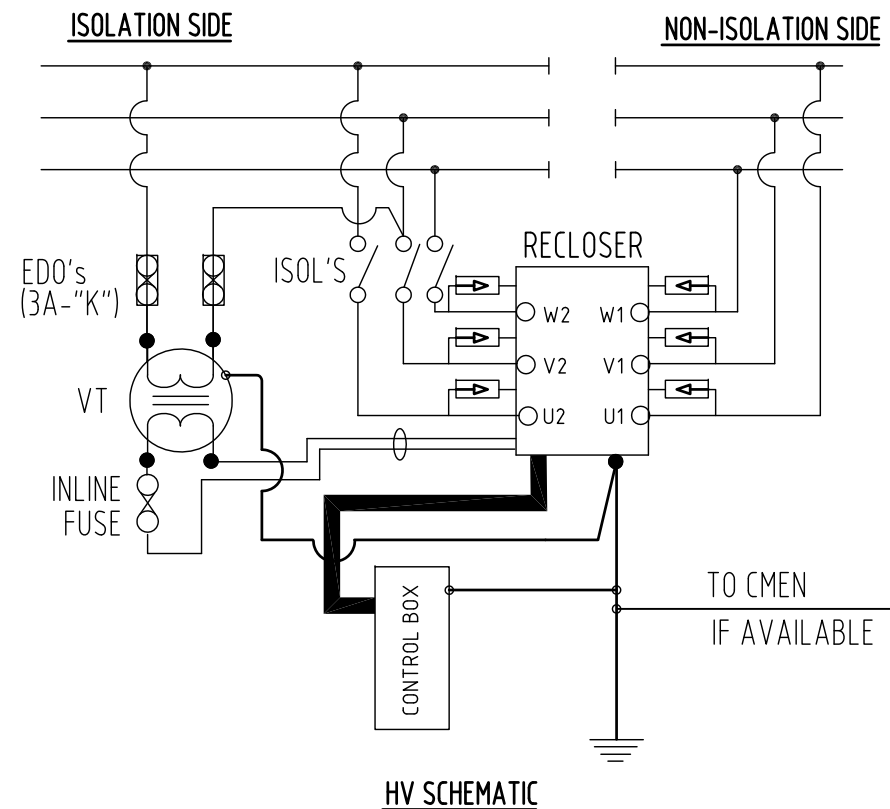


**NOTES**

1. Maintain minimum separation of 150mm between earthing cables and any other equipment cables.
2. Install wildlife proofing insulating hoods over all bushings & surge arresters.
3. Refer OCM sect 7 page 606,607 for equipment earthing detail.
4. VT L.V terminal supplied complete with HRC secondary fuses.
5. Mass of recloser : 225kg.
6. Stock code for VT secondary fuseholder is 20285  
Stock code for VT secondary fuse (3.15A type T) is 20284

A	ORIGINAL ISSUE	1st ANGLE PROJECTION		 energex ©COPYRIGHT 2009 ENERGEX This drawing must not be reproduced in part or whole without written permission from ENERGEX	OVERHEAD CONSTRUCTION MANUAL				APP'D	Pat Pearl	Tech Stds		AUTOCAD
	DATE	24-6-09	THIS PAGE TO BE READ WITH PAGE 211		POLE MOUNTED PLANT 33REC/630 33KV SCHNEIDER "N" SERIES RECLOSER CONSTRUCTION				DATE	31.05.96	4920-A4		F
	APPD	R.ENGISH							REC'D		SECT	PAGE	
	CKD	JOHN TUNNEY							CKD	R.Walker	7	212	
	DRN	T. BAKKER							DWN	M.Welsh	SHEET 1 OF 1		
	TRANSFORMER TERMINAL LABEL DETAIL ADDED								FILE:DWG_OH\4920A4\57\PMPT-212F.DWG				

MATERIAL LIST - 33REC/NOJAFF			DETAILS
DESC.	SC/CU	QTY	
33kV X-ARM	NOT INCLUDED		
ISOLATION LINKS & X-ARM	SET152-1	1	BRACE (650) TO X-ARM
	SET151-1	1	X-ARM TO POLE
	11067	1	3000X100x100 X-ARM
	21720	3	33kV 630A LINKS
EQMT. TO POLE FASTENERS	00243	5	200mm M20 NUTS & BOLTS
	08521	5	M20 FLAT WASHERS
	10447	5	M20 VOLUTE
	01046	5	M20 WASHER
EDO'S	15621	2	33kV EDO'S
	18690	2	33kV EDO FUSE 3A-"K"
RECLOSER VT, & CONTROL BOX	SET257-2	1	RECLOSER TO POLE
	SET260-1	1	CONTROL BOX TO POLE
	SET274-1	1	VT TO POLE
	23407	1	RECLOSER, VT, & CONTROL BOX
	SET274-2	1	ANTENNA TO X-ARM
BRIDGING	09946	7	Al 240sq.mm LUGS
	16615	3	33kV LINE POST INSULATOR
	17631	4	BI-METAL LUGS
	SET154-3	3	33kV BRIDGING POST TO X-ARM
	07328	6m	PLUTO
	PAGE7-145-1	10	BRIDGE TO LINKS/EDO'S
	PG CLAMPS	A.R.	BRIDGING TO MAINS



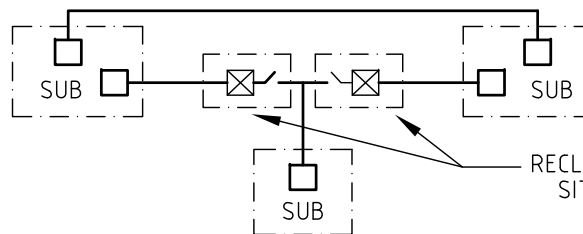
## TYPICAL NETWORK ARRANGEMENTS

### LEGEND

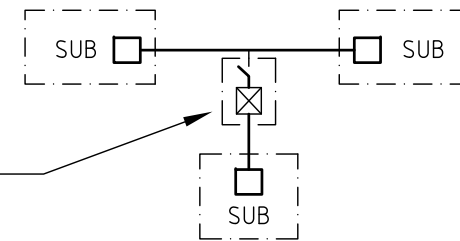
- 33kV RECLOSER
- 33kV ISOLATION LINKS
- 33kV CIRCUIT BREAKER


NOTE: ISOLATION SIDE & NON-ISOLATION SIDE MUST BE SPECIFIED ON WORKS PLAN FOR EACH RECLOSER SITE

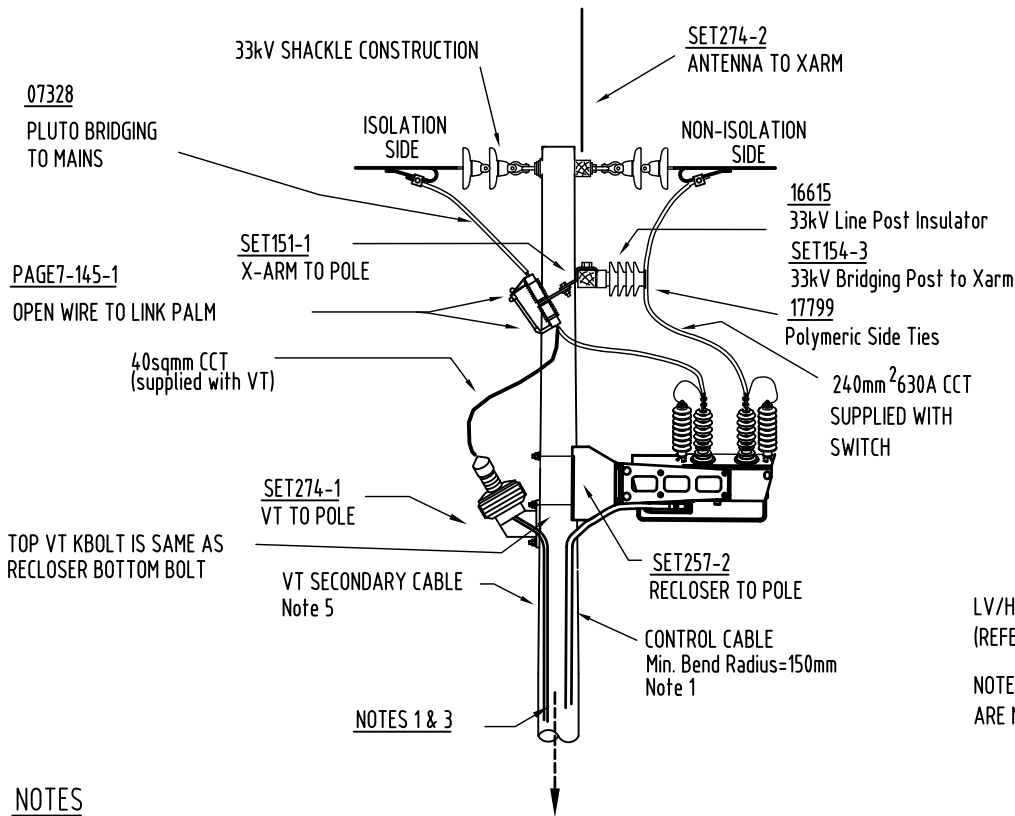
### 33kV RING ARRANGEMENT



### 33kV RADIAL ARRANGEMENT



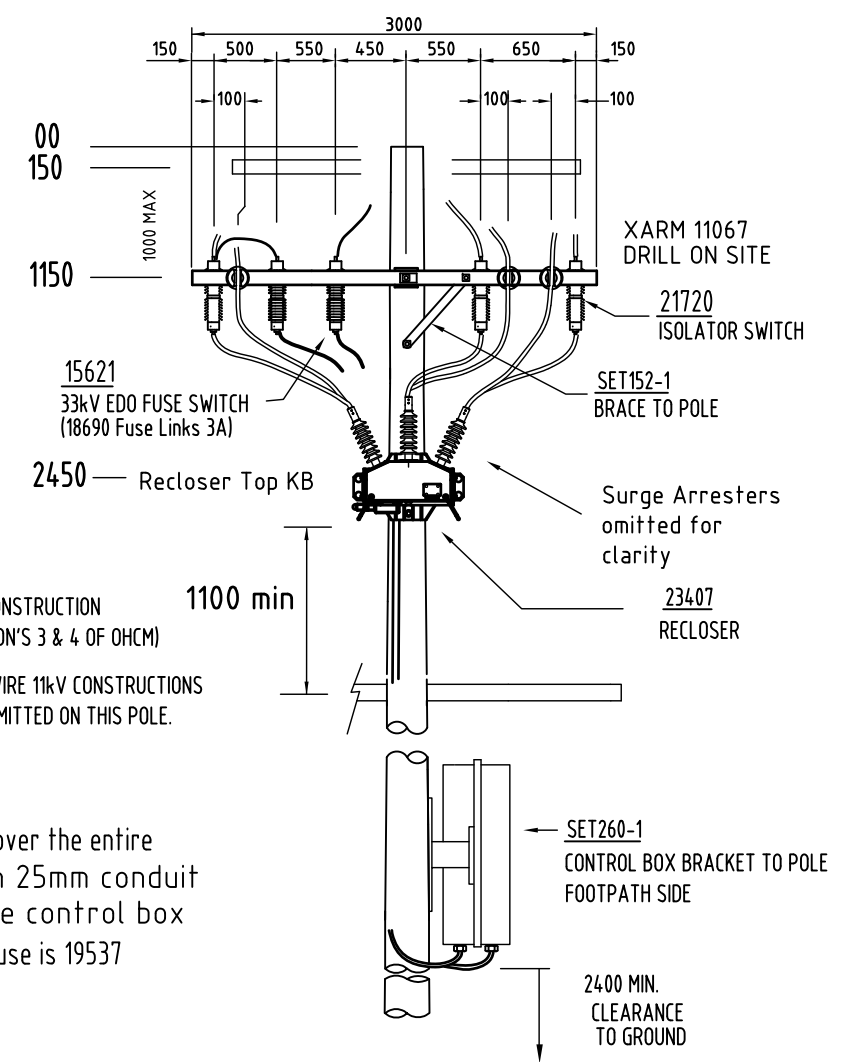
A	ORIGINAL ISSUE		APPD F. ZAINI	CKD P. RELF	DRN P. JUDGE	Bridging Lug changed to SC9946	THIS PAGE TO BE READ WITH PAGE 214	 energex ©COPYRIGHT 2015 ENERGEX This drawing must not be reproduced in part or whole without written permission from ENERGEX	OVERHEAD CONSTRUCTION MANUAL		APP'D	SMITH DE PEREZ		Tech Stds		AUTOCAD		
	B	DATE							05-01-2015		DATE		09/12/2013		4920-A4		B	
	REC'D								P. RELF		SECT		PAGE					
	CKD								S. PETERSON		7		213					
	DWN								P. JUDGE		SHEET 1 OF 1							
												FILE:						



# NOTES

1. Maintain minimum separation of 150mm between earthing cables and any other equipment cables.
2. Ensure wildlife proofing insulating hoods installed over all bushings & surge arresters.
3. Refer OCM sect 7 page 606,607 for equipment earthing detail.
4. VT LV terminal supplied complete with HRC secondary fuses.


5. VT Secondary cable supplied with VT. Cover the entire length of secondary cable with 25mm conduit from VT and terminating at the control box
6. Stock code for VT secondary 2A HRC fuse is 19537
7. Mass of bare recloser : 148 kg.  
Mass of fully fitted recloser : 176 kg.
8. 33REC/NOJAFF comes fully fitted with surge arresters and leads from factory
9. Construction limited to 630A. Switch rated at 800A.



EARTHING (NOT INCLUDED IN 33REC/NOJAFF)  
HVE4 : CMEN SYSTEM (SECT 7 PAGE 616)  
HVE3 : SEPERATE EARTH SYSTEM (SECT 7 PAGE 615)

A	ORIGINAL ISSUE	
	DATE	05-01-2015
	APP'D	F. ZAINI
	CKD	P. RELF
	DRN	P. JUDGE

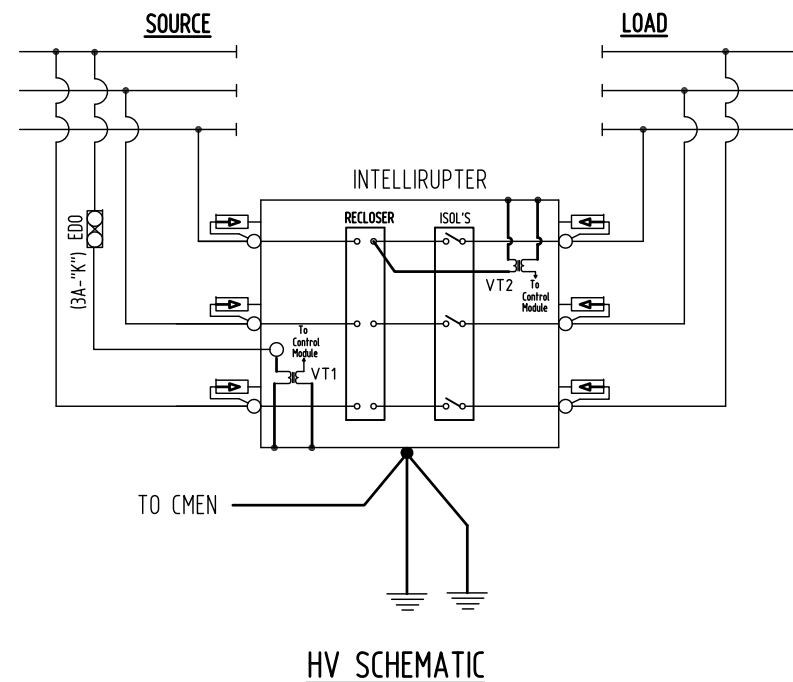
THIS PAGE TO BE READ WITH PAGE 213


  
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## OVERHEAD CONSTRUCTION MANUAL POLE MOUNTED PLANT 33REC/NOJAFF 33KV NOJA OSM38 RECLOSER CONSTRUCTION

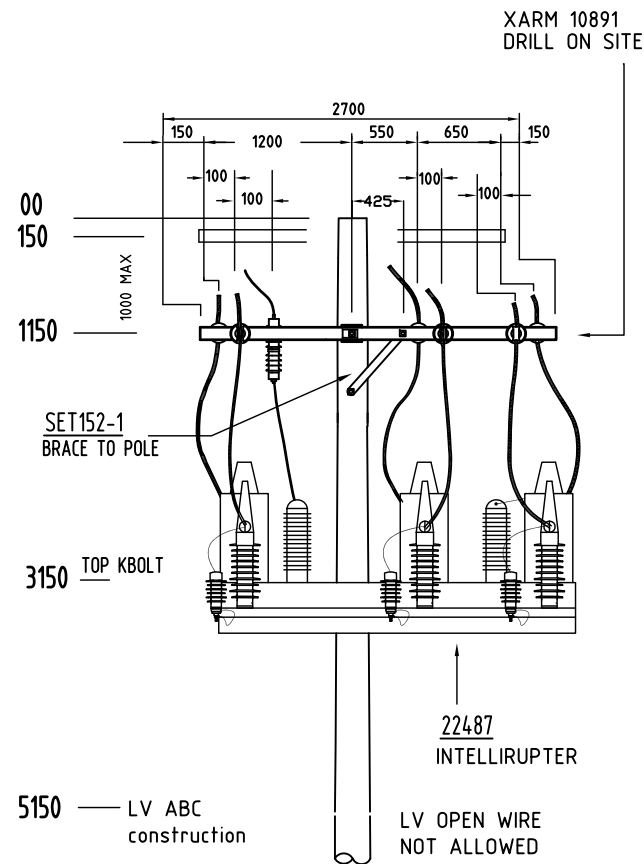
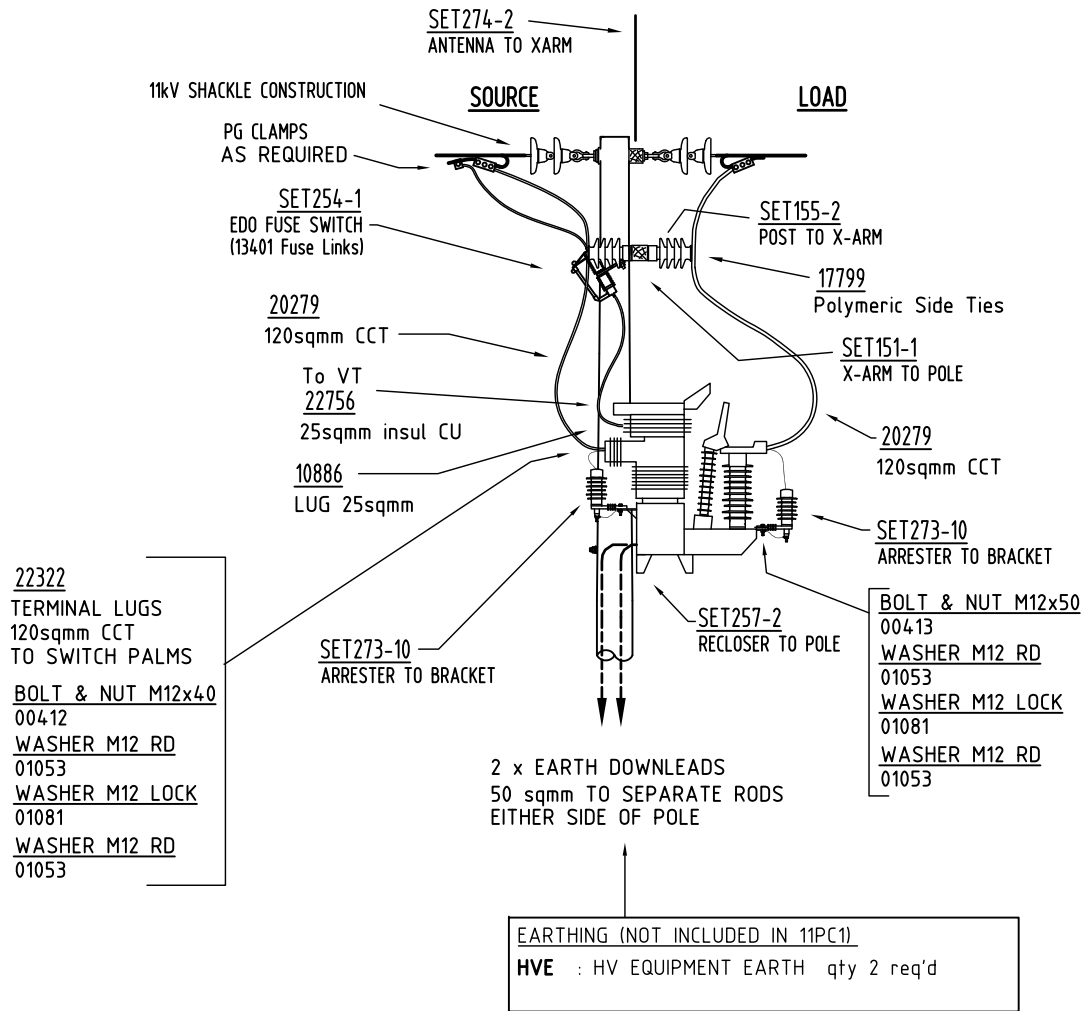
APP'D	A. SMITH DE PEREZ	Tech Stds		AUTOCAD
DATE	09/12/2013	4920-A4		B
REC'D	P. RELF	SECT	PAGE	
CKD	S. PETERSON	7	214	
DWN	P. JUDGE	SHEET 1 OF 1		
		FILE:		

MATERIAL	DESCRIPTION	QTY
SET274-2	ANTENNA TO X-ARM	1
SET254-1	EDO FUSE SWITCH	1
13401	EDO FUSE LINK - 3A "K"	1
SET155-2	POST INSULATOR TO X-ARM	6
20279	CCT 120 SQ MM	20
17799	POLYMERIC SIDE TIES	6
22756	25 SQ MM HV INS COPPER CABLE (COIL)	0.2
10886	LUG FOR 25 SQ MM CABLE	10
SET151-1	X-ARM TO POLE	1
SET152-1	BRACE TO POLE	1
10891	X-ARM 2700X100X100 UNDRILLED	1
SET273-10	ARRESTERS TO BRACKET	6
SET257-2	RECLOSER TO POLE	1
22487	INTELLIRUPTER	1
22322	TERMINAL LUGS FOR CCT TO PALMS	6
00412	BOLT & NUT M12X40 S/S	12
01053	WASHER M12 RD S/S	24
01081	WASHER, LOCK M12	12
00413	BOLT & NUT M12X50 S/S	6



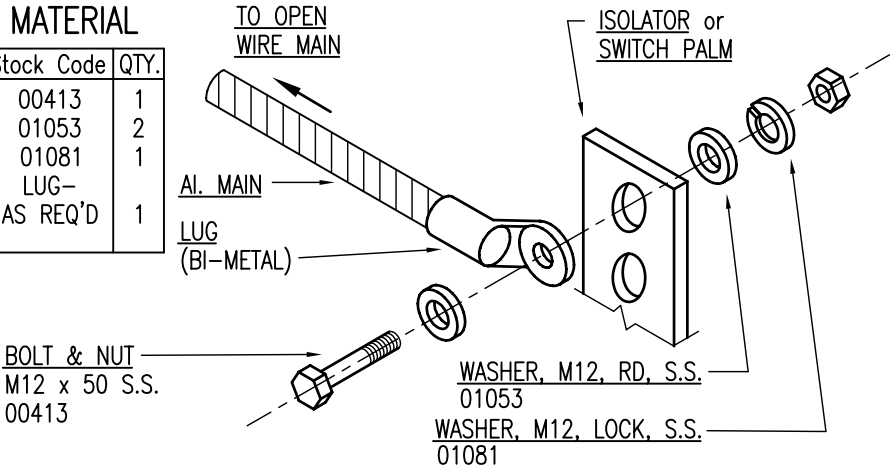
ORIGINAL ISSUE		THIS PAGE TO BE READ WITH PAGE 222	 energex © COPYRIGHT 2013 ENERGEX This drawing must not be reproduced in part or whole without written permission from ENERGEX	OVERHEAD CONSTRUCTION MANUAL		APP'D	F.ZAINI	Tech Stds		AUTOCAD
				POLE MOUNTED PLANT 11PC1 11kV S & C INTELLIRUPTER PULSE CLOSER		DATE	18-11-2013	4920-A4		A
						REC'D	A.ANAND	SECT	PAGE	
						CKD	A.ANAND	7	221	
						SHEET 1 OF 1				
						DWN	P.RELF	FILE:DWG_OHV\4920A4\57\PMPT7-221.DWG		

**POLE MOUNTED PLANT**  
**11PC1**  
 11kV S & C INTELLIRUPTER  
 PULSE CLOSER



MATERIAL

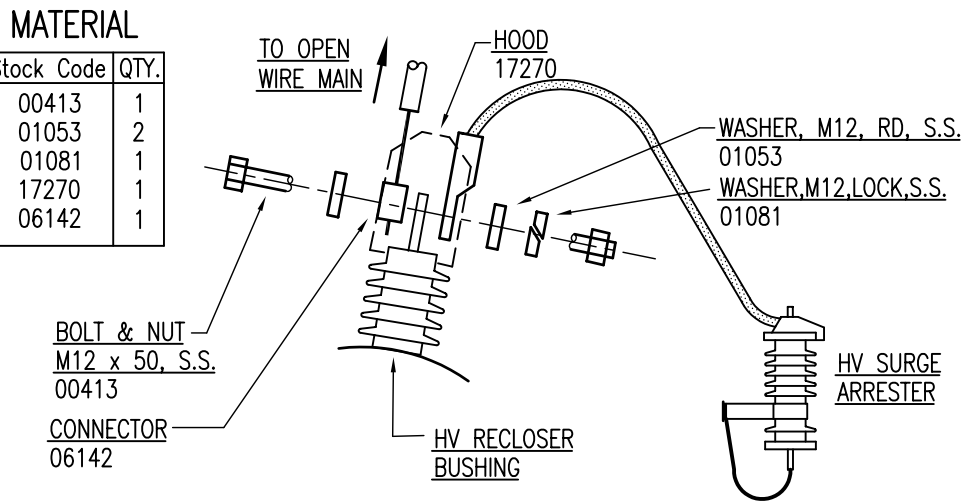
Stock Code	QTY.
00413	1
01053	2
01081	1
LUG- AS REQ'D	1



PAGE 7-255-1 – OPEN WIRE TO ISOLATING SWITCH PALM

MATERIAL

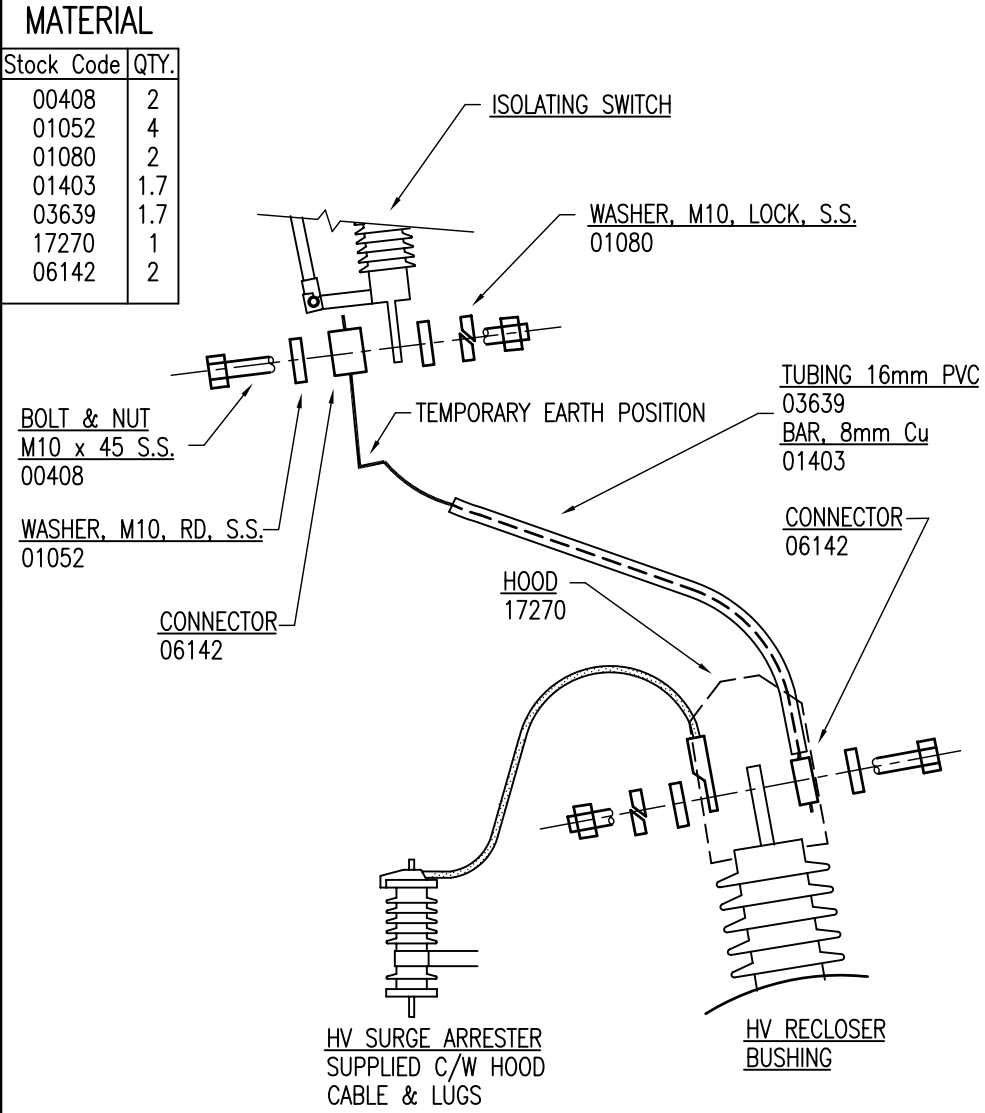
Stock Code	QTY.
00413	1
01053	2
01081	1
17270	1
06142	1



PAGE 7-255-2 – HV RECLOSER BUSHING

MATERIAL

Stock Code	QTY.
00408	2
01052	4
01080	2
01403	1.7
03639	1.7
17270	1
06142	2



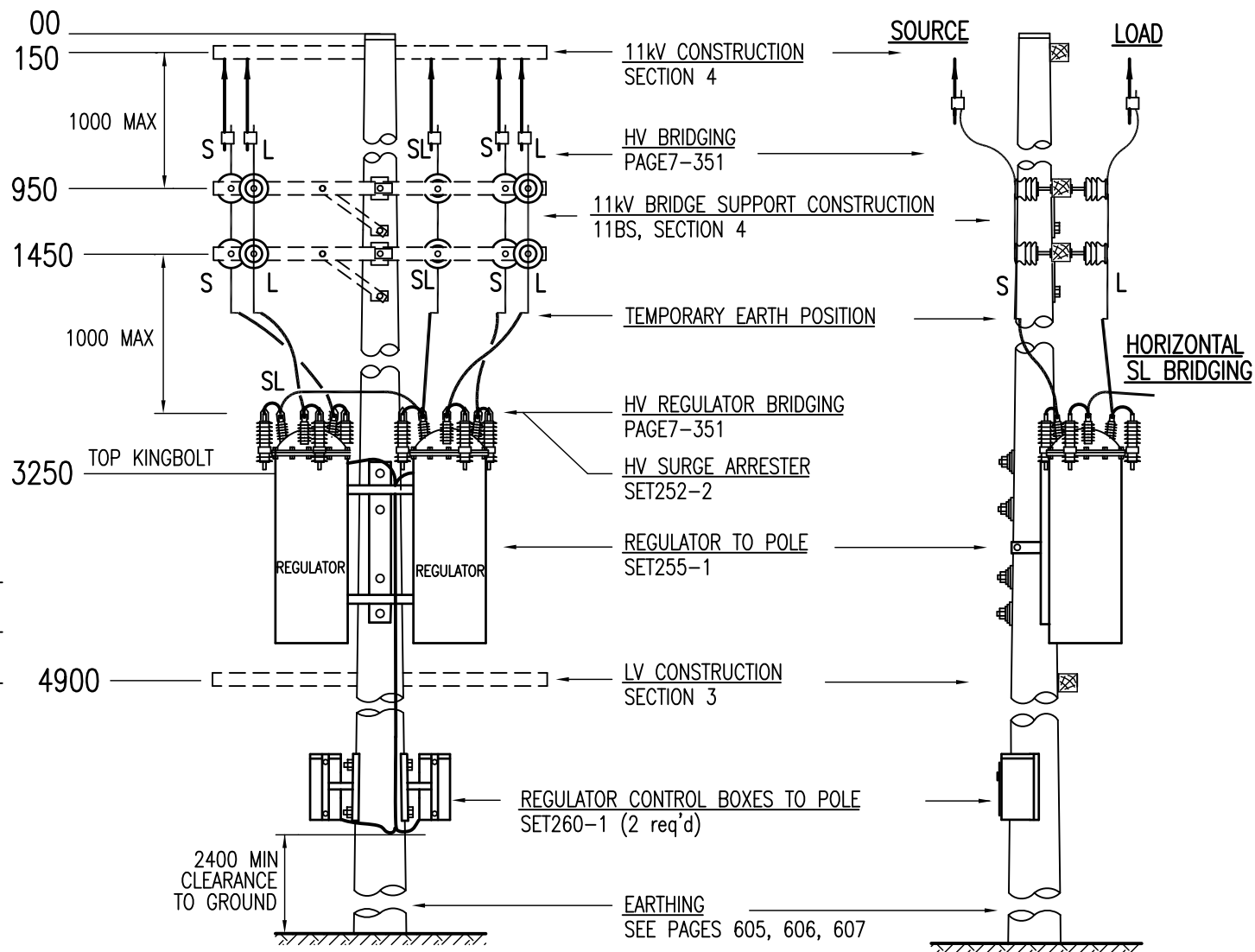
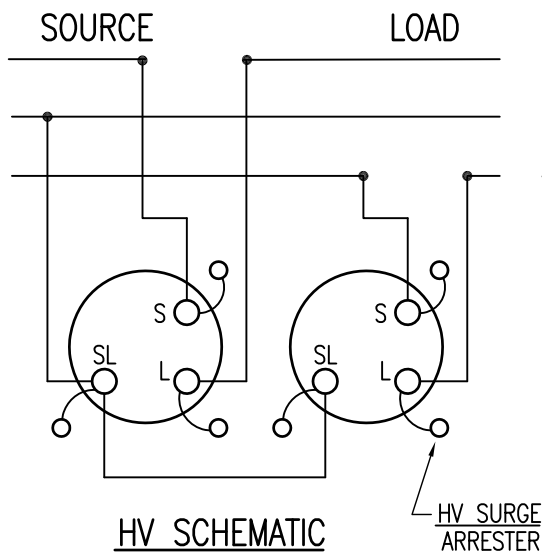
PAGE 7-255-3 – HV RECLOSER BUSHING TO ISOLATING SWITCH

CU LIST -

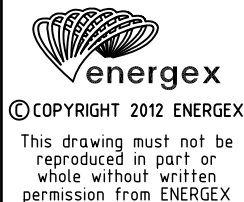
11REG/200R

PAGE7-255-2	6
SET252-2	6
SET255-1	1
SET260-1	2

REGULATOR ZS30-110 qty 2  
Open Delta (2 TANKS)  
Not included in 11REG/200R



ORIGINAL ISSUE	DATE	REVISION	J.TUNNEY	P.REF	CORRECT REGULATOR CU
A	28/02/12	APPD	CKD	DRN	
H		RENGISH			

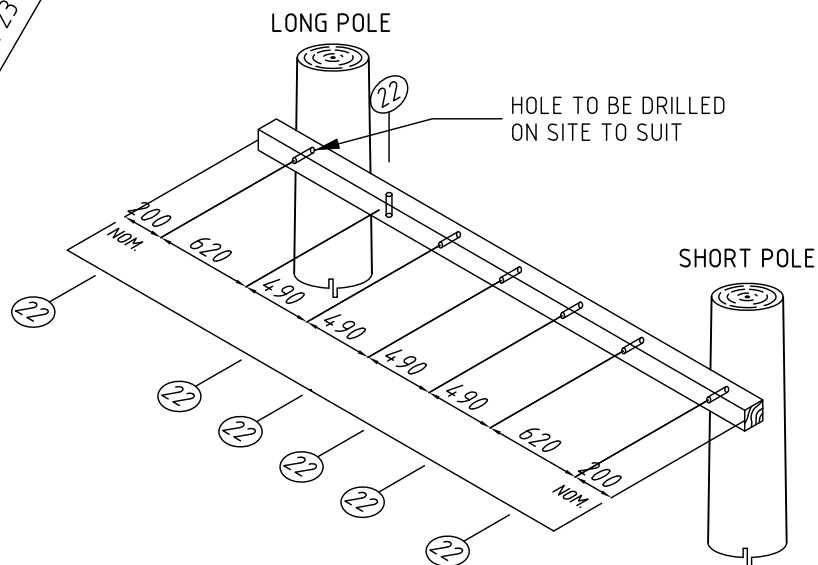


**OVERHEAD CONSTRUCTION MANUAL**  
**POLE MOUNTED PLANT**  
**11REG/200R**  
11kV REGULATOR STATION CONSTRUCTION  
OPEN DELTA (WOOD POLE)

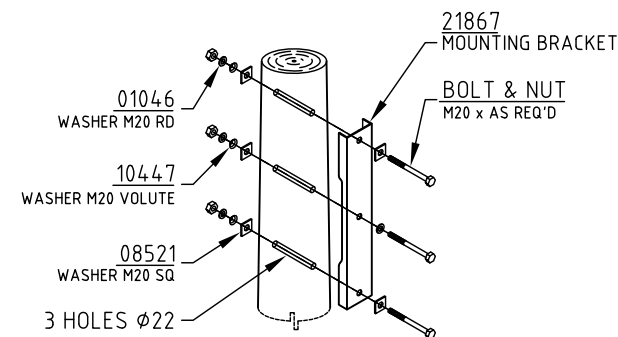
APP'D	K.Ball	<b>TECH STDS</b>	AUTOCAD
DATE	2-12-92	<b>4920-A4</b>	<b>H</b>
REC'D		SECT	PAGE
CKD		7	302
DWN	M.Welsh	SHEET	1 OF 1
		FILE:	

## CU LIST

	11REG/2003	11REG/200/23
SET154-4	2	2
11BS1	2	
PAGE7-255-2	9	3
SET255-1	2	
SET252-2	9	3
SET260-1	3	1
SET151-1	2	2
SET167-4	5	5
20279	45m	45m
17803	14	14
17799	3	3
11381	2	2
1046	4	4
10447	3	3
8521	5	5
21867	1	1
M20 BOLT & NUT	AR	AR
15568D	24	24
8/120mm LUG	9	9
07235	5m	5m
12953	2	2

**BRIDGING CROSSARM LINKING POLES**

CROSSARM 3600X100X125 SC11381

**BRACKET SINGLE REGULATOR  
MOUNTING TO WOOD POLE**

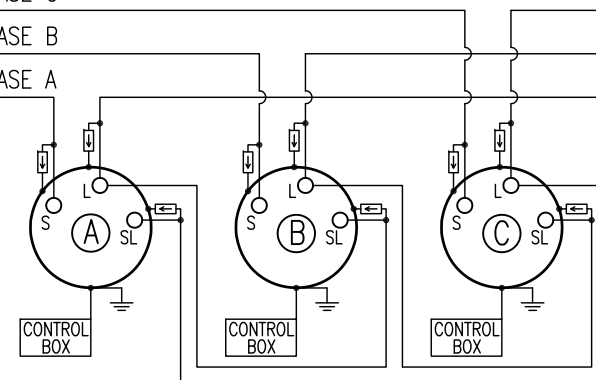
SOURCE

PHASE C

PHASE B

PHASE A

LOAD

**SCHEMATIC**THREE SINGLE PHASE REGULATORS CONTROL VOLTAGE ON A THREE-PHASE,  
THREE WIRE CIRCUIT**NOTES**

1. CROSSARM TO BE DRILLED ON SITE.
2. ENSURE CROSS-ARM BRIDGING BETWEEN THE TWO POLES IS LEVEL.
3. REGULATORS NOT INCLUDED IN CU. USE CU ZS30-110 (3 REQ'D)
4. IF UPGRADING EXISTING SITE, REPLACE EXISTING BRIDGING WITH CCT
5. BOTH POLES TO BE EARTHED AS PER SECTION 7 PAGE 606 OR 607. BUTT EARTHS TO BE CONNECTED BY UNDER GROUND 19/1.78 Cu EARTH TIE
6. BOTTOM BRIDGING XARM TO BE AT LEAST 3M ABOVE GROUND
7. SMALL POLE TO BE A 14m POLE



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11REG/2003

11kV REGULATOR STATION CONSTRUCTION  
CLOSED DELTA - 3 TANK (WOOD POLE)

APP'D F. ZAINI

DATE 23/06/2016

REC'D

CKD P. RELF

DWN P. RELF

**TECH STDS** AUTOCAD**4920-A4** A

SECT PAGE

7 311

SHEET 1 OF 1

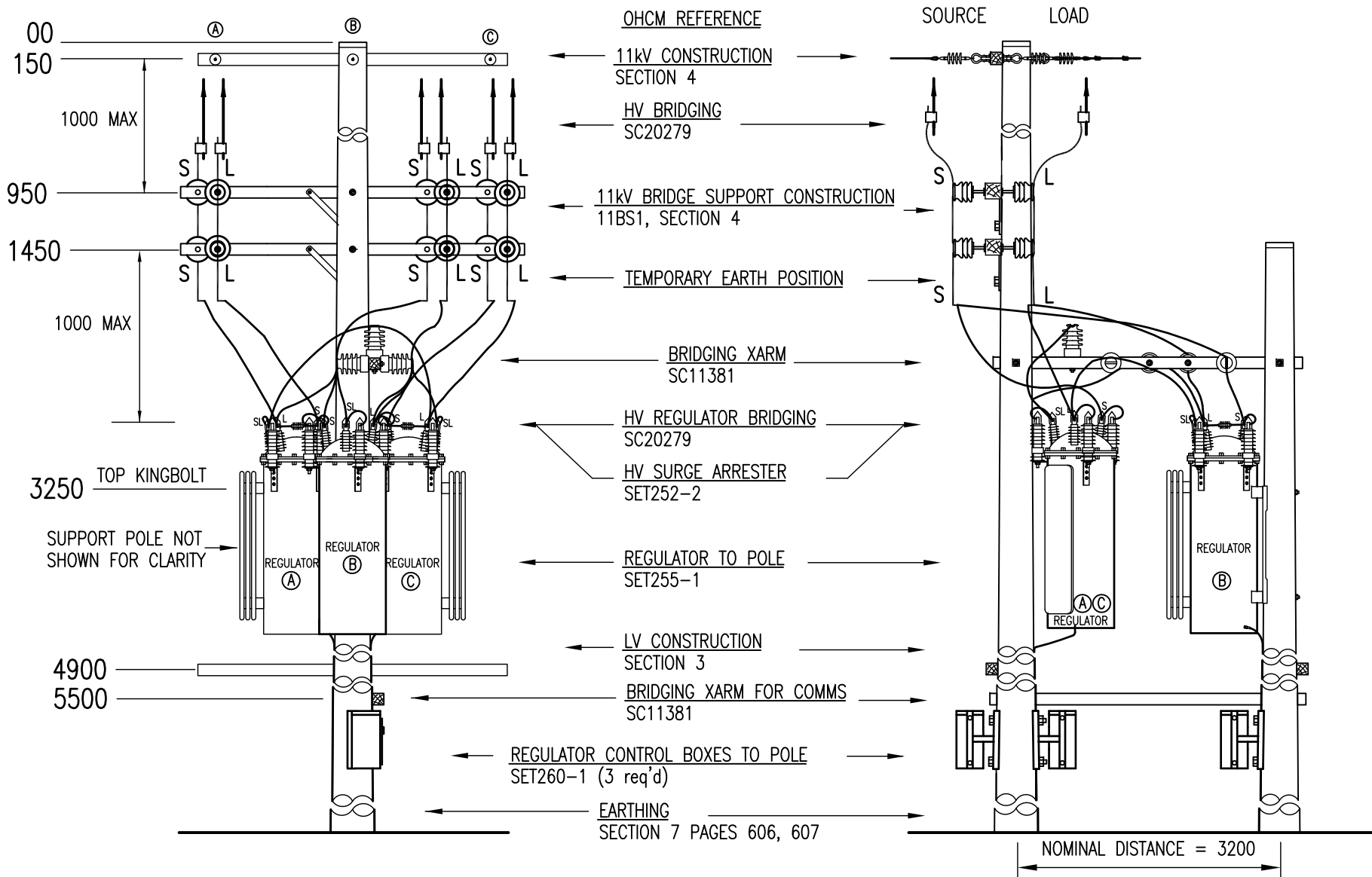
FILE: X X X X

THIS PAGE TO BE  
READ WITH PAGE 312

ORIGINAL ISSUE

A





## OVERHEAD CONSTRUCTION MANUAL

### 11kV CONSTRUCTION

#### 11REG/2003

11kV REGULATOR STATION CONSTRUCTION  
CLOSED DELTA - 3 TANK (WOOD POLE)

APP'D F. ZAINI

DATE 23/06/2016

REC'D

CKD P. RELF

DWN P. RELF

TECH STDS AUTOCAD

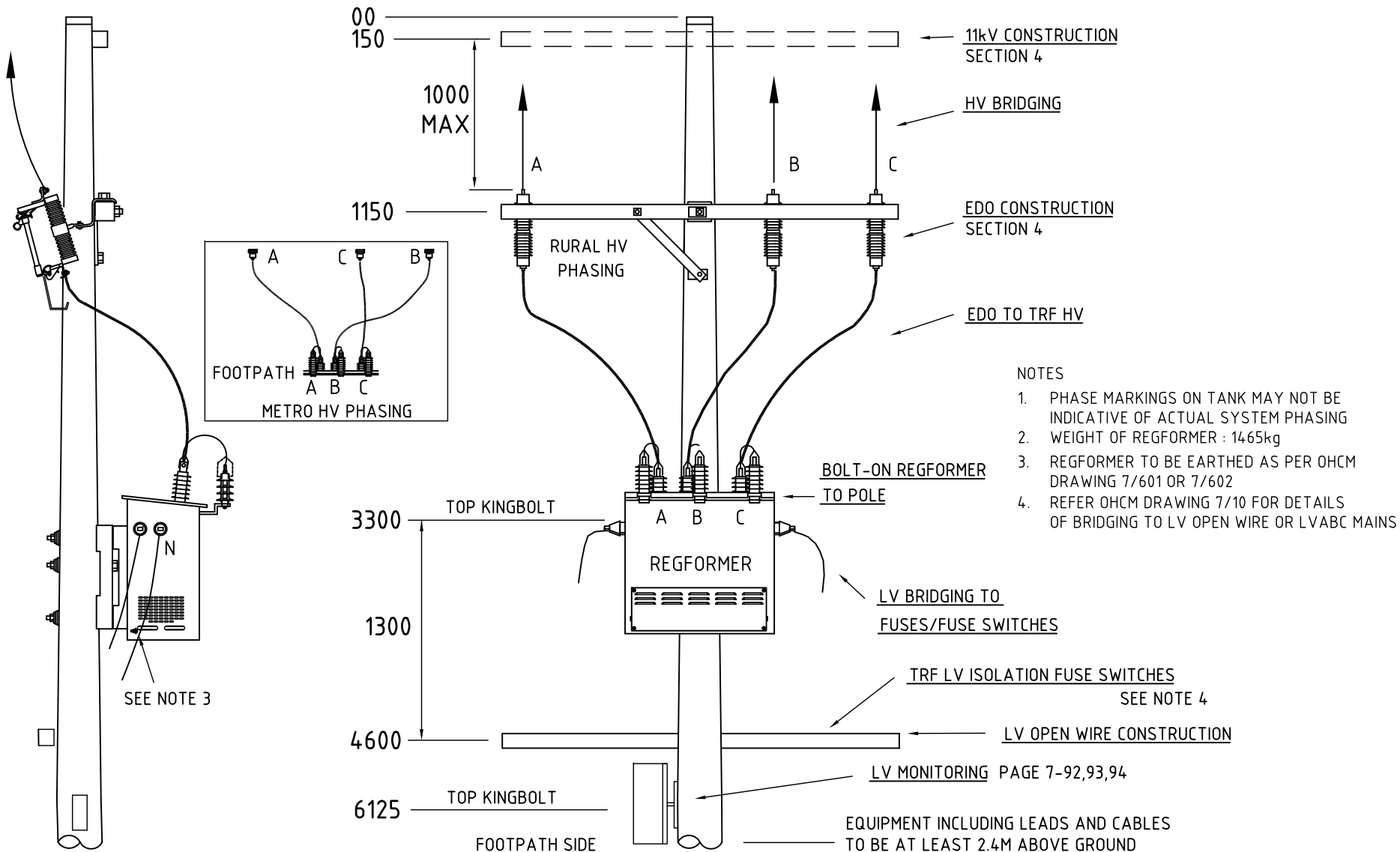
4920-A4 A

SECT PAGE

7 312

SHEET 1 OF 1

FILE: X X X X



ORIGINAL ISSUE

A



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## OVERHEAD CONSTRUCTION MANUAL

### POLE MOUNTED PLANT

11 REGFORMER (11RGT)

KINGBOLT SPACINGS

WOOD POLE

APP'D	C.LEE	Tech Stds		AUTOCAD
DATE	07/01/2015	4920-A4		A
REC'D		SECT	PAGE	
CKD	A.ANAND	7	321	
DWN	M.REID	SHEET 1 OF 1		FILE:

# MATERIAL LIST -

CU CODES

11RGT/100WA

11RGT/100AAL

11RGT/100

11RGT/100WA

11RGT/100AAL

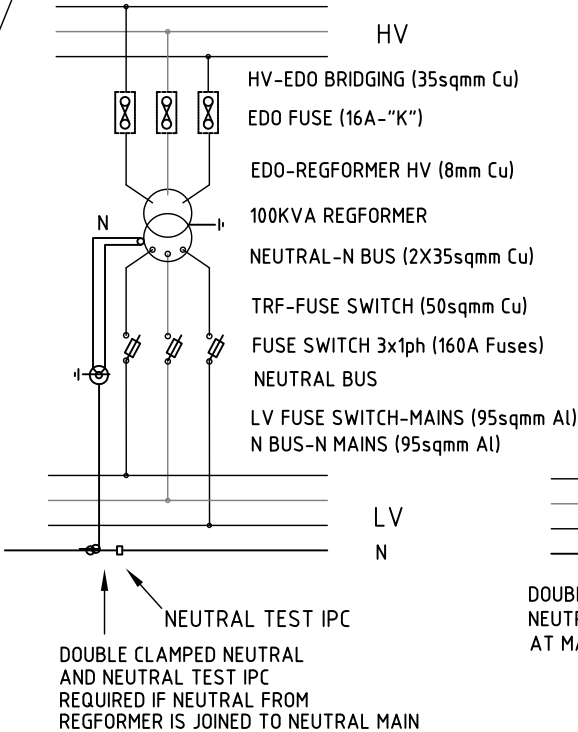
11RGT/100

MATERIAL	DESCRIPTION	QTY	QTY	QTY
PAGE7-55-	BAIL & LLC TO EDO	AR		AR
PAGE7-55-1	BAR STIRRUP ASSY & LLC TO EDO (HVABC)		3	
11ED03	EDO CONSTRUCTION - SECTION 4			
14231	EDO FUSE LINK - 16A "K"	3	3	3
PAGE7-324-1	EDO TO REGFORMER HV	3	3	3
SET250-15	BOLT ON POLE BRACKET	1	1	1
PAGE7-81-12	LV PHASE BRIDGE TRF TO 1PH FUSE SWITCH	3	3	3
PAGE7-79-12	NEUTRAL BRIDGE TRF TO N-BUS	1	1	
PAGE7-74-3	XARM, 3x1PH FUSE SWITCHES & N-BUS	1	1	
04465	160A FUSES FOR FUSE SWITCHES	3	3	3
PAGE7-80-17	BRIDGES - FUSE SWITCHES & N-BUS TO MAINS	1	1	
20849	NEUTRAL TEST IPC	1	1	
PAGE7-79-17	NEUTRAL BRIDGE TRF TO MAINS NEUTRAL			1
SET3-2	L.V 1PH 630A FUSE SWITCH TO X-ARM			3
PAGE7-80-12	LV PHASE BRIDGE 1PH FUSE SWITCH TO MAINS			3
23495	11KV 3PH 100KVA REGFORMER			
PTSMRW200	TRANSFORMER MONITORING KIT	1	1	1

11RGT/100WA - 100kVA HV OPEN WIRE, LVABC

11RGT/100AAL - 100kVA HVABC, LVABC

11RGT/100 - 100kVA HV OPEN WIRE, LV OPEN WIRE

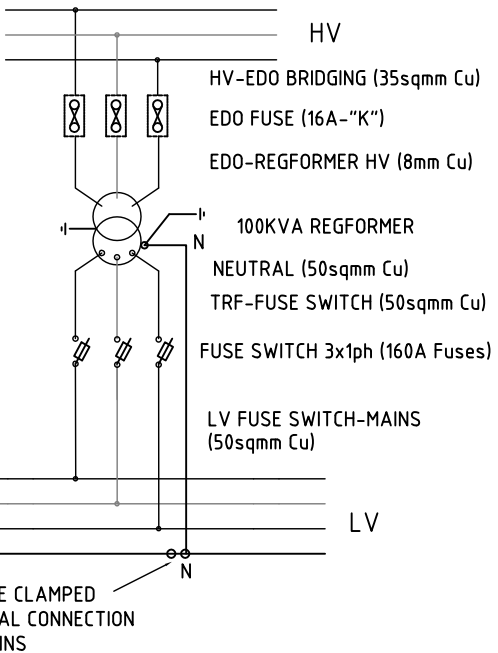


## LV ABC

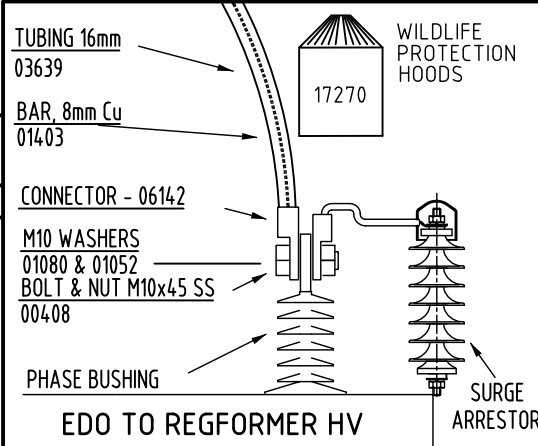
COPPER CABLE SIZE CONVERSION

35 sqmm	19/1.53
50 sqmm	19/1.78
95 sqmm	37/1.78
185 sqmm	37/2.52

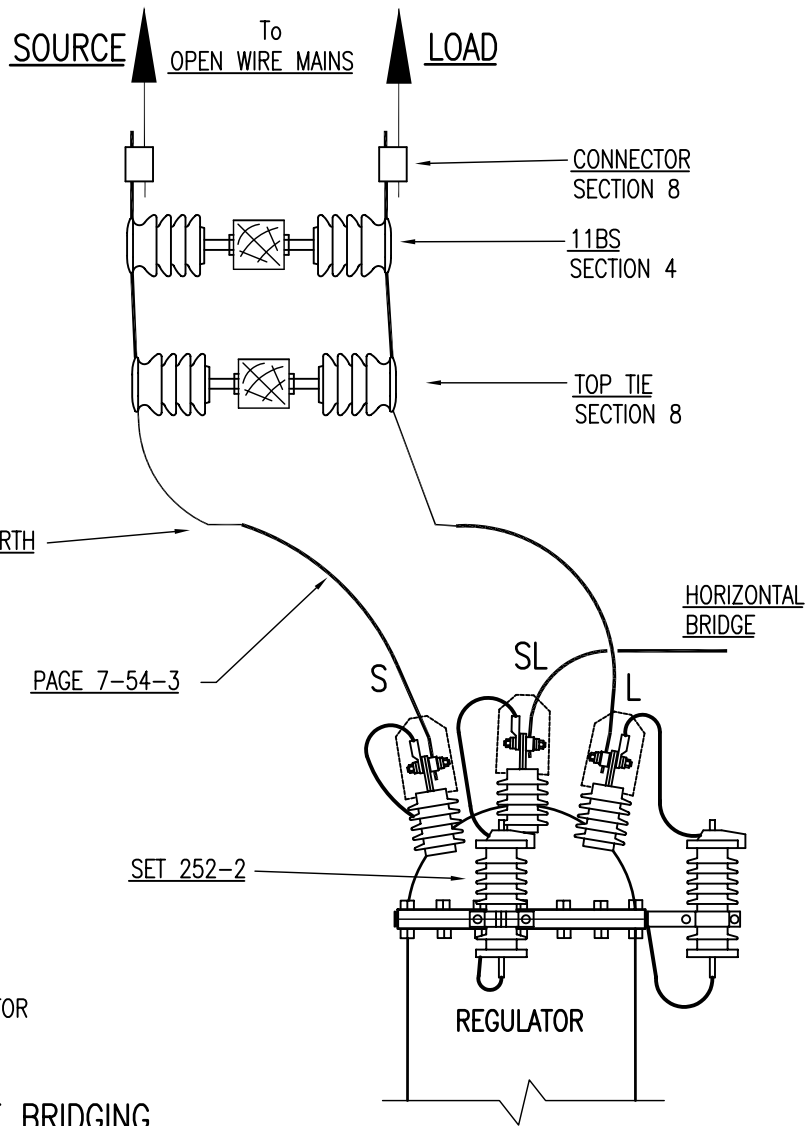
PAGE 7-324-1	
STOCK CODE	QTY.
00408	1
01052	2
01080	1
01403	3
03639	2
17270	1
06142	1



## LV OPEN WIRE



ORIGINAL ISSUE		DATE		F. ZAINI		A. ANAND		P. RELF		Remove quantities from 11ED03 and 23495 Add PTSMRW200		energex		COPYRIGHT 2016 ENERGEX		This drawing must not be reproduced in part or whole without written permission from ENERGEX		OVERHEAD CONSTRUCTION MANUAL		APP'D C.LEE		TECH STDS		AUTOCAD	
A	B	15/07/2016																POLE MOUNTED PLANT		DATE 07/01/2015		4920-A4		B	
																		100 KVA REGFORMER				SECT		PAGE	
																		3 PHASE 11 KV POLE REGFORMER				7		324	
																		SUPPLY TO LVABC AND OPEN WIRE - WOOD POLE				SHEET		1 OF 1	
																						FILE:			



## OPEN WIRE BRIDGING

A	ORIGINAL ISSUE	
C	DATE	30-01-2008
APPD	RENGISH	
CKD	J.TUNNEY	
DRN	G.JAYAWERA	
NEW TEMPLATE		



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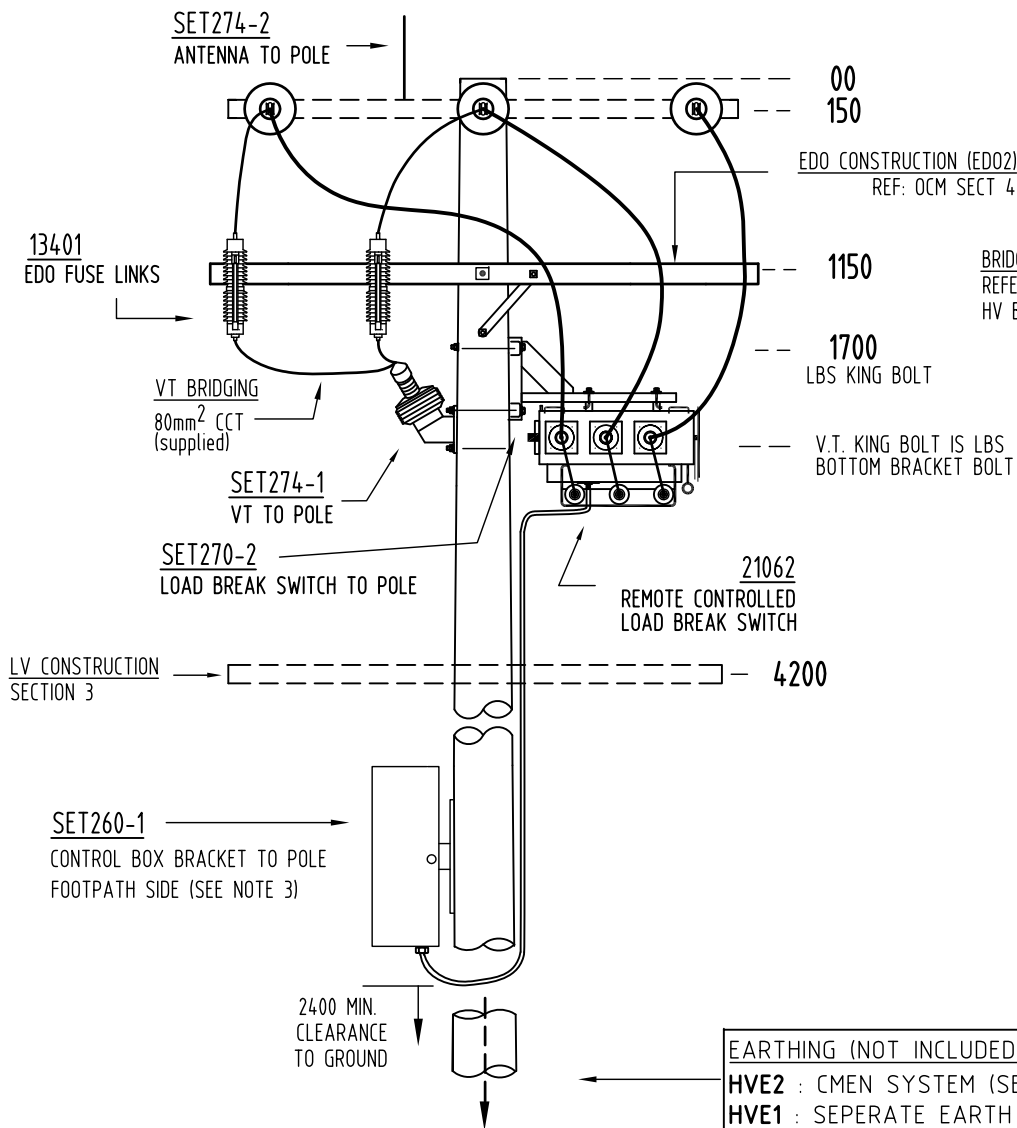
## OVERHEAD CONSTRUCTION MANUAL

### POLE MOUNTED PLANT

REGULATOR HV BRIDGING  
ARRANGEMENTS

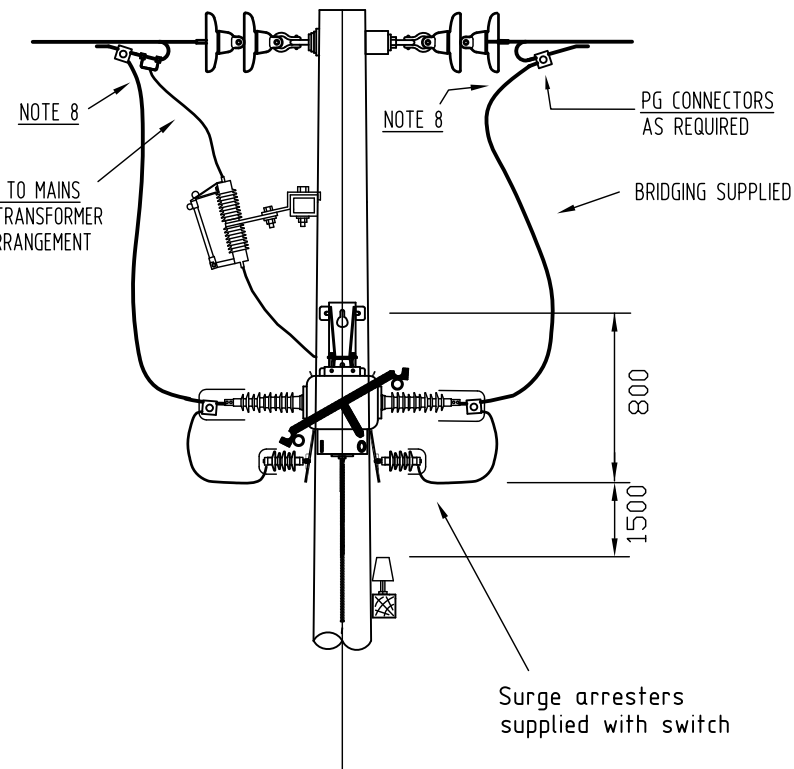
APP'D	K.B.	TECH STDS		AUTOCAD
DATE	2-12-92	4920-A4		C
REC'D		SECT	PAGE	
CKD		7	351	
DWN	M.Welsh	SHEET 1 OF 1		
		FILE:		






SOURCE

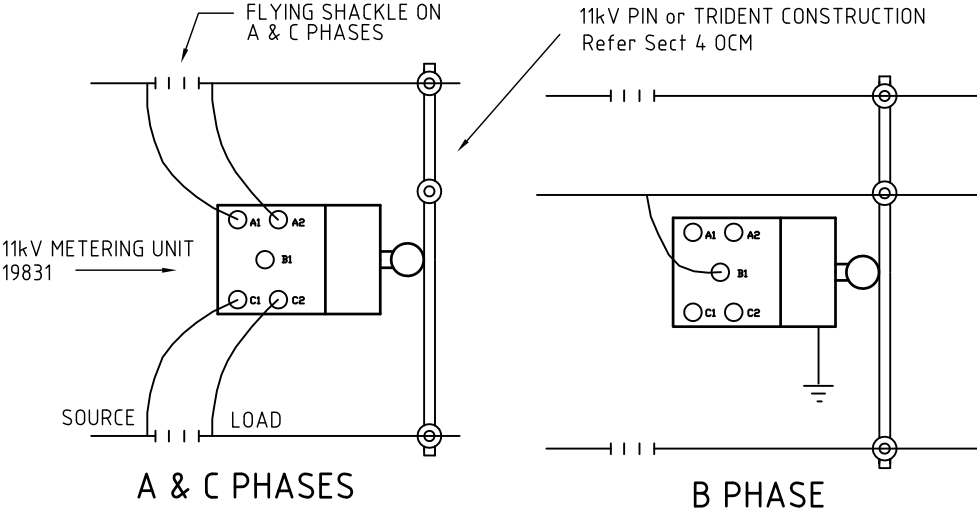
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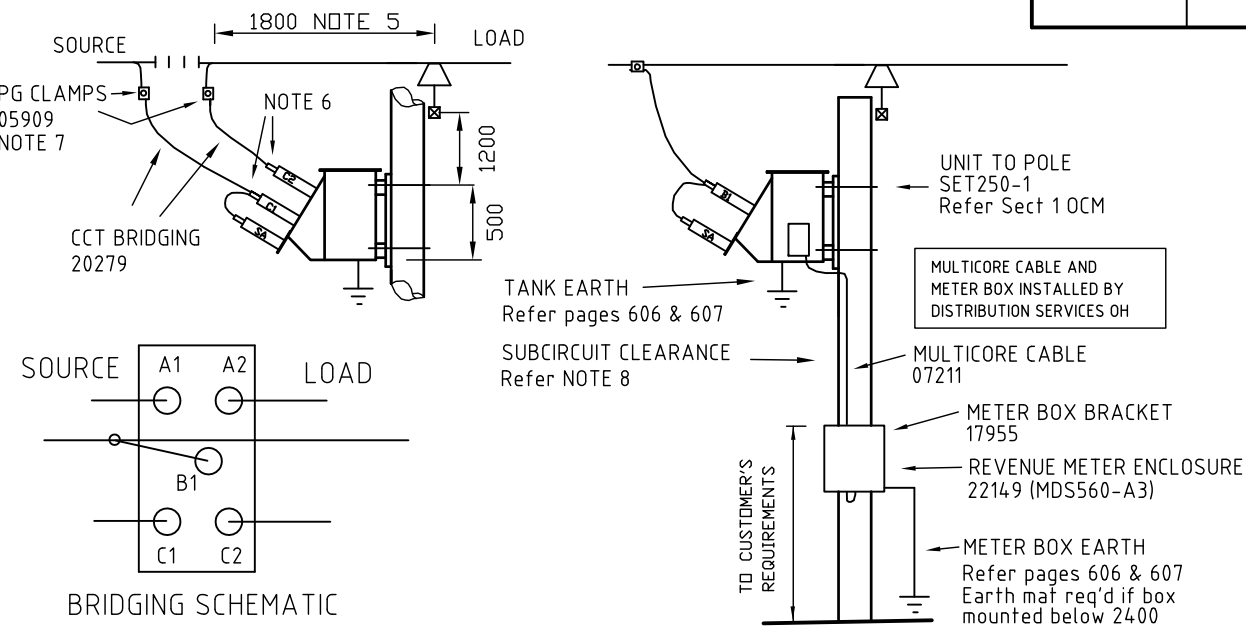
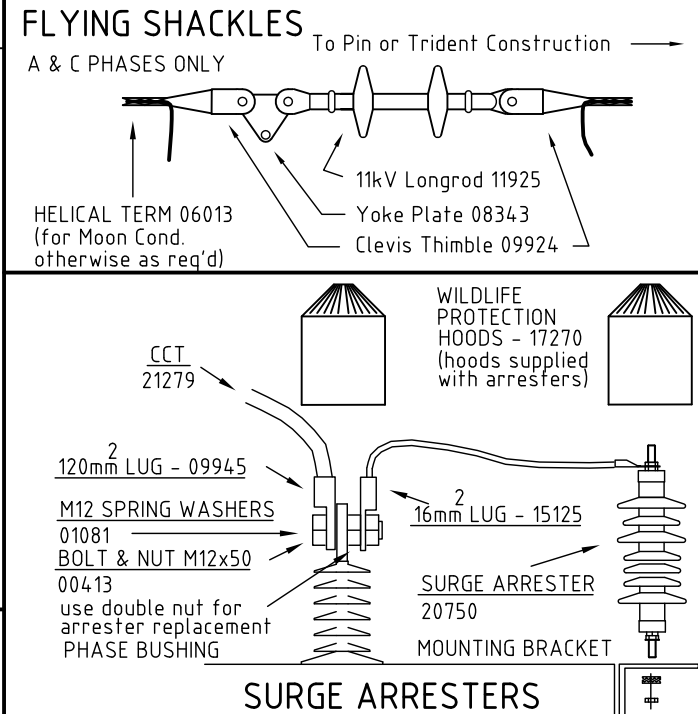
EARTHING (NOT INCLUDED IN 11LBSRMP, 11LBSRMPFF)  
HVE2 : CMEN SYSTEM (SEE PAGE 607)  
HVE1 : SEPERATE EARTH SYSTEM (SEE PAGE 606)

APPROVED ISOLATION POINT

A	ORIGINAL ISSUE	DATE 07/11/13		APPD A.SMITH DE PEREZ	CKD SPETTERSON	DRN P.RELF	Added fullyfitted switch to drawing	THIS PAGE TO BE READ WITH PAGE 401	 ©COPYRIGHT 2013 ENERGEX This drawing must not be reproduced in part or whole without written permission from ENERGEX	OVERHEAD CONSTRUCTION MANUAL		APP'D K.B.	TECH STDS		AUTOCAD	
										DATE 15-10-93	4920-A4		I			
										REC'D	SECT 7	PAGE 402				
										CKD R.W.	SHEET 1 OF 1					
										DWN M.W.	FILE:					
										POLE MOUNTED PLANT						
										11LBSRMP, 11LBSRMPFF						
										11kV REMOTE CONTROLLED LOAD BREAK SWITCH						
										MID POLE MOUNTED - SCHNEIDER RL27						



11MTU	
SET250-1	1
19831	1
17955	1
05909	9
20279	10
07211	10
11925	2
08343	2
09924	4
09945	5
01081	5
00413	5
15125	3
20750	3
17270	3
06013	4
22149	1



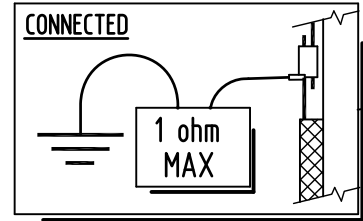
- ### NOTES
1. MOUNT METERING UNIT ON OPPOSITE SIDE OF POLE TO 11kV CONSTRUCTION
  2. PHASE MARKINGS ON TANK MAY NOT BE INDICATIVE OF ACTUAL SYSTEM PHASING
  3. WEIGHT OF METERING UNIT : 450kg
  4. CURRENT RATING : 400A
  5. WRAPPING END OF HELICAL TERMINATION MUST FINISH AT LEAST 300 mm FROM 11kV INSULATOR
  6. USE 50mm BOLTS AT BUSHINGS WHERE SURGE ARRESTER LEADS ARE CONNECTED. OTHERWISE USE 40 mm BOLTS
  7. USE 2 PG CLAMPS PER CONNECTION ON A & C PHASES
  8. CLEARANCE FROM BOTTOM OF TANK TO SUBCIRCUIT IS 1.5 METRES MINIMUM



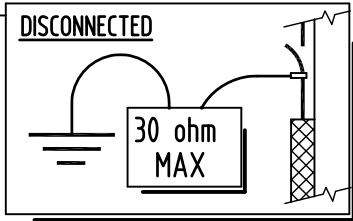
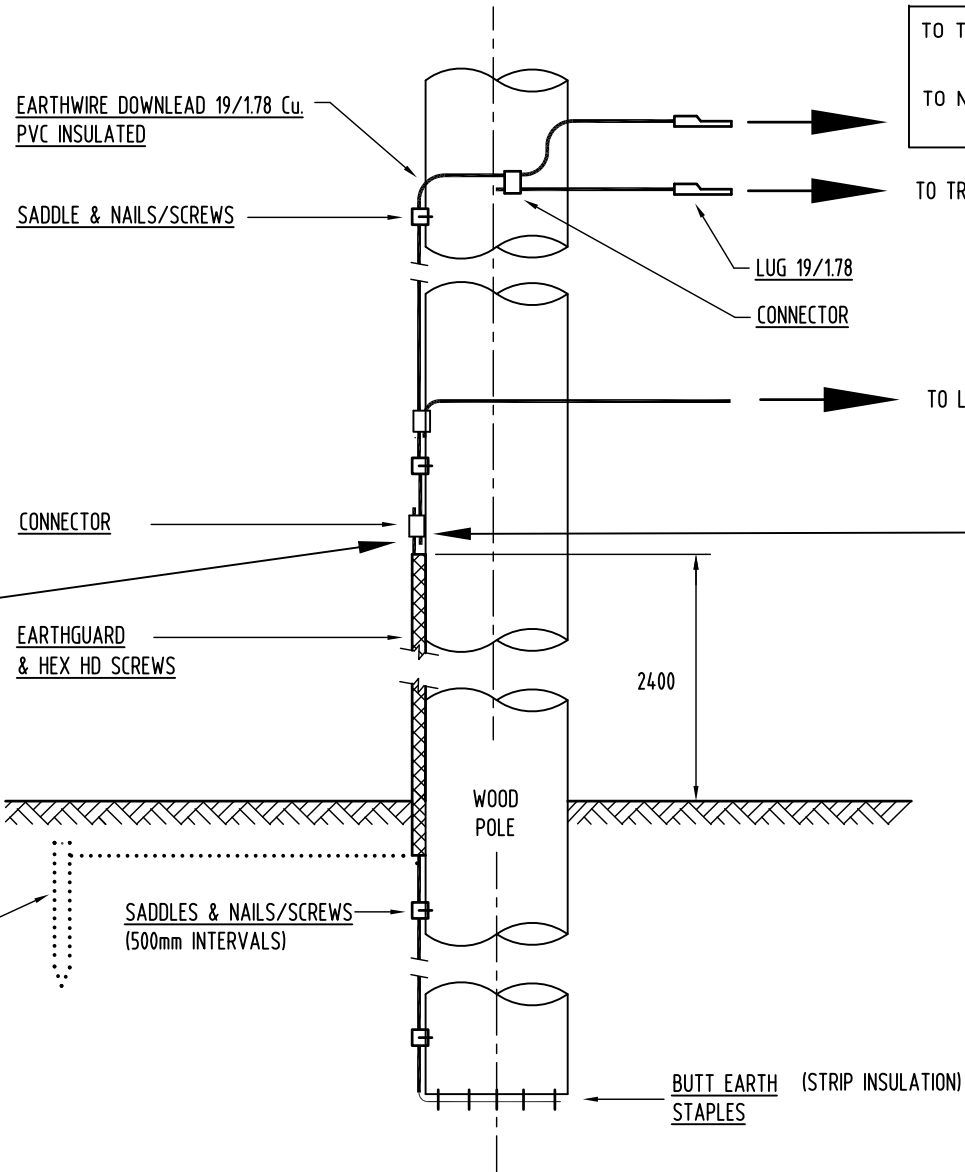


MATERIAL LIST - PTCOM

STOCK CODE	DESCRIPTION	QTY
03215	STAPLE	AR
04926	SADDLE	24
06122	CONNECTOR	3
22518	EARTH GUARD 2.7m BLACK PVC	1
06259	LUG, 19/1.78	2
07235	EARTHWIRE 19/1.78 Cu	20
11430 or 17765	NAIL 30mm Lg OR SCREW 30mm Lg	AR
22517	SCREWS 50mm Lg (Earth Guard)	AR



ADDITIONAL EARTHING  
IF REQUIRED  
(SECTION 8, PAGE 8-101)



A	ORIGINAL ISSUE		APPD	R:English	CKD	J:Turney	DRN	P:Relf	PVC earth guard replaces timber earth guard
	DATE	16-6-2011							

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OVERHEAD CONSTRUCTION MANUAL

POLE MOUNTED PLANT

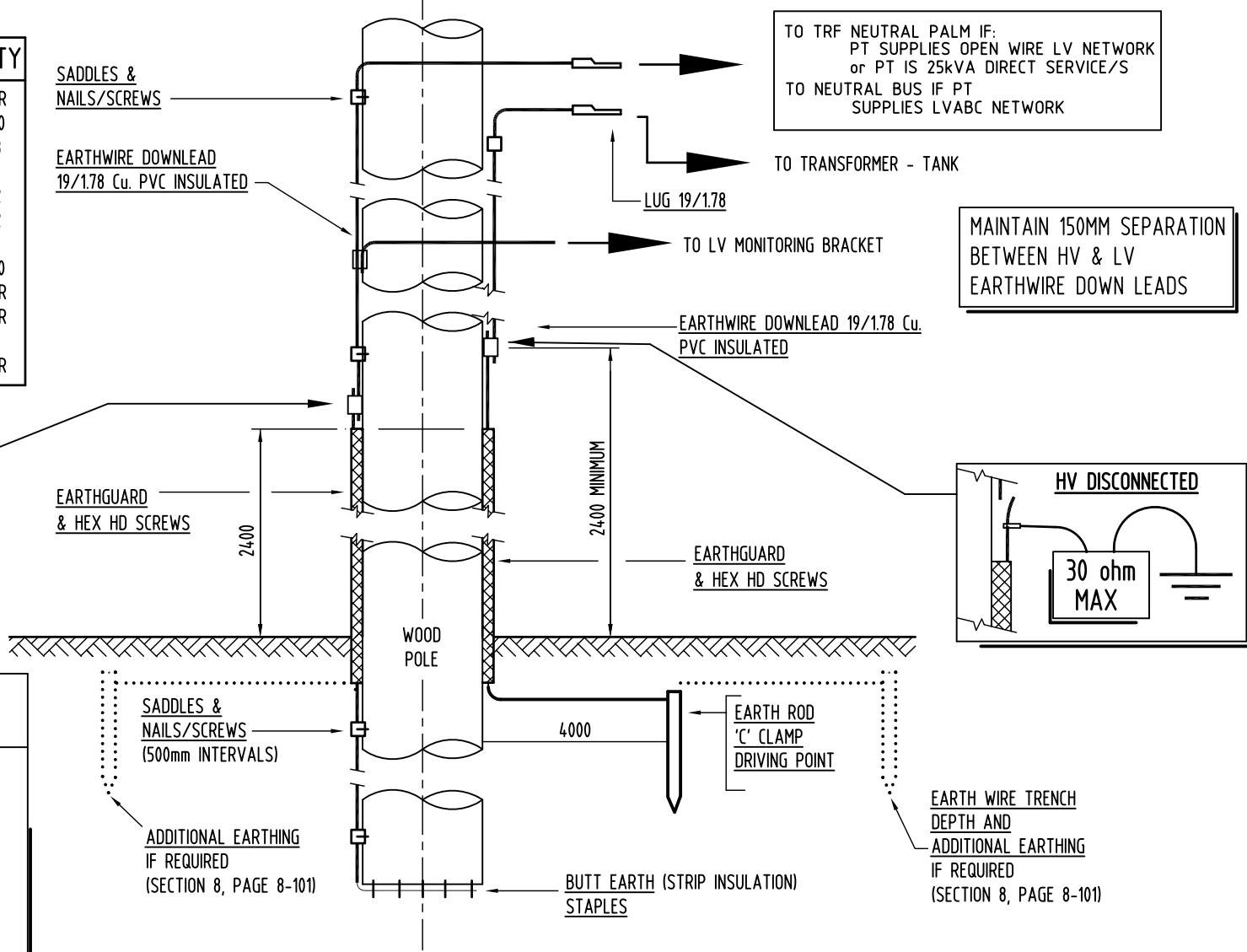
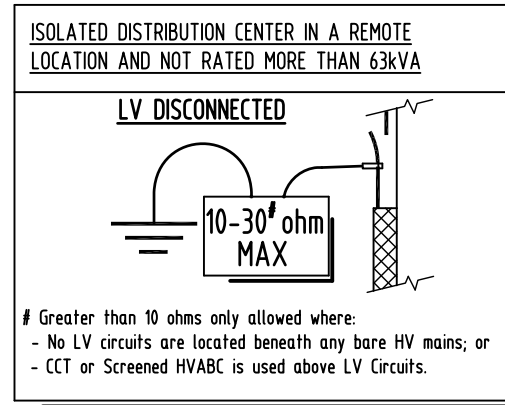
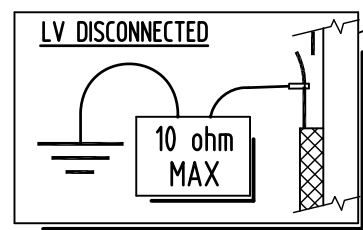
PTCOM

TRANSFORMER COMMON EARTH (WOOD POLE)

APP'D	K.B.	S&SD		AUTOCAD
DATE	2-12-92	4920-A4		1
REC'D		SECT	PAGE	
CKD		7	601	
DWN	M.Welsh	SHEET 1 OF 1		
		FILE:		

MATERIAL LIST - PTSEP

STOCK CODE	DESCRIPTION	QTY
03215	STAPLE	AR
04926	SADDLE	20
06122	CONNECTOR	3
22946	EARTH ROD	1
22518	EARTH GUARD 2.7m BLACK PVC	2
06259	LUG, 19/178	2
06339	DRIVING POINT	1
07235	EARTHWIRE 19/178 Cu	30
11430 or 17765	NAIL 30mm Lg OR SCREW 30mm Lg	AR
22517	SCREWS 50mm Lg (Earth Guard)	AR
12952	'C' CLAMP	1
14318	MARKING TAPE	AR



ORIGINAL ISSUE	DATE	APP'D	CKD	DRN
J	02/02/2018	F. ZAINI	P. RELF	F. ZAINI

Isolated Distribution Centre note updated to align with Code of Practice - Works

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OVERHEAD CONSTRUCTION MANUAL

POLE MOUNTED PLANT

PTSEP

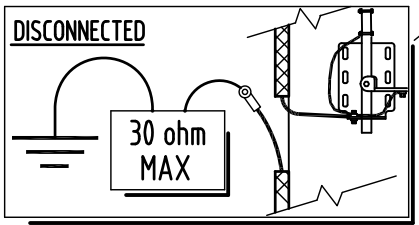
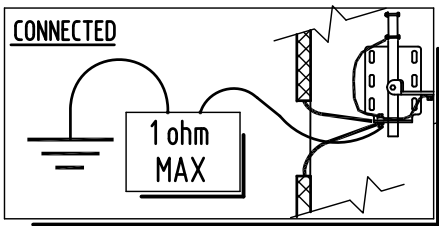
TRANSFORMER SEPARATE EARTH (WOOD POLE)

APP'D	K.B.	S&SD	AUTOCAD
DATE	2-12-92	4920-A4	J
REC'D		SECT	PAGE
CKD		7	602
DWN	M.Welsh	SHEET	1 OF 1
		FILE:	

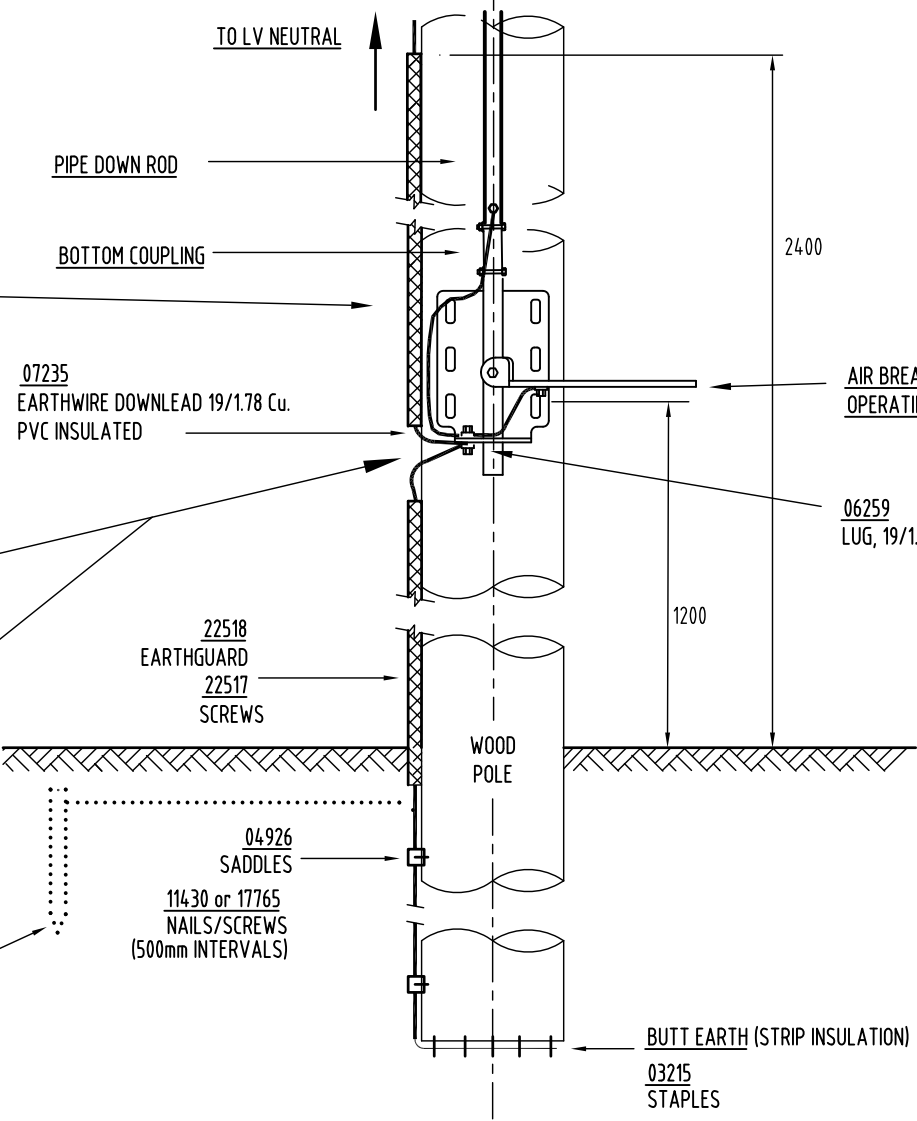
MATERIAL LIST - ABSE

STOCK CODE	QTY
04926	24
22518	1
06259	2
07235	20


EARTHING BRAIDS  
SUPPLIED WITH SWITCH  
CONNECT BETWEEN DOWNROD  
COUPLING, BRACKET & HANDLE



ADDITIONAL EARTHING  
IF REQUIRED  
(SECTION 8, PAGE 8-101)



ORIGINAL ISSUE	DATE	APPD	CKD	DRN	ADDED EARTH TO HANDLE
A	23/12/2014	F.ZAINI	P.RELF	J.LANSLEY	

  
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OVERHEAD CONSTRUCTION MANUAL  
POLE MOUNTED PLANT  
ABSE  
11kV & 33kV AIR BREAK SWITCH COMMON EARTH (WOOD POLE)

APP'D	K.B.	TECH STDS		AUTOCAD
DATE	2-12-92	4920-A4		H
REC'D		SECT	PAGE	
CKD		7	603	
DWN	M.Welsh	SHEET 1 OF 1		
FILE:				

## MATERIAL LIST - ABSES

STOCK CODE	QTY
03215	12
04926	6
22518	1
06259	1
07235	7

PIPE DOWN ROD

### BOTTOM COUPLING

EARTHING BRAIDS  
SUPPLIED WITH SWITCH  
CONNECT BETWEEN DOWNROD  
COUPLING, BRACKET & HANDLE

07235  
EARTHWIRE DOWNLEAD 19/1.78 Cu.  
PVC INSULATED

AIR BREAK SWITCH  
OPERATING HANDLE

06259  
LUG. 19/1.78

22518  
EARTHGUARD  
22517  
SCREWS

04926  
SADDLES

11430 or 17765  
NAILS/SCREWS  
(500mm INTERVALS)

ADDITIONAL EARTHING  
IF REQUIRED  
(SECTION 8, PAGE 8-101)

BUTT EARTH (STRIP INSULATION)  
03215  
STAPLES

## 11kV AIR BREAK SWITCH - SEPARATE EARTH - ABSES

## MATERIAL LIST - 33ABSES

STOCK CODE	QTY
03215	12
04926	6
22518	1
06259	1
07235	12
12953	2
21317	1
12952	2

21317  
LABEL  
Fasten to handle  
bracket by cable tie

THIS A/B HAS BEEN FITTED  
WITH A BURIED EARTH MAT  
REFER OH CONST MANUAL

12953 CONNECTOR

450 IN CULTIVATED AREAS  
OTHERWISE 300

EARTH MAT ARRANGEMENT IS ONLY REQUIRED FOR 33kV AIR BREAK SWITCH IN SEPARATELY EARTHED AREA. ALL OTHER DETAIL IS THE SAME AS 11kV AIR BREAK SWITCH IN SEPARATELY EARTHED AREA

### 33kV AIR BREAK SWITCH - SEPARATE & COMMON EARTH

A	ORIGINAL ISSUE	
G	DATE	23/12/2014
PAPD	F.ZANI	
CKD	P.RELF	
DRN	J.LANSLEY	
ADDED EARTH TO HANDLE		



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# OVERHEAD CONSTRUCTION MANUAL

## POLE MOUNTED PLANT

## ABSES & 33ABSES

11 kV AIR BREAK SEPARATE EARTH

33kV AIR BREAK SEPARATE &amp; COMMON EARTH


APP'D	K.B.	<b>TECH STDS</b>		AUTOCAD
DATE	2-12-92	<b>4920-A4</b>		<b>G</b>
REC'D		SECT	PAGE	
		7	604	
CKD		SHEET 1 OF 1		
DWN	M.Welsh	FILE:		

CU LIST-

STOCK CODE	QTY	QTY
03215	12	12
04926	24	24
22518	1	1
06259	1	1
07235	20m	22m
06122		2



HV EQUIPMENT EARTH SEPARATE - HVE  
HV EQUIPMENT EARTH COMMON - HVEC

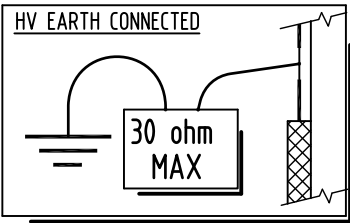
A	ORIGINAL ISSUE		APPD	RENGUSH	CKD	J.TUNNEY	DRN	J.TUNNEY	EARTHGUARD NOW POLYMERIC		 © COPYRIGHT 2011 ENERGEX This drawing must not be reproduced in part or whole without written permission from ENERGEX	OVERHEAD CONSTRUCTION MANUAL	APP'D	KB	TECH STDS		AUTOCAD
	E	DATE											14-09-2011	4920-A4		E	
	REC'D												SECT	PAGE			
	CKD												7	605			
	DWN												M.WELSH	SHEET 1 OF 1			
													FILE:				

MATERIAL LIST - HVE1

STOCK CODE	DESCRIPTION	HVE1	HVE1/D (NOTE 4)
00411	BOLT & NUT, M12 x 30, SS	3	3
01053	WASHER, M12, RD, SS	3	3
01081	WASHER, M12, LOCK, SS	3	3
06122	PG CLAMP	2	2
22518	EARTH GUARD	1	1
06259	LUG 19/178	4	9
07235	EARTHWIRE 19/178 Cu.	20m	30m
06338	DRIVING POINT NORMAL	AR	AR
06339	DRIVING POINT STAR	AR	AR
12952	CONNECTOR 'C'	1	4
22946	EARTH ROD	1	4

NOTE

- For two or more control boxes LOOP Earth Bond Wire.
- Control box to be 150 min. from Earthwire Downlead.
- Control cable to be 50 min from Earth Bond Wire.
- Where bottom of box is required to be mounted lower than 2400, an earth mat arrangement shall be installed as per layout below



STRIP INSULATION AT THIS POINT TO TEST

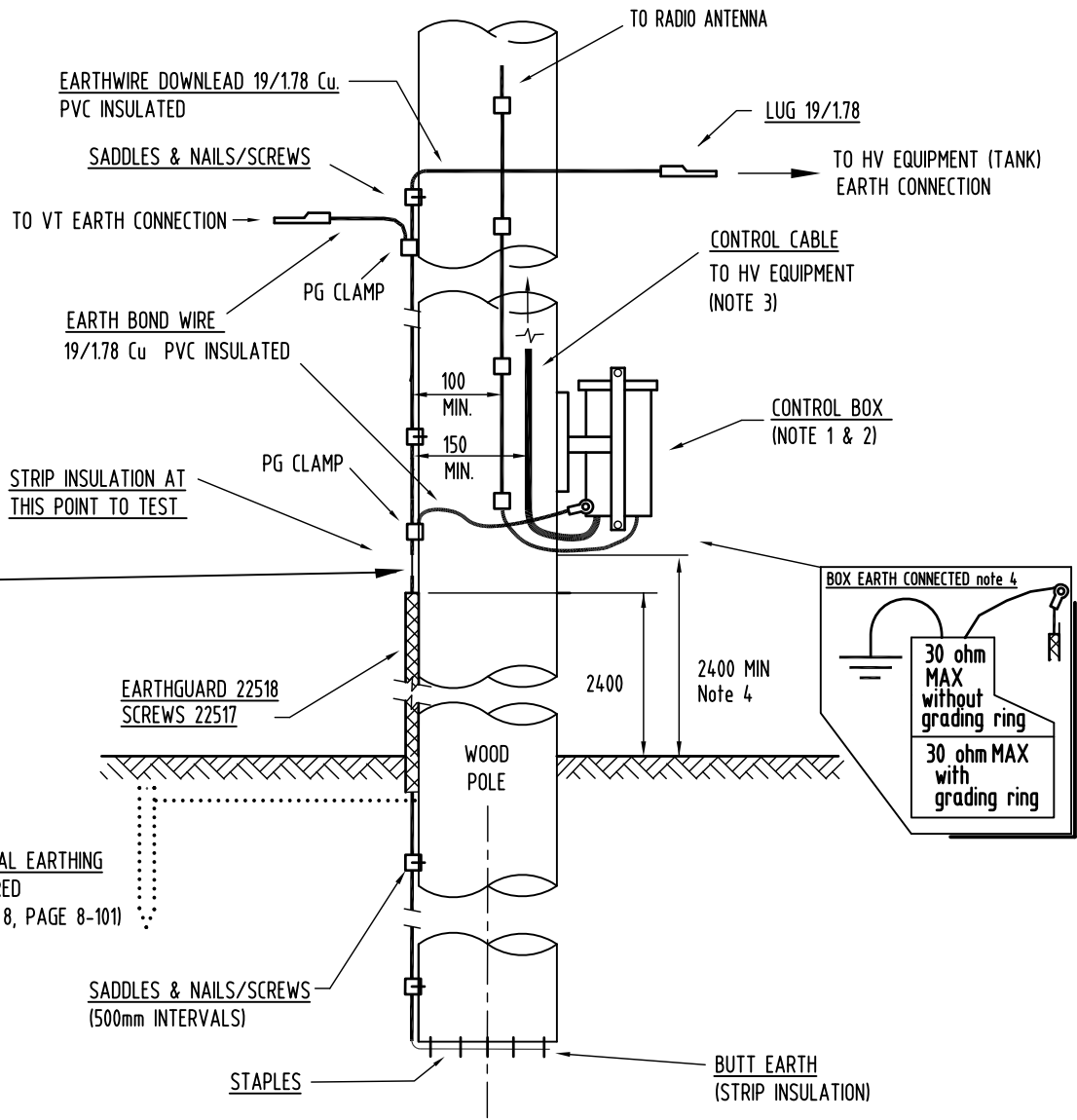
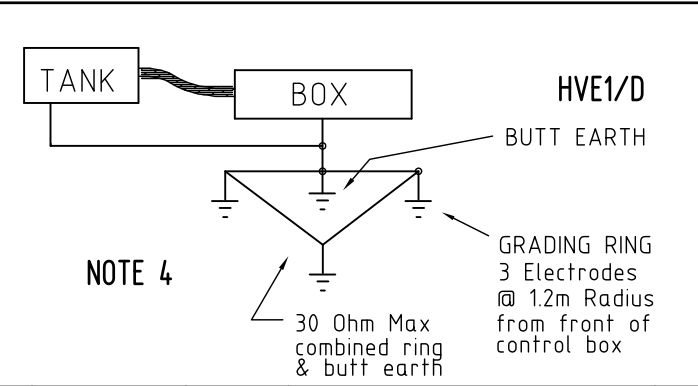
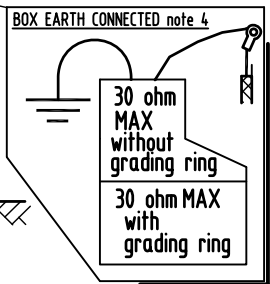
EARTHGUARD 22518  
SCREWS 22517

ADDITIONAL EARTHING  
IF REQUIRED  
(SECTION 8, PAGE 8-101)


SADDLES & NAILS/SCREWS  
(500mm INTERVALS)

STAPLES

BUTT EARTH  
(STRIP INSULATION)



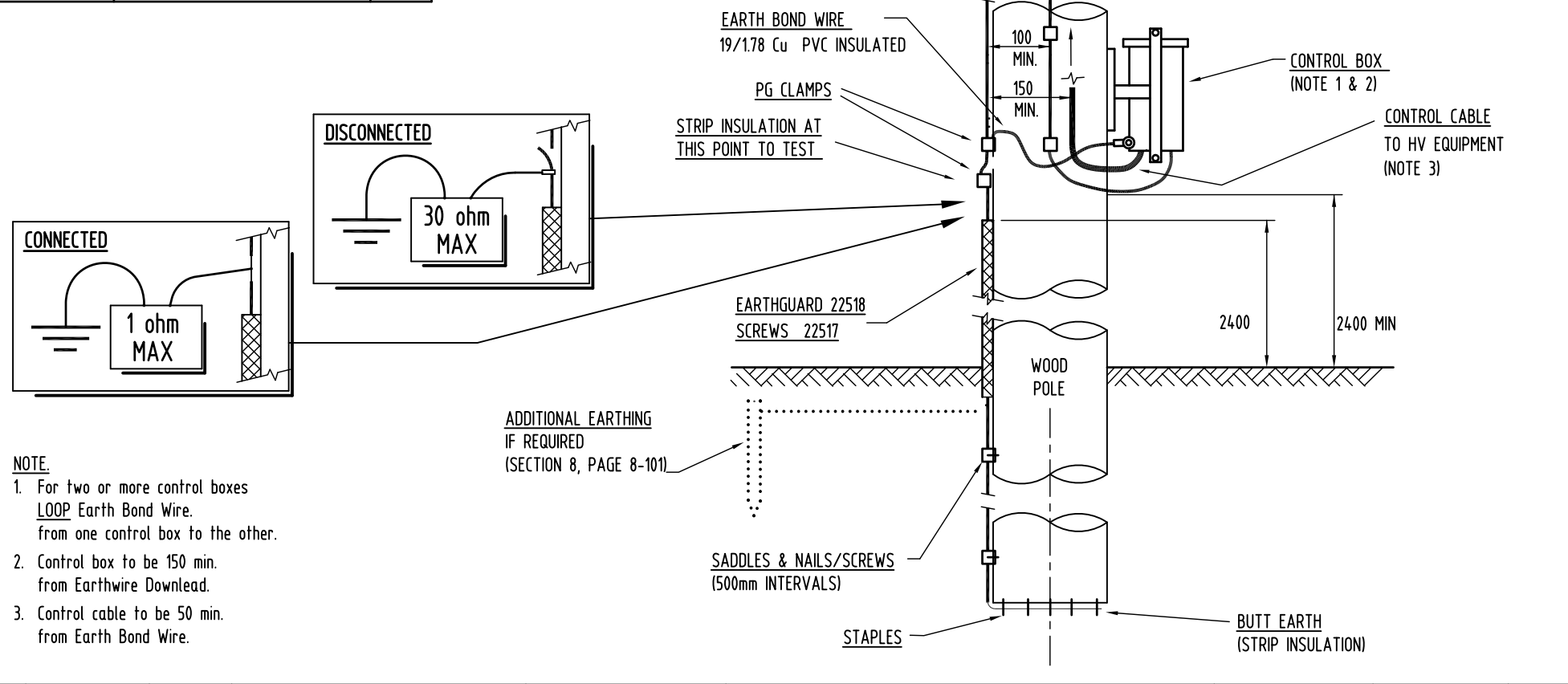
ORIGINAL ISSUE	DATE	APP'D	CKD	DRN	EARTH ROD UPDATED TO
A	09/10/2012	A.PEREZ	J.CHUNG	P.PREF	SC22946

  
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OVERHEAD CONSTRUCTION MANUAL  
POLE MOUNTED PLANT  
HVE1 (WOOD POLE)  
HV EQUIPMENT EARTH (SEPARATE EARTH AREA)  
SUITS ALL NOJA & SCHNEIDER EQUIPMENT

APP'D	K.Ball	TECH STDS	AUTOCAD
DATE	2-12-92	4920-A4	K
REC'D		SECT	PAGE
CKD		7	606
DWN	M.Welsh	SHEET	1 OF 1
FILE:			

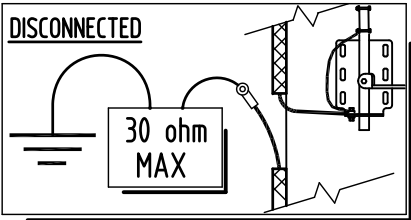
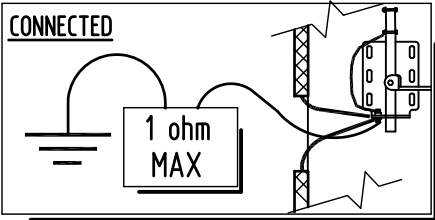
MATERIAL LIST - HVE2		HVE2
STOCK CODE	DESCRIPTION	
03215	STAPLE	12
04926	SADDLE	24
06122	PG CLAMP	4
22518	EARTH GUARD	1
06259	LUG 19/1.78	4
07235	EARTHWIRE 19/1.78 Cu.	20m
00411	BOLT & NUT, M12 x 30, SS	3
01053	WASHER, M12, RD, SS	3
01081	WASHER, M12, LOCK, SS	3



- NOTE.
- For two or more control boxes  
LOOP Earth Bond Wire.  
from one control box to the other.
  - Control box to be 150 min.  
from Earthwire Downlead.
  - Control cable to be 50 min.  
from Earth Bond Wire.

MATERIAL LIST - ABSE3

STOCK CODE	DESCRIPTION	QTY
04926	SADDLE	24
22518	EARTHGUARD	1
06259	LUG, 19/1.78	4
07235	EARTHWIRE 19/1.78 Cu.	20



ADDITIONAL EARTHING  
IF REQUIRED  
(SECTION 8, PAGE 8-101)

07235  
EARTHWIRE DOWNLEAD 19/1.78 Cu.  
PVC INSULATED

PIPE DOWN ROD  
EARTHGUARD 22518  
SCREWS 22517

BOTTOM COUPLING

EARTHING BRAID  
SUPPLIED WITH SWITCH  
CONNECT BETWEEN DOWNROD  
COUPLING & BRACKET

06259  
LUG, 19/1.78

EARTHGUARD 22518  
SCREWS 22517

SADDLES & NAILS/SCREWS  
(500mm INTERVALS)

TO HV SURGE ARRESTER AT CABLE TERM

TO LV NEUTRAL  
(CONNECTOR - PAGE 8-33)

HV CABLE

06259  
LUG, 19/1.78

2400

CABLE  
GUARD

AIR BREAK SWITCH  
OPERATING HANDLE

06259  
LUG, 19/1.78

1200

WOOD  
POLE

BUTT EARTH (STRIP INSULATION)  
STAPLES



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OVERHEAD CONSTRUCTION MANUAL

POLE MOUNTED PLANT

ABSE3

ABS & CABLE GUARD COMMON EARTH  
(WOOD POLE)

APP'D P.Pearl

DATE 18-12-95

REC'D

CKD R.Walker

DWN M.W

TECH STDS AUTOCAD

4920-A4 E

SECT  
7

PAGE  
610

SHEET 1 OF 1

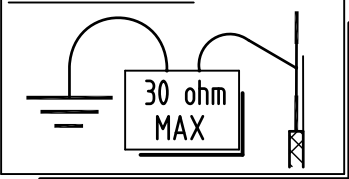
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MATERIAL LIST - ABSE5

STOCK CODE	DESCRIPTION	QTY
04926	SADDLE	24
06122	CONNECTOR	1
06144	COUPLING	AR
22946	EARTH ROD	1
22518	EARTH GUARD	1
06259	LUG 19/1.78	3
06338	DRIVING POINT NORMAL	1
06339	DRIVING POINT STAR	AR
07235	EARTHWIRE 19/1.78 Cu	20
12952	CONNECTOR 'C'	1
14318	MARKING TAPE	AR
16914	100mm SPLIT CONDUIT	AR

HV EARTH CONNECTED



EARTH WIRE TRENCH  
DEPTH AND  
ADDITIONAL EARTHING  
IF REQUIRED  
(SECTION 8, PAGE 8-101)

07235  
EARTHWIRE DOWNLEAD 19/1.78 Cu.  
PVC INSULATED

06122  
CONNECTOR

PIPE DOWN ROD

EARTHGUARD 22518  
SCREWS 22517

BOTTOM COUPLING

EARTHING BRAID  
SUPPLIED WITH SWITCH  
CONNECT BETWEEN DOWNROD  
COUPLING & BRACKET

EARTHGUARD 22518  
SCREWS 22517

BUTT EARTH (STRIP INSULATION)  
STAPLES

TO HV SURGE ARRESTER AT CABLE TERM

100mm HEAVY DUTY SPLIT GREY CONDUIT  
IF HV CABLE IS JUTE COVERED

HV CABLE

06259  
LUGS, 19/1.78

EARTHWIRE DOWNLEAD 19/1.78 Cu PVC  
TO EARTHROD

19/1.78 Cu PVC

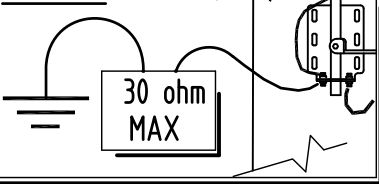
CABLE  
GUARD

AIR BREAK SWITCH  
OPERATING HANDLE

CABLE GUARD  
WITH EARTHWIRE INSIDE

06259  
LUG, 19/1.78

CONNECTED



ADDITIONAL EARTHING  
IF REQUIRED  
(SECTION 8, PAGE 8-101)

WOOD  
POLE

1200

4000

SADDLES & NAILS/SCREWS  
(500mm INTERVALS)

ORIGINAL ISSUE	DATE	APP'D	CKD	DRN	EARTH ROD UPDATED TO
F	09/10/2012	A PEREZ	J CHUNG	P RELF	SC22946



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OVERHEAD CONSTRUCTION MANUAL

POLE MOUNTED PLANT

ABSE5

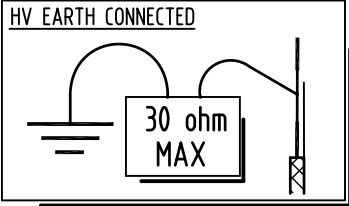
ABS & CABLE GUARD SEPARATE EARTH  
(WOOD POLE)

APP'D	P.Pearl
DATE	18-12-92
REC'D	
CKD	R.Walker
DWN	M.W

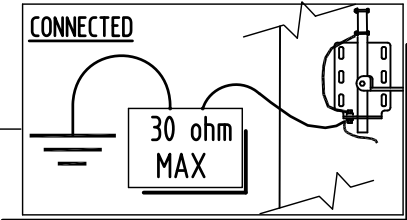
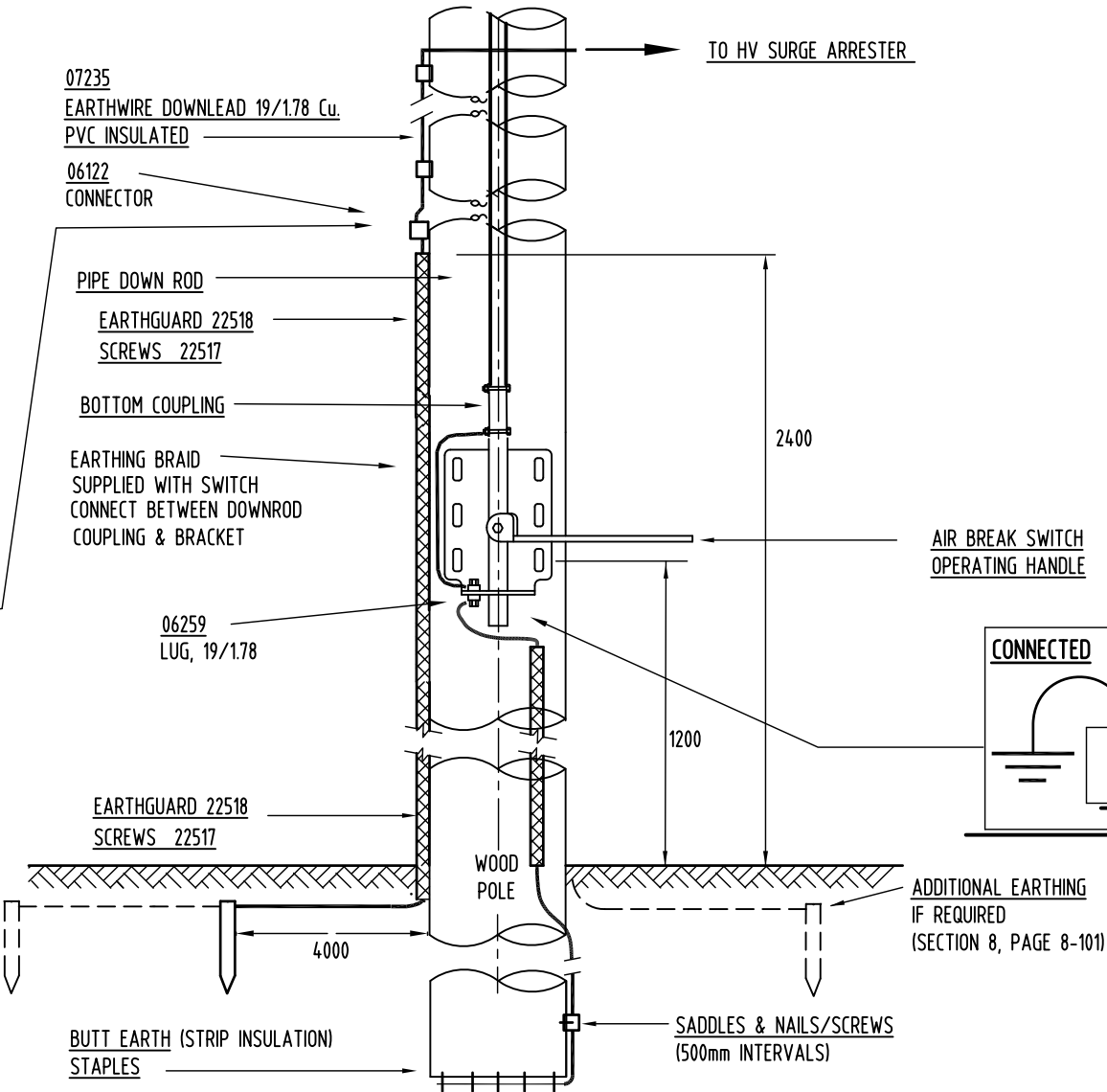
TECH STDS	AUTOCAD
4920-A4	F
SECT	PAGE
7	611
SHEET	1 OF 1
FILE:	

MATERIAL LIST - ABSE4

STOCK CODE	DESCRIPTION	QTY
04926	SADDLE	24
06122	CONNECTOR	1
06144	COUPLING	AR
22946	EARTH ROD	1
22518	EARTH GUARD	2
06259	LUG 19/178	1
06338	DRIVING POINT NORMAL	AR
06339	DRIVING POINT STAR	AR
07235	EARTHWIRE 19/178 Cu	20
12952	CONNECTOR 'C'	1
14318	MARKING TAPE	AR



EARTH WIRE TRENCH  
DEPTH AND  
ADDITIONAL EARTHING  
IF REQUIRED  
(SECTION 8, PAGE 8-101)



ORIGINAL ISSUE	DATE	APPD	CKD	DRN	EARTH ROD UPDATED TO
A	09/10/2012	A PEREZ	J CHUNG	P RELF	SC22946
F					

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OVERHEAD CONSTRUCTION MANUAL

POLE MOUNTED PLANT

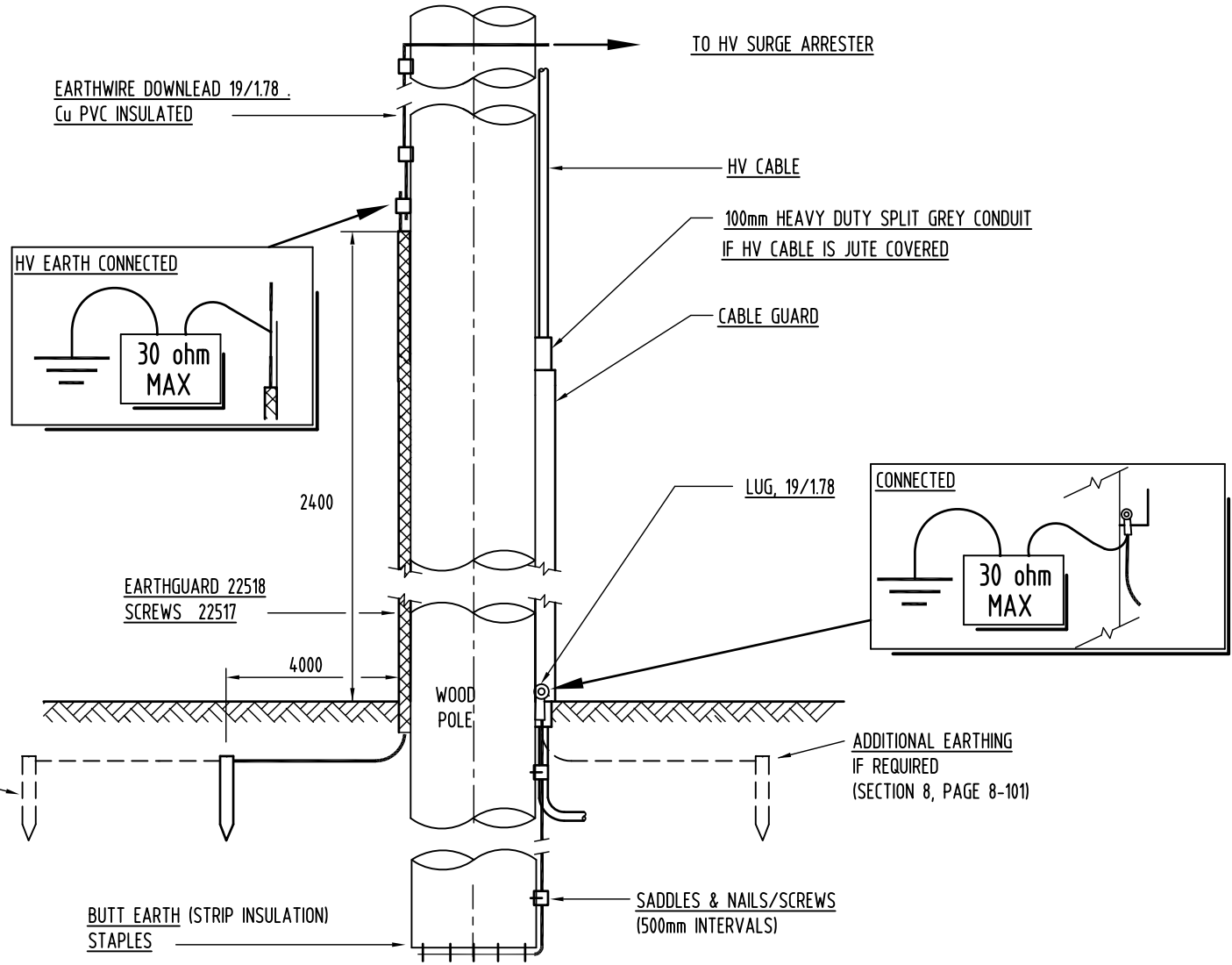
ABSE4

ABS & SURGE ARRESTER SEPARATE EARTH (WOOD POLE)

APP'D	P.Pearl	TECH STDS	AUTOCAD
DATE	18-12-92	4920-A4	F
REC'D		SECT	PAGE
CKD	R.Walker	7	612
DWN	M.W.	SHEET	1 OF 1
		FILE:	

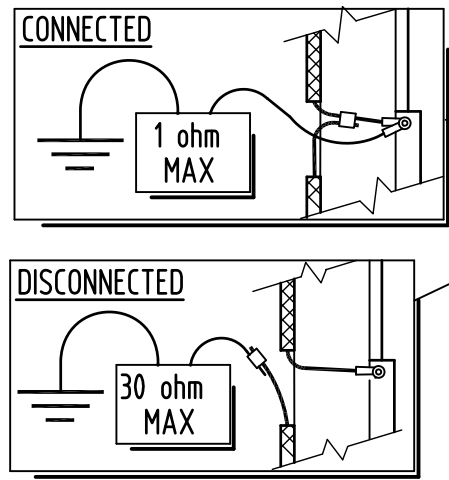
MATERIAL LIST - CGES

STOCK CODE	DESCRIPTION	QTY
04926	SADDLE	24
06122	CONNECTOR	1
06144	COUPLING	AR
22946	EARTH ROD	1
22518	EARTH GUARD	1
06259	LUG 19/178	1
06338	DRIVING POINT NORMAL	AR
06339	DRIVING POINT STAR	AR
07235	EARTHWIRE 19/178 Cu	20
12952	CONNECTOR 'C'	1
14318	MARKING TAPE	AR
16914	100mm SPLIT CONDUIT	AR



MATERIAL LIST - CGEC

STOCK CODE	DESCRIPTION	QTY
04926	SADDLE	24
06122	CONNECTOR	1
22518	EARTHGUARD	1
06259	LUG, 19/178	1
07235	EARTHWIRE 19/178 Cu.	20



ADDITIONAL EARTHING  
IF REQUIRED  
(SECTION 8, PAGE 8-101)

EARTHWIRE DOWNLEAD  
19/178 Cu. PVC INSULATED

EARTHGUARD 22518  
SCREWS 22517

EARTHGUARD 22518  
SCREWS 22517

SADDLES &  
NAILS/SCREWS  
(500mm INTERVALS)

TO HV SURGE ARRESTER

TO LV NEUTRAL  
(CONNECTOR - PAGE 8-33)

HV CABLE

LUG, 19/178


CABLE GUARD

WOOD  
POLE

BUTT EARTH (STRIP INSULATION)  
STAPLES

NOTE:  
FOR LV CABLES ONLY :  
IF THE LV CABLE INSIDE THE CABLE GUARD  
IS NOT ADDITIONALLY PROTECTED BY CONDUIT,  
THE CABLE GUARD SHALL BE EARTHED TO  
TO THE VALUE OF 30 OHMS MAX (DISCONNECTED)  
AND BONDED TO THE LV NEUTRAL.  
  
IF THE LV CABLE INSIDE THE CABLE GUARD  
IS ADDITIONALLY PROTECTED BY CONDUIT,  
THE CABLE GUARD IS NOT REQUIRED  
TO BE EARTHED.

ORIGINAL ISSUE	DATE	APPD	CKD	DRN	EARTHGUARD NOW POLYMERIC
A	14-09-2011	E	RENGISH	J.TUNNEY	J.TUNNEY



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OVERHEAD CONSTRUCTION MANUAL

POLE MOUNTED PLANT

CGEC  
(WOOD POLE)  
CABLE EARTH GUARD (COMMON)

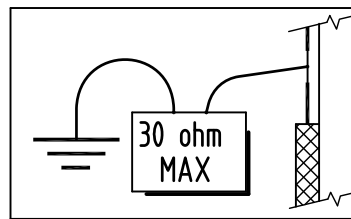
APP'D	Pat Pearl	TECH STDS	AUTOCAD
DATE	27.3.96	4920-A4	E
REC'D	Paul Rainbird	SECT	PAGE
CKD	T.Holden	7	614
DWN	T.Holden	SHEET	1 OF 1
FILE:			

MATERIAL LIST - HVE3		HVE3
STOCK CODE	DESCRIPTION	
00411	BOLT & NUT, M12 x 30, SS	-
01053	WASHER, M12, RD, SS	-
01081	WASHER, M12, LOCK, SS	-
04926	SADDLE	24
06122	CONNECTOR	2
22518	EARTH GUARD	1
06258	LUG 19/1.78 x M10 HOLE	1
06259	LUG 19/1.78 x M12 HOLE	1
07235	EARTHWIRE 19/1.78 Cu. (50mm <sup>2</sup> )	22m
7-615-A	RADIO ANTENNA ABOVE HV MAINS	AR
7-615-B	RADIO ANTENNA BELOW HV MAINS	AR
7-615-C	ISOLATION TRANSF (AUX SUPPLY)	AR

#### NOTE.

- Control box, Control cable, Isolation transformer, associated equipment and wiring to be 150 min from Earthwire Download.
- Radio Antenna above HV mains.
- Radio Antenna below HV mains.
- 19/1.78 (50mm<sup>2</sup>) Cu Earthwire to first earthrod.
- Minimum 50mm<sup>2</sup> Earth Bond wire from isolation transformer to control Box Earth Studs.
- Install 6mm<sup>2</sup> Earth tail with lug from Neutral to Earth Stud on Control Box.

ADDITIONAL EARTHING  
IF REQUIRED (SECTION 8, PAGE 8-101)



19/1.78 Cu PVC INSULATED

EARTHWIRE DOWNLEAD 19/1.78 Cu.  
(50mm<sup>2</sup>) PVC INSULATED  
CONNECTOR

ISOLATION TRANSFORMER  
IF REQUIRED SEE (NOTE 1)  
(SEE SECTION 2 FOR DETAILS)

CONTROL CABLE  
TO HV EQUIPMENT (NOTE 1)

EARTHGUARD 22518  
SCREWS 22517

(NOTE 4)  
SADDLES & NAILS/SCREWS  
(500mm INTERVALS)

EARTHWIRE DOWNLEAD 19/1.78 Cu.  
(50mm<sup>2</sup>) PVC INSULATED

BUTT EARTH  
(STRIP INSULATION)

STAPLES

TO RADIO ANTENNA (NOTE 2)

LUG 19/1.78

TO HV EQUIPMENT (TANK)  
EARTH STUD

LUG 19/1.78

TO RADIO ANTENNA  
(NOTE 3)

EARTH BOND WIRE  
19/1.78 Cu PVC INSULATED

CONTROL BOX  
(NOTE 1)

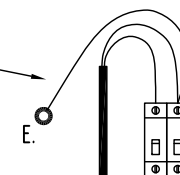
EARTH BOND WIRE  
19/1.78 Cu PVC INSULATED

150 MIN.  
1000mm  
2400 MIN

WOOD POLE

Bonding of Control Box (If Required)

Note 6.



Note: Only to be used when installing an Isolation Transformer as dedicated LV Auxiliary supply

ORIGINAL ISSUE	DATE	14-09-2011	APPD	RENGISH	CKD	J.TUNNEY	DRN	J.TUNNEY	EARTH GUARD NOW POLYMERIC
A	E								



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## OVERHEAD CONSTRUCTION MANUAL

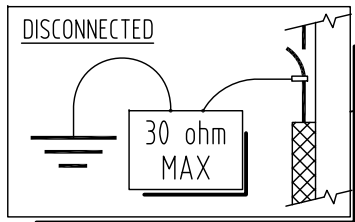
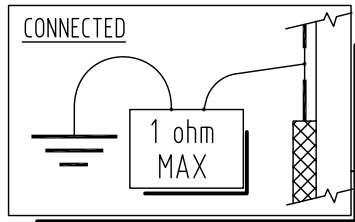
### POLE MOUNTED PLANT

#### HVE3

NULEC "RL", "L" & "N" SERIES SWITCHES  
HV EQUIPMENT EARTH TYPE 3 (SEPARATE EARTH)

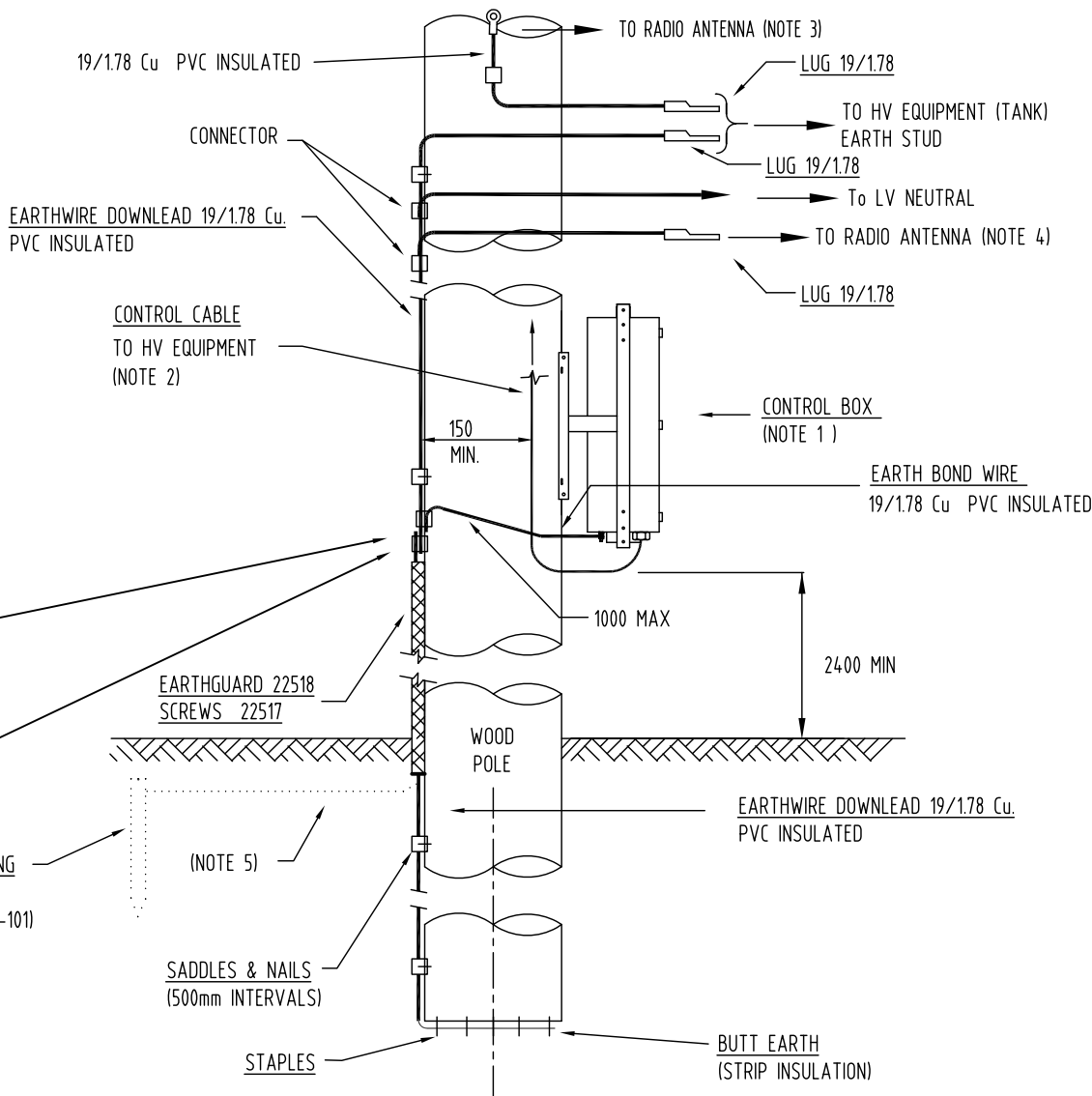
APP'D	P.PEARL	TECH STDS		AUTOCAD
DATE	23/5/97	4920-A4 E		
REC'D	J.TUNNEY	SECT	PAGE	
CKD	J.TUNNEY	7	615	
DWN	J.HILL	SHEET 1 OF 1		
		FILE:		

MATERIAL LIST - HVE4		HVE4	HVE4/A (NOTE 3)	HVE4/B (NOTE 4)
STOCK CODE	DESCRIPTION			
00411	BOLT & NUT, M12 x 30, SS	-	-	-
01053	WASHER, M12, RD, SS	-	-	-
01081	WASHER, M12, LOCK, SS	-	-	-
04926	SADDLE	24	24	24
06122	CONNECTOR	3	2	3
22518	EARTH GUARD	1	1	1
06258	LUG 19/178 x M10	1	1	1
06259	LUG 19/178 x M12	1	3	2
07235	EARTHWIRE 19/178 Cu.	22m	25m	25m




- NOTE.
- Control box, associated equipment and wiring to be 150mm from earthwire download.
  - Control cable to be 150 min. from Earthwire Download.
  - Radio Antenna above HV mains.
  - Radio Antenna below HV mains.
  - 19/178 (50mm<sup>2</sup>) Cu Earthwire to first earthrod.

ADDITIONAL EARTHING  
IF REQUIRED  
(SECTION 8, PAGE 8-101)



ORIGINAL ISSUE	DATE	REVISION	APP'D	CKD	DRN	EARTHGUARD NOW POLYMERIC
A	14-09-2011	ENGLISH	J.TUNNEY	J.TUNNEY	J.TUNNEY	

  
**energex**  
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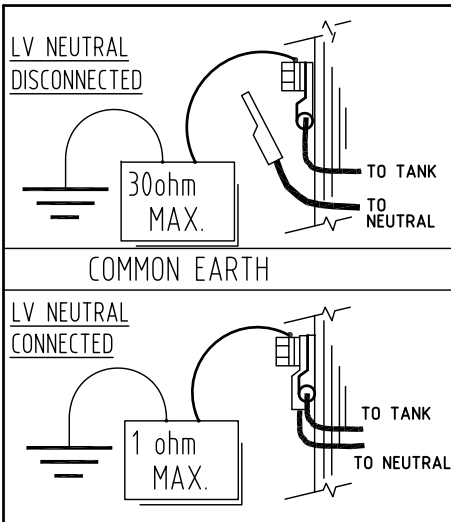
**OVERHEAD CONSTRUCTION MANUAL**

**POLE MOUNTED PLANT**

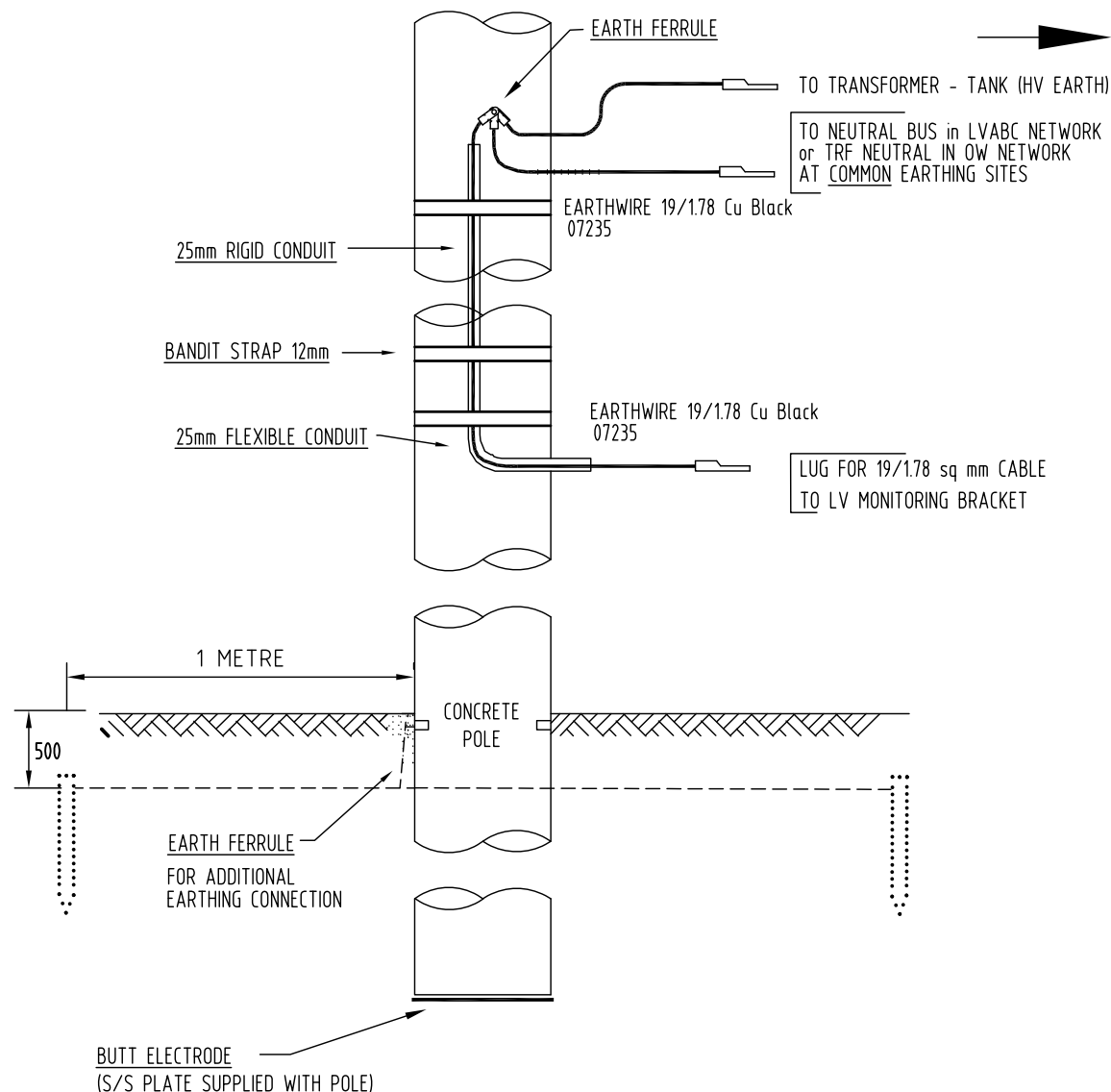
**HVE4**

NULEC "RL", "L" AND "N" SERIES SWITCHES  
 HV EQUIPMENT EARTH (TYPE 4, COMMON)

APP'D	PAT PEARL	TECH STDS		AUTOCAD
DATE	25-5-97	4920-A4		D
REC'D		SECT	PAGE	
CKD	J.TUNNEY	7	616	
DWN	J.HILL	SHEET 1 OF 1		
		FILE:		



MATERIAL LIST		PTCOMC
STOCK CODE	DESCRIPTION	QTY
00411	SETSCREW, M12 x 30 SS	2
01053	WASHER, M12, RD, SS	2
01081	WASHER, M12, LOCK, SS	2
06259	LUG, 19/178	6
07235	EARTHWIRE 19/178 Cu	8
06249	LUG, M12 6 sqmm	2
04844	RIGID CONDUIT 25 mm	1 length
16023	FLEXIBLE CONDUIT 25mm	2m
02475	BANDIT STRAP 12 mm	AR
SUB-ASSY CU	DESCRIPTION	
ADE	EARTH ROD ASSY	



**PTCOMC** - TRANSFORMER COMMON EARTH

ORIGINAL ISSUE  
A



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## OVERHEAD CONSTRUCTION MANUAL

### POLE MOUNTED PLANT

#### PTCOMC

#### CONCRETE POLE

#### TRANSFORMER COMMON EARTH

APP'D Roy English

DATE 16/09/2011

REC'D

CKD JOHN TUNNEY

DWN PAUL RELF

TECH STDS AUTOCAD

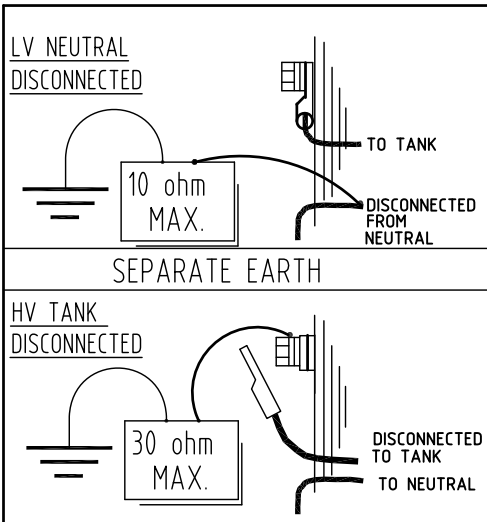
4920-A4 A

SECT PAGE

7 619

SHEET 1 OF 1

FILE:



MATERIAL LIST		PTSEPC
STOCK CODE	DESCRIPTION	QTY
00411	SETSCREW, M12 x 30 SS	2
01053	WASHER, M12, RD, SS	2
01081	WASHER, M12, LOCK, SS	2
06259	LUG, 19/1.78	5
07235	EARTHWIRE 19/1.78 Cu	8
04844	RIGID CONDUIT 25MM	2 LENGTHS
16023	FLEXIBLE CONDUIT 25MM	15M
02457	BANDIT STRAP 12 mm	AR
16569	IPC	1
16569	6 sqmm XLPE	AR
10490	SPIRAL WRAP	AR
06249	LUG, 6 sq mm M8	1
21832	EXTENSION PALM M8-M12	1
00403	BOLT & NUT SS M8x30	1
01079	SPRING WASHER M8	1
SUB-ASSY CU	DESCRIPTION	QTY
ADE	EARTH ROD ASSY	5

## PTSEPC - TRANSFORMER SEPARATE EARTH

ORIGINAL ISSUE	DATE	ROY ENGLISH	JOHN TUNNEY	PAUL RELF	REDRAWN FOR SEPARATE EARTHING
A	F	APPD	CKD	DRN	



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## OVERHEAD CONSTRUCTION MANUAL

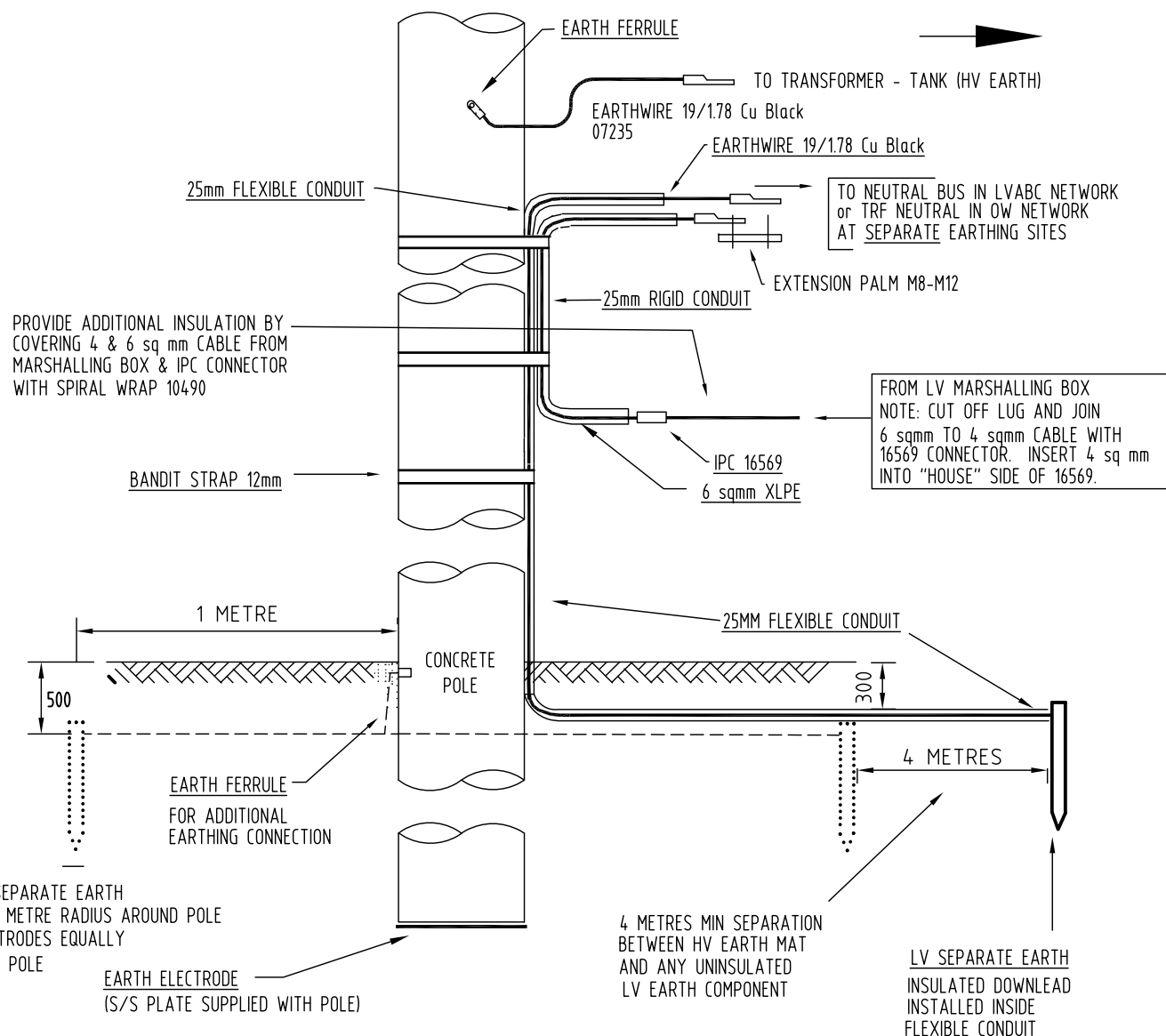
### POLE MOUNTED PLANT

#### PTSEPC

#### CONCRETE POLE

#### TRANSFORMER SEPARATE EARTH

APP'D	PAT PEARL	TECH STDS		AUTOCAD
DATE	23/5/97	4920-A4 F		
REC'D		SECT	PAGE	
		7	620	
CKD	JOHN TUNNEY	SHEET 1 OF 1		
DWN	JOHN TUNNEY	FILE:		



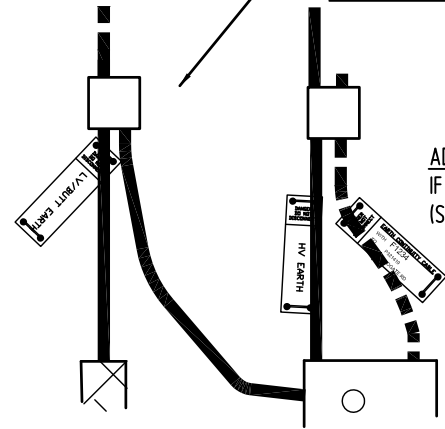


MATERIAL LIST - CGE33

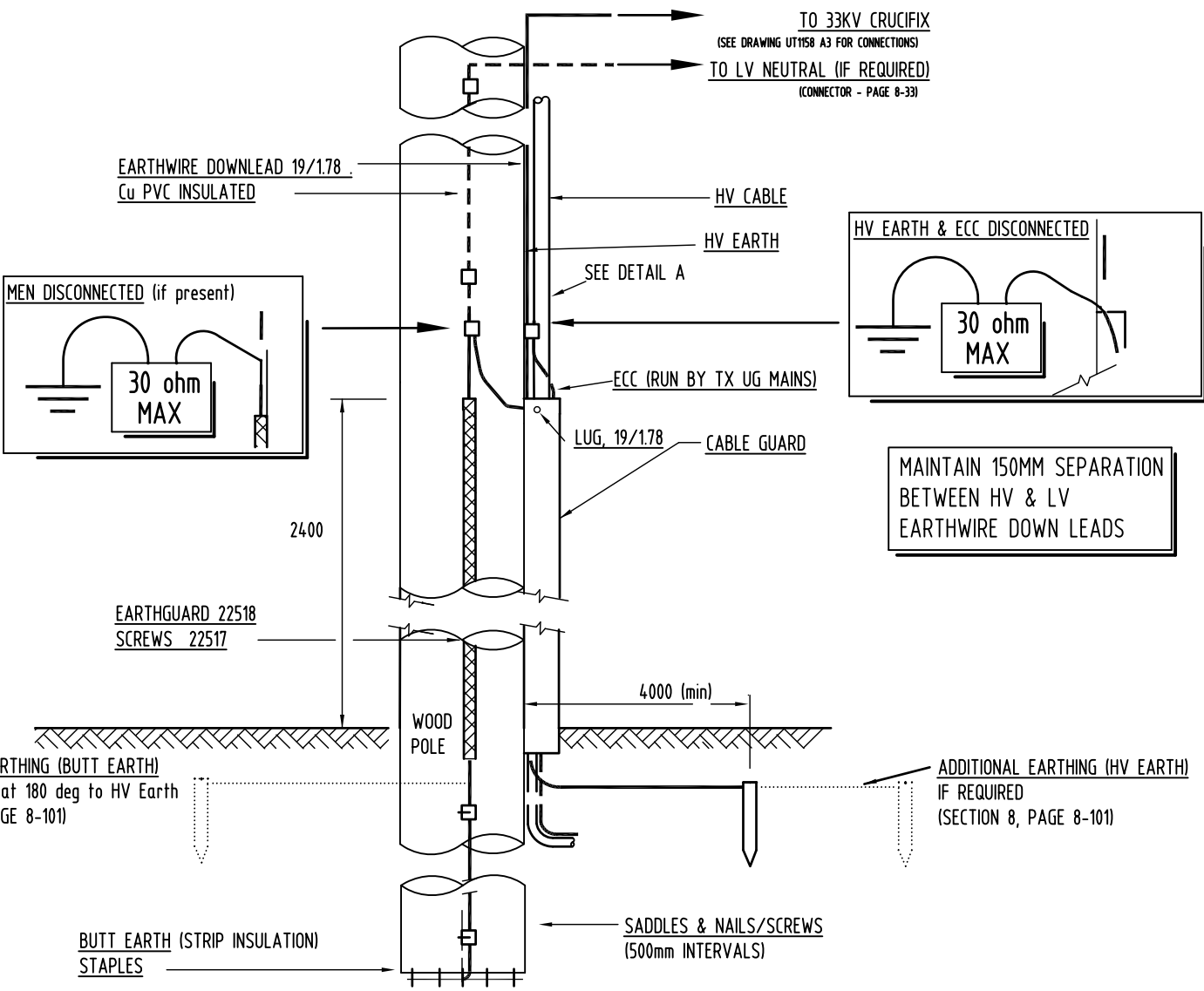
STOCK CODE	DESCRIPTION	QTY
04926	SADDLE	24
06122	CONNECTOR	1
06144	COUPLING	AR
22946	EARTH ROD	1
22518	EARTH GUARD	1
06259	LUG 19/1.78	1
06338	DRIVING POINT NORMAL	AR
06339	DRIVING POINT STAR	AR
07235	EARTHWIRE 19/1.78 Cu	20
12952	CONNECTOR 'C'	1
14318	MARKING TAPE	AR
15075	PARALLEL CLAMP	2

NOTE ENSURE BUTT EARTH IS CONNECTED TO POLE GUARD AND NEUTRAL ONLY - NOT TO ANY HV EARTHS

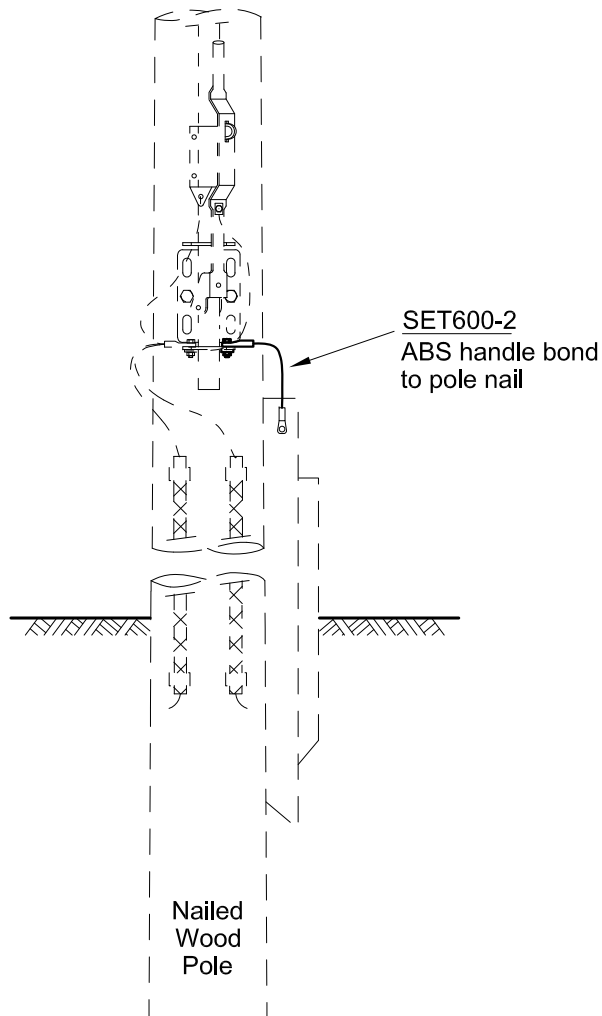
TO LV NEUTRAL (IF REQUIRED) TO 33KV CRUCIFIX



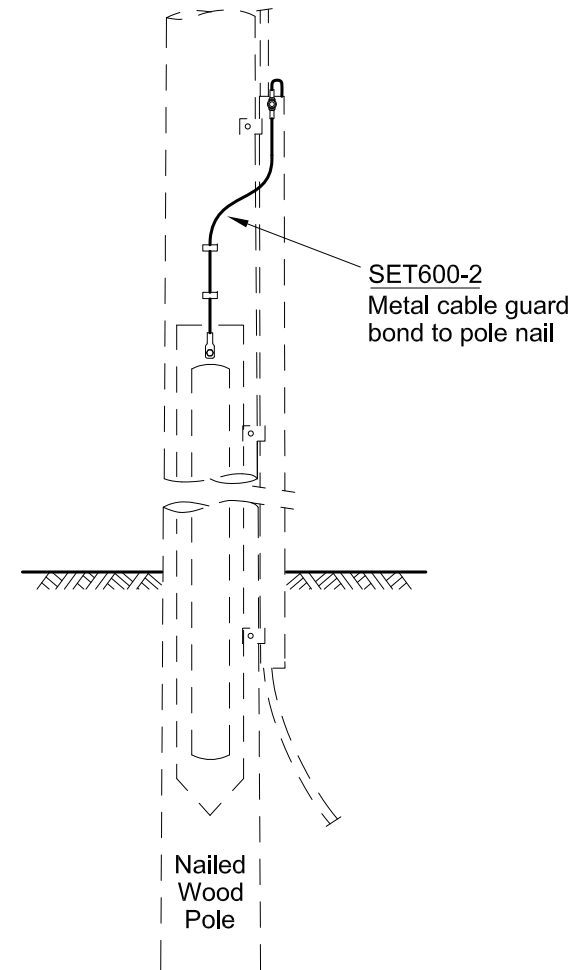
DETAIL A - LABELLING DETAILS (BY UG MAINS)



CU	DESCRIPTION	QTY
SET600-1	ABS handle bond to pole nail	1



CU	DESCRIPTION	QTY
SET600-2	Metal cable guard bond to pole nail	1



#### NOTES:-

1. Bond ABS or cable guard to pole nail.
2. If metal cable guard is installed, ensure guard is bonded to ABS handle and nail.
3. HV equipment separate earths (e.g. arrestor / tank) and pole nail to be separated by 50mm if not installed in HFT conduit.
4. Do not bond pole nail on SWER poles. Keep SWER earths 100mm from any other metal items.

ORIGINAL ISSUE

A



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## OVERHEAD CONSTRUCTION MANUAL

### POLE MOUNTED PLANT

BONDING NAILED & STEEL BUTTED WOOD POLE  
AIR BREAK SWITCH OR CABLE GUARD BOND  
TO POLE NAIL - EARTHING ARRANGEMENT

APP'D F. Zaini

DATE 29/05/19

REC'D F. Zaini

CKD P. Relf

DWN L. Burton

TECH STDS Microstation

4920-A4 A

SECT 7 PAGE 630

SHEET 1 of 1

FILE:

MATERIAL LIST - CGECROD

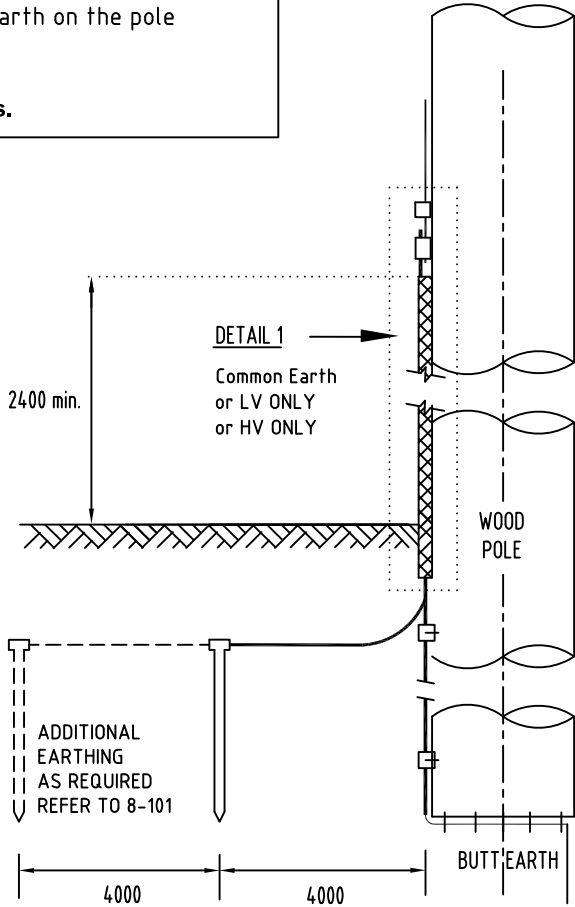
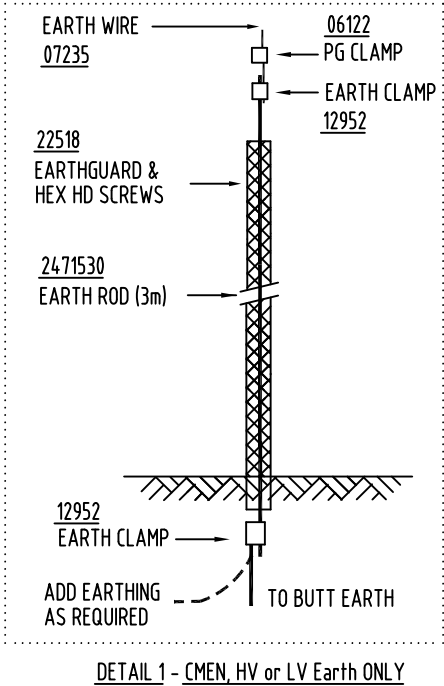
STOCK CODE	DESCRIPTION	QTY
03215	STAPLE	AR
04926	GALV. SADDLE	12
06122	PG CLAMP	2
06259	LUG, 19/1.78	2
2471530	EARTH ROD 3m	1
22518	EARTH GUARD 2.7m BLACK 15mm	1
12952	EARTH CLAMP - CABLE TO ROD	2
17765	SCREWS 30mm Lg	AR
22517	SCREWS 50mm Lg (Earth Guard)	AR
07235	EARTHWIRE 50 sqmm	AR

NOTES:

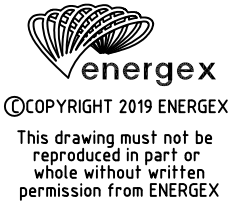
1. Earth down-rods may not sit flush with the pole, particularly if there are knots or other imperfections on the pole. The rod must be positioned on the pole to be as flush as possible to prevent fingers from being placed behind the rod/guard.
2. Can be used when there is only one earth on the pole (e.g. CMEN, HV or LV earth only).
3. Do not use this on SWER earth poles.

EARTH RESISTIVITY MEASUREMENTS

REFER TO DISTRIBUTION  
EARTHING MANUAL OR  
SPECIFIC PLANT DRAWING



A	ORIGINAL ISSUE	DATE	1/11/19	APPD	F.ZAINI	CKD	P.RELF	DRN	J.CHUNG	Updated title to show Common Earth. Removed nails. Notes updated.
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OVERHEAD CONSTRUCTION MANUAL

CONSTRUCTION PRACTICES

COMMON / SINGLE EARTH

POLE EARTHS DOWNLOADS (WOOD POLE)

ANTI-THEFT ARRANGEMENT

APP'D	F. ZAINI	S&SD	AUTOCAD
DATE	25/01/19	4920-A4	E
REC'D	J. CHUNG	SECT	PAGE
CKD	J. CHUNG	7	631
DWN	J. CHUNG	SHEET	1 OF 1
FILE:			

MATERIAL LIST - SGECROD

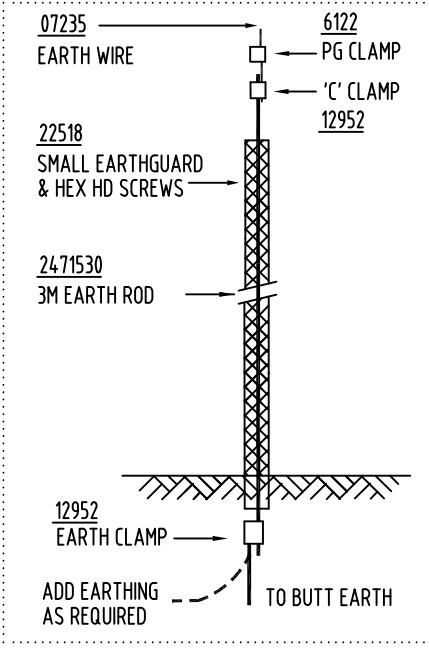
STOCK CODE	DESCRIPTION	QTY
03215	STAPLE	AR
104649	COPPER SADDLE	20
06122	PG CLAMP	2
06259	LUG, 19/1.78	2
2471530	EARTH ROD 3m	2
22518	EARTH GUARD 15MM (SMALL)	1
20793	EARTH GUARD 30MM (LARGE)	1
12952	'C' CLAMP - CABLE TO ROD	2
104802	SCREWS 50mm Lg (Stainless)	AR
07235	EARTHWIRE 50 sqmm	AR

NOTES:

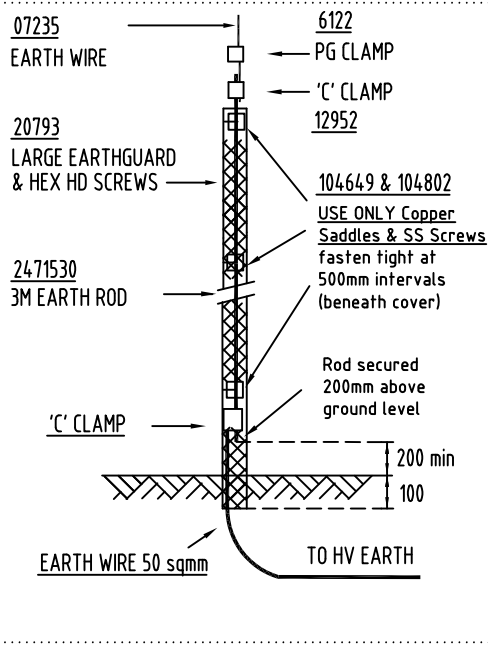
- 1. Earth down-rods may not sit flush with the pole, particularly if there are knots or other imperfections on the pole. The rod must be positioned on the pole to be as flush as possible to prevent fingers from being placed behind the rod/guard.
- 2. HV down-rod must maintain 200mm separation from the ground.
- 3. Only use Copper Saddles with Stainless Steel screws to hold up HV down-rod.
- 4. Do not use this on SWER earth poles.

EARTH RESISTIVITY MEASUREMENTS

REFER TO DISTRIBUTION  
EARTHING MANUAL OR  
SPECIFIC PLANT DRAWING



DETAIL 1 - LV EARTH



DETAIL 2 - HV EARTH

