RESOURCE ESTIMATION GUIDE

APPROVED: C. Noel

RESOURCE ESTIMATION GUIDE

PREFACE

Scope

This standard applies to the ENERGEX distribution network only.

This document covers the major material and labour resource models within the Ellipse system. It is designed to assist Distribution Network Planners and Designers in estimating and ordering resources for Overhead, Underground and Public Lighting constructions.
It is not intended as a substitute for any current Construction or Design manuals that contain additional resource estimation information.

General

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ENERGEX will not accept any liability for work carried out to a superseded standard.
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SECTION 1 OVERHEAD CONSTRUCTION

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ENERGEX LABOUR				
CU				DESCRIPTION
LIVE LINE	L/L @ O/T	REGULAR	REG @ OT	
OTLAB4000A	OTLAB4000OTA	OTLAB2000A	OTLAB2000OTA	INSTALL NEW POLE UP TO 17M - LINE
OTLAB4000B	OTLAB4000OTB	OTLAB2000B	OTLAB2000OTB	STAND NEW POLE UP TO 17M - BORER LIFTER
OTLAB2000C	OTLAB2000C-O	OTLAB2000C	OTLAB2000C-O	BORE HOLE - BORER LIFTER
OTLAB4014A	OTLAB4014OTA	OTLAB2012A	OTLAB2012OTA	INSTALL NEW POLE 18.5 - 23 M OH Linesp
OTLAB4014B	OTLAB4014OTB	OTLAB2012B	OTLAB2012OTB	STAND POLE 18.5M+ BORER LIFTER
OTLAB4010A	OTLAB4010OTA	OTLAB2006A	OTLAB2006OTA	RECOVER WOOD POLE (UP TO 17M) - LINE
OTLAB4010B	OTLAB4010OTB	OTLAB2006B	OTLAB2006OTB	RECOVER WOOD POLE (UP TO 17M) - BL
-	-	OTLAB2009A	OTLAB2009OTA	RECOVER POLE - 2ND VISIT FOR BBCC - LINE
-	-	OTLAB2009B	OTLAB2009OTB	RECOVER POLE - 2ND VISIT FOR BBCC - BL
OTLAB4039	OTLAB4039-OT	OTLAB213	OTLAB213-OT	LOP HEAD OF POLE
OTLAB772	-	OTLAB771	-	OH CREW SITE INDUCTION
MM123	MM123-OT	MM100	MM100-OT	EXTRA LINE CREW HRS *SPECIFY WORK TASK*
MM101				SWITCHING BY LINE CREW / MHRS
MM231			MM231-OT	RAPID RESPONSE SWITCHING/HR

FOR A & B CU DETAILS REFER TO NOTE 6.

WOOD POLES Length(m) / MWT Tip Load kN			
		P8/12-22	P8/20-36
P9.5/5-9	P9.5/8-14	P9.5/12-22	
P11/5-9	P11/8-14	P11/12-22	
P12.5/5-9	P12.5/8-14	P12.5/12-22	
P14/5-9	P14/8-14	P14/12-22	P14/20-36
	P15.5/8-14	P15.5/12-22	P15.5/20-36
	P17/8-14	P17/12-22	P17/20-36
	P18.5/8-14	P18.5/12-22	P18.5/20-36
	P20/8-14	P20/12-22	P20/20-36
		P21.5/12-22	P21.5/20-36
		P23/12-22	P23/20-36

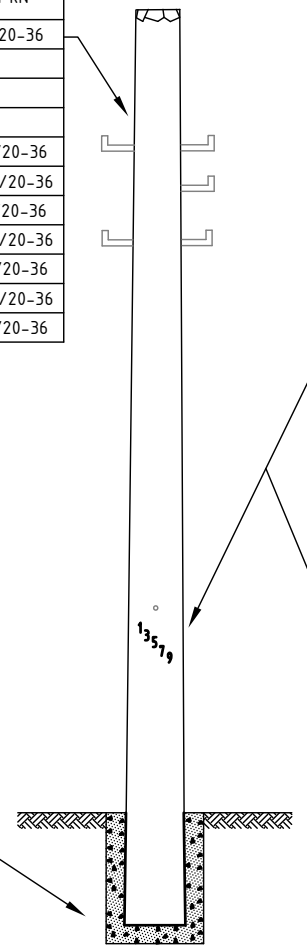
WOOD POLE NUMBERS

POLE NUMBERS	
NUMBER	CU
0	SC0005950
1	SC0005957
2	SC0005958
3	SC0005959
4	SC0005960
5	SC0005961
6 & 9	SC0005962
7	SC0005963
8	SC0005964
S	SC0005953
P	SC0005951
X	SC0015393

CONTRACT LABOUR	
CU	DESCRIPTION
OTSC1	CONTRACT POLE EARTHING / POLE
OTSC2	CONTRACT POLE SINKING / POLE
OTSC14	CONTRACT POLE INSPECTION / POLE
OHSC1	TRAFFIC CONTROL - 1 MAN-HOUR
OHSC2	TRAFFIC CONTROL - 2 MAN-HOUR
UGSC112	CONTRACT-$$ QUOTE DIS UG WORKS
CLEARING1	CONTRACT CLEARING - LIGHT /10m2
CLEARING2	CONTRACT CLEARING - MEDIUM /10m2
CLEARING3	CONTRACT CLEARING - HEAVY /10m2
CLEARINGS	CONTRACT CLEARING - SLASHING / m2
CONTQUOTE	CONTRACTOR SURVEYING/HR - $ QUOTE

CONCRETE POLES Length(m) / MWT Tip Load kN
P14/12-24CPT FOR POLE TRANSFORMERS IN CMEN AREA ONLY
ALL OTHER CONCRETE POLES ARE NON-STOCK ITEMS - SEE NOTE 3

FOUNDATION	
CU	DESCRIPTION
NAEF	NATURAL EARTH
RGBF	ROAD BASE GRAVEL
CCF	CONCRETE COLLAR
MDCF	MAXIMUM DEPTH CONCRETE



CONCRETE POLE NUMBERS

POLE NUMBERS	
NUMBER	CU
0	SC0015819
1	SC0015820
2	SC0015821
3	SC0015822
4	SC0015823
5	SC0015824
6 & 9	SC0015825
7	SC0015826
8	SC0015827
S	SC0022481
P	SC0022482
X	SC0022483

NOTES

1. POLE CU INCLUDES POLE, POLE CAP, TEST POINT & POLE STEPS.
2. FOR INFORMATION ON POLE LABELLING SEE THE NETWORK LABELLING & SIGNAGE MANUAL.
3. FOR ADDITIONAL INFORMATION ON CONCRETE POLES, SEE ODM SECTION 1 DWG. 6439-A4.
4. FOR ADDITIONAL CONSTRUCTION INFORMATION, REFER OCM SECTION 8 pp.1-6.
5. FOR ADDITIONAL INFORMATION ON POLE FOUNDATIONS, REFER OCM SECTION 8 p. 6-1
6. FOR STANDING & RECOVERING POLES BOTH A & B CU's MUST BE USED, (A) IS FOR LINE CREW MAN/HRS & (B) IS FOR BORER LIFTER MAN/HRS.

A	ORIGINAL ISSUE				
F	DATE 11/11/2015	APPD B. THOMAS	CKD K. MCKEE	DRN D. WOOD	UPDATED LABOUR CU'S ADDED POLE NUMBER TABLES & LIMIT STATE

RESOURCE ESTIMATION GUIDE

OVERHEAD CONSTRUCTION POLES

APP'D	R.ENGLISH
DATE	15.05.09
RECD	J.TUNNEY
CKD	K.GOSDEN
DWN	F.AMANPOOR

AUTOCAD 9562-A4 F

SECTION 1 | SUB-SECT. 1

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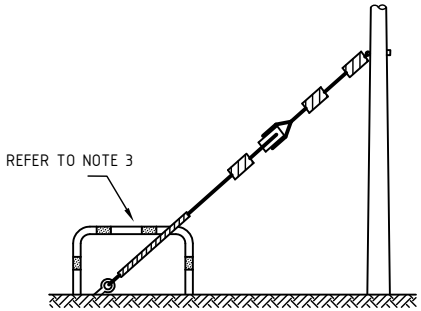
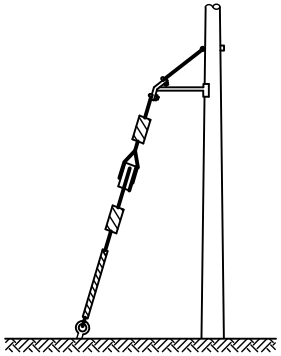
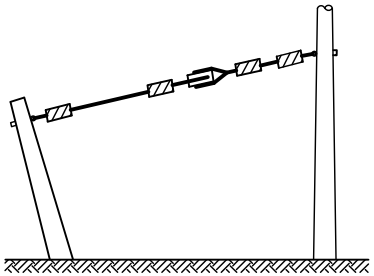


GROUND STAY



SIDEWALK STAY



POLE STAY

CU CODE

GS E 39 /SA S25

STAY TYPE

GS -GROUND STAY
SS -SIDEWALK STAY
PS -POLE STAY

POLE ATTACHMENT

E -EYEBOLT ATTACHMENT
W -WRAP ATTACHMENT

STAYWIRE SIZE

LST LOADS
39kN-7/2.75
55kN-19/2.00
108kN-19/2.75

ANCHOR TYPE

GLA -GROUND LOG
MCA -MASS CONCRETE
RA -ROCK
SA -SCREW
SP -STAY POLE (BOLLARD)

ANCHOR/POLE SIZE

-N/A TO RA, GLA OR MCA
-STAY POLE
SP8 - 8/20 POLE
SP9.5 - 9.5/12 POLE
-SCREW ANCHOR
S20 -SINGLE HELIX (200mm)
S25 -SINGLE HELIX (250mm)
S30 -SINGLE HELIX (300mm)
D10 -DOUBLE HELIX (100mm)
D25 -DOUBLE HELIX (250mm)

STAY SUNDRY ITEMS		
DESCRIPTION	CU	UOI
7/2.75 STAY WIRE 39kN MWT 19/2.00 STAY WIRE 55kN MWT 19/2.75 STAY WIRE 108 kN MWT	STAYWIRE39 STAYWIRE55 STAYWIRE108	m
7/2.75 HEAD WRAP STAY SPLICE 19/2.00 HEAD WRAP STAY SPLICE 19/2.75 HEAD WRAP STAY SPLICE	WSA39 WSA55 WSA108	EACH
GY2 STAY INSULATOR GY3 STAY INSULATOR GY4STAY INSULATOR SIDEWALK BRACKET	SI2 SI3 SI4 SWB	EACH
EYE BOLT ATTACHMENT TO POLE	ESA	EACH
HELICAL D/END STEEL WIRE 7/2.75STEEL HELICAL DEAD END GALV STEEL 19/2.00 HELICAL DEAD END GALV STEEL 19/2.75	SC0006442 SC0006443 SC0006444	EACH

STAY WIRE ROLLS	
DESCRIPTION	CU
7/2.75 STAY WIRE 39kN 20m ROLL	SC0019091
7/2.75 STAY WIRE 39kN 40m ROLL	SC0019769
7/2.75 STAY WIRE 39kN 50m ROLL	SC0019770
7/2.75 STAY WIRE 39kN 60m ROLL	SC0019771
19/2.00 STAY WIRE 55kN 20m ROLL	SC0019089

ENERGEX LABOUR		
CU		DESCRIPTION
REGULAR	REG @ OT	
OTLAB220	OTLAB220OTA	INSTALL SCREW ANCHOR STAY - LINE
OTLAB220B	OTLAB220OTB	INSTALL SCREW ANCHOR STAY - BL
OTLAB221	OTLAB221-OT	RECOVER GROUND/SIDE/POLE STAY
OTLAB222	OTLAB222-OT	ERECT AERIAL STAY (BETWEEN POLES) - LINE
OTLAB224	-	INSTALL POLE TO GROUND STAY ONLY
OTLAB225	-	INSTALL POLE TO GRND SIDE WALK STAY ONLY
OTLAB230A	-	INSTALL MASS CONC ANCHOR IN SOIL - LINE
OTLAB230B	-	INSTALL MASS CONC ANCHOR IN SOIL - BL

NOTES

1. FOR ADDITIONAL DETAILS OF STAY CONSTRUCTION REFER OCM SECTION 8 PP.11-16. FOR STAY SELECTION AND DESIGN REFER TO ODM SECTION 2.
2. 20m OF STAY WIRE IS INCLUDED IN CU.
3. GROUND STAY CUs INCLUDE GUY PROTECTOR GUARD (HORSE RAIL).

B	ORIGINAL ISSUE			
G	DATE 11/11/2015	APPD B. THOMAS	CKD K. MCKEE	DRN D. WOOD	UPDATED MATERIAL CU's TO LIMIT STATE

energex

RESOURCE ESTIMATION GUIDE

OVERHEAD CONSTRUCTION STAYS

APP'D	R.ENGLISH
DATE	15.05.09
RECD	J.TUNNEY
CKD	K.GOSDEN
DWN	F.AMANPOOR

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9562-A4 G
SECTION 1 | SUB-SECT. 2
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OPEN WIRE CONSTRUCTION CODES

THIS METHOD FOR INTERMEDIATE CONSTRUCTIONS

33PO / N PL S

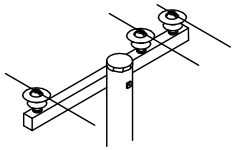
S -SLACK (T880-T220, T110 FOR ACSR and AAAC)
T -TIGHT (T110 FOR AAC, T65 & T42 FOR ACSR and AAAC)
REFER NOTE 5

REFER NOTES 1 & 2

CONSTRUCTION TYPE | INSULATOR TYPE | CONDUCTOR CODE | STRINGING TENSION

INTERMEDIATE CONSTRUCTIONS	
CU	DESCRIPTION
33TD	TRIDENT
33PC	PIN COMPOSITE X-ARM
33POC	PIN OFFSET COMPOSITE X-ARM
33SUC	SUSPENSION COMPOSITE X-ARM
33SUAC	SUSPENSION ANGLE COMPOSITE
33SUAHC	SUSPENSION ANGLE-HEAVY COMP
33W	WISHBONE
33WA	WISHBONE ANGLE
33TPC	TRIANGULAR PIN
33TA	TRIANGULAR ANGLE
33VA	VERTICAL ANGLE
33VDR	VERTICAL DELTA RURAL
33VOR	VERTICAL OFFSET RURAL

S -SYNTHETIC
N -NORMAL (PORCELAIN)
F -FOG
REFER NOTE 3



LI -LIBRA
MA -MARS
MO -MOON
PL -PLUTO
SA -SATURN
NE -NEON (AAAC)
RA -RAISIN
AP -APPLE
BA -BANANA
CH -CHERRY
LE -LEMON
REFER NOTE 4

S -SLACK
T -TIGHT

33S / S

THIS METHOD FOR STRAIN CONSTRUCTIONS
REFER NOTE 9.

CONSTRUCTION TYPE | INSULATOR TYPE

STRAIN CONSTRUCTIONS (Terms & Shackles)	
CU	DESCRIPTION
33T	TERMINATION 7kN STEEL X-ARM
33S	SHACKLE 7kN STEEL X-ARM
33T2	TERMINATION 13kN STEEL X-ARM
33S2	SHACKLE 13kN STEEL X-ARM
33TT	TRIANGULAR TERMINATION 13kN
33TS	TRIANGULAR SHACKLE 13kN
33VT	VERTICAL TERMINATION
33VS	VERTICAL SHACKLE
33VXS	VERTICAL CROSS-CHECK

HV CONDUCTOR HELICAL TERMINATION & CLEVIS THIMBLE FITTINGS - PER WIRE ATTACHED TO CONSTRUCTION refer note 9	
HVTLI	LIBRA
HVTMA	MARS
HVTMO	MOON
HVTPL	PLUTO
HVTSA	SATURN
HVTAP	APPLE
HVTBA	BANANA
HVTCH	CHERRY
HVTLE	LEMON
HVTRA	RAISIN
HVTNE	NEON (AAAC)
HVT7080CU	7/.080 (7/14) CU
HVT7104CU	7/.104 (7/12) CU
HVT19083CU	19/.083 (19/14) CU
HVT19104CU	19/.104 (19/12) CU

ENERGEX LABOUR		
CU		DESCRIPTION
LIVE LINE	REGULAR	
-	OTLAB280	GROUND FIT OPEN WIRE INTERMEDIATE CONSTRUCTION
OTLAB4011	OTLAB283	AIR FIT OPEN WIRE INTERMEDIATE CONSTRUCTION
-	OTLAB290	GROUNDFIT OPEN WIRE TENSION CONSTN
OTLAB4013	OTLAB291	AIRFIT OPEN WIRE TENSION CONSTN
OTLAB4050	-	REPLACE HV CROSSARM (L/L)
OTLAB4027	OTLAB1113	CONVERT EX TERMINATION TO SHACKLE / WIRE
OTLAB4038	OTLAB214	CONVERT SHACKLE TO INTERMEDIATE
OTLAB4037	OTLAB215	CONVERT INTERMEDIATE TO SHACKLE
OTLAB4039	OTLAB213	LOP HEAD OFF POLE
OTLAB4025	OTLAB297	RAISE/LOWER X-ARM
OTLAB4021	OTLAB281	RECOVER X-ARM CONSTRUCTION
OTLAB4042	OTLAB40	OH CREW PICK UP AND SORT MATERIALS
-	OTLAB50	CLEANUP SITE & RETURN MATLS / MHR
OTLAB4041	OTLAB10	TRAVEL TIME / MHRS OH DIST

ADD "-OT" SUFFIX TO CU FOR OVERTIME

NOTES

1. IF ONLY A PARTIAL CONSTRUCTION CODE CU IS ENTERED, e.g. "33TD" OR "33T", THE CROSSARM OR BRACKET WILL BE SUPPLIED, BUT NO INSULATORS OR CONDUCTOR FITTINGS WILL BE INCLUDED.
2. CONSTRUCTIONS SHOWN ARE ALL FOR USE WITH WOOD POLES.
3. FOR 33TD, 33VDU & 33VOU, ONLY SPECIFY NORMAL INSULATORS. FOR 33PO, 33TP & 33TA, ONLY SPECIFY NORMAL OR FOG INSULATORS. FOR OTHER CONSTRUCTIONS, WHILE ALL INSULATOR OPTIONS ARE AVAILABLE, SYNTHETIC INSULATORS ARE USUALLY PREFERED.
4. FOR CONDUCTOR TYPES NOT LISTED ABOVE, OMIT THE CONDUCTOR CODE AND STRINGING TENSION e.g. ENTER "33T/S" OR "33TD/N" AND MANUALLY ENTER SUITABLE CONDUCTOR FITTINGS (DEAD-ENDS, THIMBLES, ARMOUR RODS ETC.)-REFER SECTION 1.5 OF THIS MANUAL.
5. "T" FOR TIGHT STRINGING TENSION INCLUDES ARMOUR RODS FOR THE CONDUCTOR.
6. REFER OCM SECTION 5 FOR MORE DETAILS OF CONSTRUCTION.
7. REFER ODM SECTION 3 FOR DESIGN LAYOUT GUIDES-SPAN AND ANGLE LIMITATIONS.
8. FOR 33kV OVERHEAD EARTH WIRE CONSTRUCTIONS, REFER SHEET 2.
9. FOR STRAIN CONSTRUCTIONS, ADD THE CONDUCTOR TERMINATION FITTINGS FOR EACH WIRE ATTACHED TO THE CONSTRUCTION AS SEPARATE ITEMS. Eg, A 33kV SHACKLE 33S/S WILL HAVE 6 PLUTO CONDUCTOR TERMINATIONS ATTACHED TO THE CONSTRUCTION - HVTPL qty 6.

A	ORIGINAL ISSUE			
D	DATE 15/12/2015	APPD B. THOMAS	CKD K. MCKEE	DRN D. WOOD
	UPDATED MATERIAL CU's ADDED COMPOSITE CU'S 33POC, 33SUC, 33SUAC 33SUAHC, 33PC, 33TPC			

RESOURCE ESTIMATION GUIDE

OVERHEAD CONSTRUCTION
POLETOP CONSTRUCTIONS
33kV OPEN WIRE

APP'D	R.ENGLISH
DATE	15.05.09
RECD	J.TUNNEY
CKD	K.GOSDEN
DWN	F.AMANPOOR

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9562-A4 D
SECTION 1 | SUB-SECT. 3
SHT 1 OF 6
FILE RES-1-3-1A.DWG

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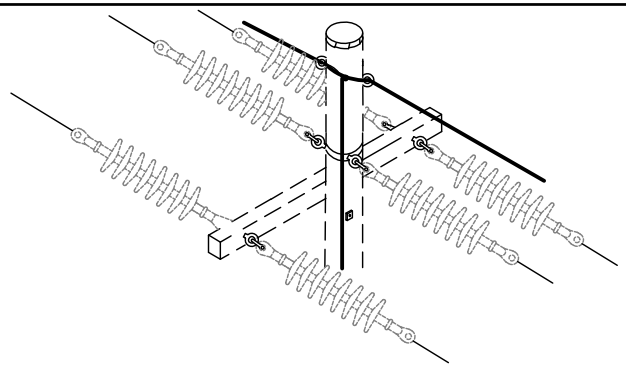

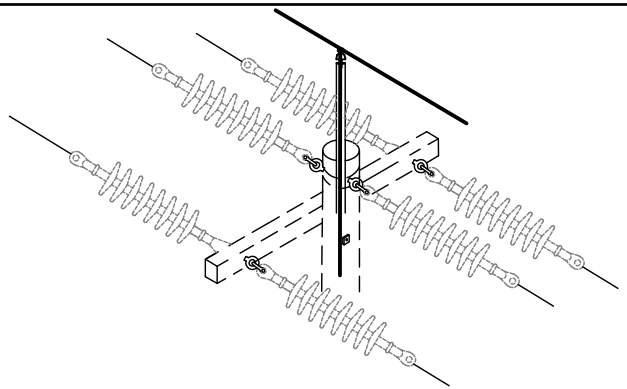

OHEW CONSTRUCTION		
CU	DESCRIPTION	ASSOCIATED 33kV CONSTRUCTION
OE	INLINE SUSPENSION	33PO, 33SU, 33W
OEA	ANGLE SUSPENSION	33SUA, 33SUAH, 33WA, 33TA
OEAR	RAISER ANGLE SUSPENSION	33SUA
OEP	POLE EARTH	
OEPR	INLINE PIN RAISER	33PO
OER	RAISER INLINE SUSPENSION	33SU
OES3	SHACKLE 0-30 DEG	33S, 33S2, 33TS, 33DCS
OES9	SHACKLE 31-90 DEG	33S, 33S2, 33TS, 33DCS
OESR	RAISER TERMINATION	33S, 33DCS
OET	TERMINATION	33T, 33T2, 33TT
OETR	RAISER TERMINATION	33T
OEV	SUSPENSION VD,VO	33VDR, 33VOR
OEVR	RAISER VDR,VOR	33VDR, 33VOR

OPGW CONSTRUCTION		
CU	DESCRIPTION	ASSOCIATED 33kV CONSTRUCTION
OPSU/11	SUSPENSION	33PO. 33SU, 33SUA, 33W, 33WA, 33DCI
OPSUR/11	SUSPENSION RAISER	33SU, 33SUA, 33DCI
OPS4/11	SHACKLE 0-45 DEG	33S, 33S2, 33TS, 33DCS
OPS9/11	SHACKLE 45-90 DEG	33S, 33S2, 33TS, 33DCS
OPSR/11	SHACKLE RAISER	33S, 33DCS
OPT/11	TERMINATION	33T, 33T2, 33TT
OPTR/11	RAISER TERMINATION	33T
OPJ/11	JOINT	
OPUGT/11	UNDERGROUND TERMINATION	
OPV/11	SUSPENSION	33VDR, 33VOR
OPVR/11	SUSPENSION RAISER	33VDR, 33VOR

SUNDRIES	
CU	DESCRIPTION
ADE	STAKE EARTH ON EXISTING POLE

ENERGEX LABOUR – SEE NOTE 5		
CU		DESCRIPTION
LIVE LINE	REGULAR	
-	OTLAB280	GROUND FIT OPEN WIRE INTERMEDIATE CONSTRUCTION
OTLAB4011	OTLAB283	AIR FIT OPEN WIRE INTERMEDIATE CONSTRUCTION
-	OTLAB290	GROUND FIT OPEN WIRE STRAIN CONSTRUCTION
OTLAB4013	OTLAB291	AIR FIT OPEN WIRE STRAIN CONSTRUCTION
OTLAB4032	OTLAB216	INSTALL LV MEN NEW POLE
OTLAB4033	OTLAB217	INSTALL LV MEN EXISTING POLE
OTLAB4042	OTLAB40	OH CREW PICK UP AND SORT MATERIALS
-	OTLAB50	CLEANUP SITE & RETURN MATLS / MHR

ADD "-OT" SUFFIX TO CU FOR OVERTIME

NOTES

1. CONSTRUCTIONS SHOWN ARE ALL FOR USE WITH WOOD POLES.
2. REFER TO SECTION 1.4 SHT 2 OF THIS MANUAL FOR OPGW COMPATIBLE UNIT GUIDE.
3. REFER OCM SECTION 5 FOR MORE DETAILS OF 33kV CONSTRUCTION.
4. RAISER CONSTRUCTION SUITABLE ONLY FOR SLACK STRINGING.
5. ONLY INCLUDE LABOUR WHERE AN OVERHEAD EARTHWIRE IS RETRO FITTED TO EXISTING 33kV.

A	ORIGINAL ISSUE				
D	DATE 15/12/2014	APPD B. THOMAS	CKD P. RELF	DRN S. GOODRIDGE	UPDATED LABOUR CU's ADDED OTLAB50

RESOURCE ESTIMATION GUIDE

OVERHEAD CONSTRUCTION POLETOP CONSTRUCTIONS

33kV OHEW & OPGW

APP'D	R.ENGLISH	AUTOCAD	
DATE	15.05.09	9562-A4	D
RECD	J.TUNNEY	SECTION 1	SUB-SECT. 3
CKD	K.GOSDEN	SHT 2 OF 6	
DWN	F.AMANPOOR	FILE RES-1-3-2C.DWG	

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OPEN WIRE CONSTRUCTION CODES

11A /N M0 S

THIS METHOD FOR INTERMEDIATE CONSTRUCTIONS

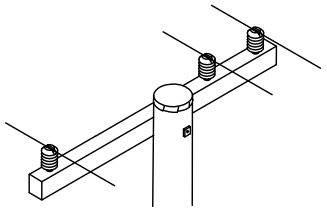
REFER NOTES 1 & 2 — CONSTRUCTION TYPE | INSULATOR TYPE | CONDUCTOR CODE | STRINGING TENSION

INTERMEDIATE CONSTRUCTIONS	
11TD	TRIDENT
11TDA	TRIDENT ANGLE-ALUMINIUM MAINS
11TDCA	TRIDENT ANGLE-COPPER MAINS
11P	PIN (NOT PREFERRED - USE 11A)
11A	STRAIGHT LINE AND ANGLE
11SUC	SUSPENSION COMPOSITE X-ARM
11SUAC	SUSPENSION ANGLE COMPOSITE X-ARM
11SUAHC	SUSPENSION ANGLE-HEAVY COMPOSITE
11VOR	VERTICAL OFFSET-RURAL
11VDR	VERTICAL DELTA-RURAL
11VA	VERTICAL ANGLE
11PETD	POLE EXTENSION-LONG
11PEP	POLE EXTENSION-SHORT
11W	WISHBONE
11WA	WISHBONE ANGLE

S -SYNTHETIC
N -NORMAL (PORCELAIN)
F -FOG (POLLUTION/SALT)
REFER NOTE 3

LI -LIBRA
MA -MARS
M0 -MOON
PL -PLUTO
RA -RAISIN
AP -APPLE
BA -BANANA
CH -CHERRY
C1 -7/.064 COPPER
C2 -7/.080 COPPER
C3 -7/.104 COPPER
C4 -19/.083 COPPER
C5 -7/.101 COPPER
REFER NOTES 5 & 6

S -SLACK (T880-T220 FOR AAC, T110 FOR ACSR)
T -TIGHT (T110 FOR AAC, T65 & T42 FOR ACSR)
REFER NOTE 4



11SC /S

CONSTRUCTION TYPE | INSULATOR TYPE

THIS METHOD FOR STRAIN CONSTRUCTIONS
REFER NOTE 9.

STRAIN CONSTRUCTIONS (Terms & Shackles)	
CU	DESCRIPTION
11TC	TERMINATION 7kN COMPOSITE X-ARM
11TC2	TERMINATION 13kN COMPOSITE X-ARM
11SC	SHACKLE 7kN COMPOSITE X-ARM
11SC2	SHACKLE 13kN COMPOSITE X-ARM
11TSC2	TRIANGULAR SHACKLE COMPOSITE
11TTSC2	TRIANGULAR TERMINATION COMPOSITE
11VT	VERTICAL TERMINATION
11VS	VERTICAL SHACKLE
11VXS	VERTICAL CROSS-CHECK
11PET	POLE EXTENSION TERMINATION
11PES	POLE EXTENSION SHACKLE

HV CONDUCTOR HELICAL TERMINATION & CLEVIS THIMBLE FITTINGS - PER WIRE ATTACHED TO CONSTRUCTION refer note 9	
HVTLI	LIBRA
HVTMA	MARS
HVTM0	MOON
HVTPL	PLUTO
HVTAP	APPLE
HVTBA	BANANA
HVTCH	CHERRY
HVTRA	RAISIN
HVTFL	FLY
HVT7080CU	7/.080 (7/14) CU
HVT7104CU	7/.104 (7/12) CU
HVT19083CU	19/.083 (19/14) CU
HVT19104CU	19/.104 (19/12) CU

ENERGEX LABOUR		
CU		DESCRIPTION
LIVE LINE	REGULAR	
OTLAB296	-	ERECT EDOs
-	OTLAB280	GROUND FIT OPEN WIRE INTERMEDIATE CONSTRUCTION
OTLAB4011	OTLAB283	AIR FIT OPEN WIRE INTERMEDIATE CONSTRUCTION
-	OTLAB290	GROUNDFIT OPEN WIRE TENSION CONSTN
OTLAB4013	OTLAB291	AIRFIT OPEN WIRE TENSION CONSTN
OTLAB4027	OTLAB1113	CONVERT EX TERMINATION TO SHACKLE / WIRE
OTLAB4038	OTLAB214	CONVERT SHACKLE TO INTERMEDIATE
OTLAB4037	OTLAB215	CONVERT INTERMEDIATE TO SHACKLE
OTLAB4023	OTLAB1132	FIT RAISER & INTERMED CONSTN (PETD)
OTLAB4024	OTLAB1133	AIRFIT PIN/TENSION RISER (PE/PET)
OTLAB4032	OTLAB216	INSTALL LV MEN NEW POLE
OTLAB4033	OTLAB217	INSTALL LV MEN EXISTING POLE
OTLAB4039	OTLAB213	LOP HEAD OFF POLE
OTLAB4025	OTLAB297	RAISE / LOWER HV OR LV XARM
OTLAB4021	OTLAB281	RECOVER X-ARM CONSTRUCTION
OTLAB4042	OTLAB40	PICK UP & SORT MATERIALS / MHR OH DIST
-	OTLAB50	CLEANUP SITE & RETURN MATLS / MHR
OTLAB772	OTLAB771	OH - SITE INDUCTIONS / MHR
-	OTSC11	ENERGEX ACCOMMODATION / PERSON / NIGHT
MM231		RAPID RESPONSE-SWITCHING / MHR

ADD "-OT" SUFFIX TO CU FOR OVERTIME

NOTES

1. IF ONLY A PARTIAL CONSTRUCTION CODE CU IS ENTERED, e.g. "11TD" OR "11T" THE CROSSARM OR BRACKET WILL BE SUPPLIED, BUT NO INSULATORS OR CONDUCTOR FITTINGS WILL BE INCLUDED.
2. CONSTRUCTIONS SHOWN ARE ALL FOR USE WITH WOOD POLES.
3. FOR 11A, 11TD, 11VDR, 11PEP ONLY SPECIFY NORMAL INSULATORS. FOR 11P ONLY SPECIFY NORMAL OR FOG INSULATORS. FOR OTHER CONSTRUCTIONS, WHILE ALL INSULATOR OPTIONS ARE AVAILABLE, SYNTHETIC INSULATORS ARE USUALLY PREFERRED.
4. "T" FOR TIGHT STRINGING TENSION INCLUDES ARMOUR RODS FOR THE CONDUCTOR.
5. FOR CONDUCTOR TYPES NOT LISTED ABOVE, OMIT THE CONDUCTOR CODE AND STRINGING TENSION e.g. ENTER "11T/S" OR "11TD/N" AND NOMINATE SUITABLE CONDUCTOR FITTINGS (DEAD-ENDS, THIMBLES, ARMOUR RODS ETC.) AS SEPARATE ITEMS, OR USE THE "TMO" STYLE TERMINATION CUs.
6. 11kV CCT AND 11kV ABC CONSTRUCTION CODES MAY FOLLOW A DIFFERENT PATTERN - REFER TABLE ON NEXT SHEET.
7. NOT ALL CONSTRUCTION/CONDUCTOR COMBINATIONS ARE AVAILABLE. CHECK VALIDITY OF CUs ON ELLIPSE SYSTEM, PARTICULARLY FOR COPPER CONDUCTORS.
8. REFER ODM SECTION 3 FOR DESIGN LAYOUT GUIDES-SPAN AND ANGLE LIMITATIONS.
9. FOR STRAIN CONSTRUCTIONS ADD THE CONDUCTOR TERMINATION FITTINGS FOR EACH WIRE ATTACHED TO THE CONSTRUCTION AS SEPARATE ITEMS. Eg, AN 11KV SHACKLE 11SC/S MAY HAVE 3 MOON CONDUCTOR TERMINATIONS ONE 1 SIDE AND 3 7/.104 COPPER ATTACHED TO THE OTHER SIDE OF THE CONSTRUCTION - HVTM0 qty 3 + HVT7104CU qty 3.

C	ORIGINAL ISSUE	15/12/2015	B. THOMAS	K. MCKEE	D. WOOD
H	UPDATED MATERIAL CU'S ADDED COMPOSITE CU'S 11SUC, 11SUAC, 11SUAHC				

RESOURCE ESTIMATION GUIDE

OVERHEAD CONSTRUCTION
POLETOP CONSTRUCTIONS
11kV OPEN WIRE

APP'D	R.ENGLISH
DATE	15.05.09
RECD	J.TUNNEY
CKD	K.GOSDEN
DWN	F.AMANPOOR

AUTOCAD 9562-A4 H

SECTION 1 | SUB-SECT. 3

SHT 3 OF 6

FILE

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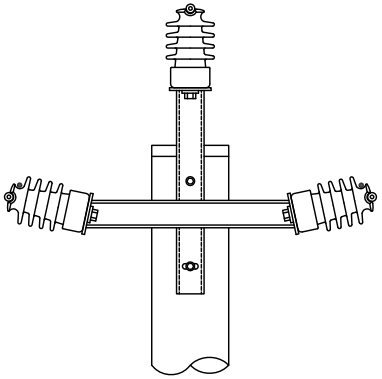
CCT CONSTRUCTIONS

STRAIN CONSTRUCTIONS	
CU	DESCRIPTION
11TC/SCCT	TERMINATION
11SC/SCCT	SHACKLE

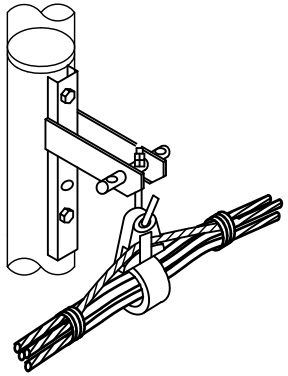


11kV ABC CONSTRUCTIONS

REFER TO NOTE 7

35mm 11kV ABC	
CU	DESCRIPTION
11ABC/T35	TERMINATION
11ABC/S35	SHACKLE
11ABC/XS35	CROSS CHECK
11ABC35/OW	35 ABC TO OPEN WIRE SHACKLE
11ABCSU/35	SUSPENSION

120mm 11kV ABC	
CU	DESCRIPTION
11ABC/T120	TERMINATION
11ABC/S120	SHACKLE
11ABC/XS120	CROSS CHECK
11ABC120/OW	120 ABC TO OPEN WIRE SHACKLE
11ABCSU/120	SUSPENSION



11kV ABC JOINTS	
CU	DESCRIPTION
11ABCJ1	11ABC JOINTS WITH ARRESTORS
11ABCJ2	11ABC JOINTS WITHOUT ARRESTORS
11ABCJ3	11ABC JOINTS WITHOUT ARRESTORS

INTERMEDIATE CONSTRUCTIONS		
CU		DESCRIPTION
REGULAR	WITH LIGHTNING OVERVOLTAGE KIT (LOK) REFER NOTE 5	
11TD/NCCT	11TDNCCTLOK	TRIDENT
11TDA/NCCT	11TDANCCTLOK	TRIDENT ANGLE
11VDU/NCCT	11VDUNCCTLOK	VERTICAL DELTA
11VOU/NCCT	11VOUNCCTLOK	VERTICAL OFFSET
11PETD/NCCT	-	POLE EXTENSION-LONG, TRIDENT
11PEP/NCCT	-	POLE EXTENSION-SHORT, TRIDENT
11A/NCCT	-	FLAT INTERMEDIATE-POST INSULATOR ON X-ARM (STRAIGHT LINE OR ANGLE)

ENERGEX LABOUR				
CU				DESCRIPTION
REGULAR	REG @ OT	LIVE LINE	L/L @ OT	
OTLAB520	OTLAB520-OT	-	-	GROUNDFIT HVABC INTERMEDIATE CONSTRUCTION
OTLAB522	OTLAB522-OT	OTLAB5022	OTLAB5022-OT	AIRFIT HVABC INTERMEDIATE CONSTRUCTION
OTLAB521	OTLAB521-OT	-	-	GROUNDFIT HVABC TENSION CONSTRUCTION
OTLAB523	OTLAB523-OT	OTLAB5023	OTLAB5023-OT	AIRFIT HVABC TENSION CONSTRUCTION
OTLAB524	OTLAB524-OT	-	-	FIT HVABC JOINT WITH ARRESTORS
OTLAB525	OTLAB525-OT	-	-	FIT HVABC JOINT WITHOUT ARRESTORS
OTLAB526	OTLAB526-OT	OTLAB5260	OTLAB5260-OT	STRING HVABC / SPAN

ENERGEX LABOUR		
CU		DESCRIPTION
REGULAR	LIVE LINE	
OTLAB400	-	GROUND FIT CCT INTERMEDIATE CONST. - NO LOK
OTLAB402	OTLAB4011	AIR FIT CCT INTERMEDIATE CONST. - NO LOK
OTLAB401	-	GROUND FIT CCT INTERMEDIATE CONST. - WITH LOK
OTLAB403	OTLAB4029	AIR FIT CCT INTERMEDIATE CONST. - WITH LOK
OTLAB405	-	GROUNDFIT CCT TENSION CONSTN
OTLAB406	OTLAB4031	AIRFIT CCT TENSION CONSTN
OTLAB216	OTLAB4032	INSTALL LV MEN NEW POLE
OTLAB217	OTLAB4033	INSTALL LV MEN EXISTING POLE

ADD "-OT" SUFFIX TO CU FOR OVERTIME

SUNDRIES	
CU	DESCRIPTION
SC0017803	POLYMERIC TOP TIE
SC0017799	POLYMERIC SIDE TIE
SC0020281	WEDGE CLAMP
SC0020282	WEDGE CLAMP COVER
11CCT1350	CCT CONDUCTOR-MAINS (NOT BRIDGING)
ADE	EARTH ON EXISTING POLE (STAKE)
CCTPETD	EARTH ON NEW POLE (BUTT) FOR 11TDNCCTLOK
CCTPETD	EARTH ON NEW POLE (BUTT) FOR 11TDANCCTLOK
CCTPEVD	EARTH ON NEW POLE (BUTT) FOR 11VDUNCCTLOK
CCTPEVO	EARTH ON NEW POLE (BUTT) FOR 11VOUNCCTLOK

NOTES

1. CONSTRUCTION SHOWN ARE FOR WOOD POLES.
2. CCT STRAIN CONSTRUCTION CUs INCLUDE WEDGE CLAMPS, COVERS AND BRIDGING.
3. BRIDGING IS INCLUDED IN 11ABC/OW.
4. FOR ADDITIONAL DETAILS OF CONSTRUCTIONS, REFER OCM SECTION 4. REFER ODM SECTION 3 FOR DESIGN LAYOUT GUIDES-SPAN AND ANGLE LIMITATIONS. (ALSO REFER TO MAINS DES APPLICATION FOR MORE PRECISE INFORMATION)
5. EARTH IS REQUIRED ON ALL LOK CONSTRUCTIONS (CCTPETD, CCTPEVD, CCTPEVO & POSSIBLY ADE).
6. FOR LABOUR CUs, SEE PRECEDING SHEET (11kV BARE OPEN WIRE).
7. EXCEPT FOR SPECIAL APPLICATIONS, CCT IS PREFERRED OVER 11ABC.

D	ORIGINAL ISSUE			
H	DATE 15/12/2014	APPD B. THOMAS	CKD P. RELF	DRN S. GOODRIDGE	UPDATED LABOUR CU'S ADDED TABLE FOR HVABC LABOUR CU's

RESOURCE ESTIMATION GUIDE

OVERHEAD CONSTRUCTION
POLETOP CONSTRUCTIONS
11kV INSULATED (CCT & ABC)

APP'D	R.ENGLISH	AUTOCAD	
DATE	15.05.09	9562-A4	H
RECD	J.TUNNEY	SECTION 1	SUB-SECT. 3
CKD	K.GOSDEN	SHT 4 OF 6	
DWN	F.AMANPOOR	FILE	

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LV OPEN WIRE

THIS METHOD FOR INTERMEDIATE CONSTRUCTIONS

LVP/N MO S

- LVP/N: CONSTRUCTION TYPE
- MO: CONDUCTOR CODE
- S: STRINGING TENSION

INSULATOR TYPE
-NORMAL (PORCELAIN)

INTERMEDIATE CONSTRUCTIONS	
CU	DESCRIPTION
LVP	PIN
LVA	ANGLE
LVCP	CANTILEVER PIN
LVCA	CANTILEVER ANGLE
LVSUA	SUSPENSION ANGLE
LVU	UPLIFT
LVV	VERTICAL
LVVA	VERTICAL ANGLE
LVPTU	PT UPLIFT

CONDUCTOR CODE

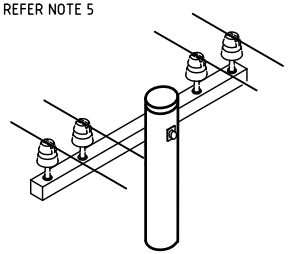
- LI -LIBRA
- MA -MARS
- MO -MOON
- PL -PLUTO
- RA -RAISIN
- AP -APPLE
- BA -BANANA
- CH -CHERRY

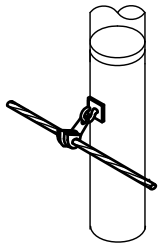
REFER NOTE 4

STRINGING TENSION

- S -SLACK (T880-T220 FOR AAC, T110 FOR ACSR)
- T -TIGHT (T110 FOR AAC, T65 & T42 FOR ACSR)

REFER NOTE 5





LVABC

INTERMEDIATE CONSTRUCTIONS	
CU	DESCRIPTION
LVABC/A	ANGLE CONSTRUCTION
LVABC/HA	HEAVY ANGLE CONSTRUCTION
LVABC/SU3	SUSPENSION 300mm HOOK BOLT
LVABC/SU4	SUSPENSION 400mm HOOK BOLT
LVABC/PTSU	LVABC PT SUSPENSION

STRAIN CONSTRUCTIONS (Terms & Shackles)	
CU	DESCRIPTION
LVABC/T	TERMINATION
LVABC/S	SHACKLE
LVABC/XS	CROSSCHECK CONSTRUCTION
LVABC/PTS	LVABC PT SHACKLE-SEE NOTE 2

LVS

NOT REQUIRED BECAUSE ALL LV OPEN WIRE STRAIN CONSTN'S USE NORMAL INSULATORS

THIS METHOD FOR STRAIN CONSTRUCTIONS REFER NOTE 8.

CONSTRUCTION TYPE

INSULATOR TYPE NOT REQ'D

STRAIN CONSTRUCTIONS (Terms & Shackles)	
CU	DESCRIPTION
LVS	SHACKLE
LVT	TERMINATION
LVS2	SHACKLE/TWIN X-ARM
LVT2	TERMINATION/TWIN X-ARM
LVVS	VERTICAL SHACKLE
LVVT	VERTICAL TERMINATION
LVPTS	PT SHACKLE
LVPTT	PT TERMINATION
LVPTS2	PT SHACKLE/TWIN X-ARM
LVPTT2	PT TERMINATION/TWIN X-ARM

LV CONDUCTOR HELICAL TERMINATION FITTINGS - PER WIRE ATTACHED TO CONSTRUCTION refer note 8	
LVTLI	LIBRA
LVTMA	MARS
LVTMO	MOON
LVTPL	PLUTO
LVTAP	APPLE
LVTBA	BANANA
LVTCH	CHERRY
LVTRA	RAISIN
LVT7080CU	7/.080 (7/14) CU
LVT7104CU	7/.104 (7/12) CU
LVT19083CU	19/.083 (19/14) CU
LVT19104CU	19/.104 (19/12) CU

3 PHASE FUSE SWITCH CONSTRUCTIONS	
CU	DESCRIPTION
LVABC/DS2	LVABC FUSE SWITCH 200A FUSES
LVABC/DS4	LVABC FUSE SWITCH 630A LINKS
LVABC/DS2T	LVABC FUSE SWITCH 315A FUSES TWIN ABC
LVABC/DS4T	LVABC FUSE SWITCH 630A LINKS TWIN ABC

ENERGEX LABOUR	
CU REGULAR	DESCRIPTION
OTLAB280	GROUND FIT OPEN WIRE INTERMEDIATE CONSTRUCTION
OTLAB290	GROUNDFIT OPEN WIRE TENSION CONSTN
OTLAB282	GROUNDFIT LVABC INTERMED/TENSION CONST
OTLAB283	AIR FIT OPEN WIRE INTERMEDIATE CONSTRUCTION
OTLAB284	AIRFIT LVABC INTERMED/TENSION CONST
OTLAB291	AIR FIT OPEN WIRE STRAIN CONSTRUCTION
OTLAB1113	CONVERT EX TERMINATION TO SHACKLE / WIRE
OTLAB214	CONVERT SHACKLE TO INTERMEDIATE
OTLAB215	CONVERT INTERMEDIATE TO SHACKLE
OTLAB281	RECOVER XARM CONSTRUCTION
OTLAB297	RAISE / LOWER HV OR LV XARM
OTLAB213	LOP HEAD OF POLE
OTLAB216	INSTALL LV MEN NEW POLE
OTLAB217	INSTALL LV MEN EXISTING POLE
OTLAB40	OH CREW PICK UP AND SORT MATERIALS
OTLAB50	CLEANUP SITE & RETURN MATLS / MHR
MM101	SWITCHING BY LINE CREW / MHRS
MM231	RAPID RESPONSE-SWITCHING / MHR

ADD "-OT" SUFFIX TO CU FOR OVERTIME

NOTES

1. CONSTRUCTIONS APPLY TO WOOD POLES.
2. "LVABC/PTS" IS A 'FLYING SHACKLE' AND CANNOT BE USED TO STRAIN MAINS.
3. IF ONLY A PARTIAL CONSTRUCTION CODE CU IS ENTERED, e.g. "LVT", INSULATORS WILL BE SUPPLIED BUT CONDUCTOR FITTINGS WILL BE MISSING.
4. FOR OTHER UNLISTED CONDUCTOR TYPES, OMIT THE LATTER PART OF THE CODE ,e.g. SIMPLY ENTER "LVT", AND MANUALLY ENTER SUITABLE CONDUCTOR FITTINGS (DEAD-ENDS, THIMBLES, ARMOUR RODS ETC.). - REFER SECTION 1.5 OF THIS MANUAL.
5. SINGLE PHASE OPEN WIRE CONSTRUCTIONS INCLUDE LVT/1, LVT2/1, LVS/1, LVS2/1 & LVP/1.
6. "T" FOR TIGHT STRINGING INCLUDES ARMOUR RODS FOR THE CONDUCTOR.
7. REFER OCM SECTION 3 FOR MORE DETAILS OF CONSTRUCTIONS.
8. FOR OPEN WIRE STRAIN CONSTRUCTIONS, ADD THE CONDUCTOR TERMINATION FITTINGS FOR EACH WIRE ATTACHED TO THE CONSTRUCTION AS SEPARATE ITEMS. Eg, A LV SHACKLE LVS MAY HAVE 4 MOON CONDUCTOR TERMINATIONS ONE 1 SIDE AND 4 7/.104 COPPER ATTACHED TO THE OTHER SIDE OF THE CONSTRUCTION - LVTMO qty 4 + LVT7104CU qty 4.

A	ORIGINAL ISSUE	15/12/2014	B. THOMAS	P. RELF	S.GOODRIDGE
C	UPDATED LABOUR CU's ADDED TABLE FOR LVABC FUSE SWITCHES				

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OVERHEAD CONSTRUCTION
POLETOP CONSTRUCTIONS
LV CONSTRUCTION

APP'D	R.ENGLISH	AUTOCAD	
DATE	15.05.09	9562-A4	C
RECD	J.TUNNEY	SECTION 1	SUB-SECT. 3
CKD	K.GOSDEN	SHT 5 OF 6	
DWN	F.AMANPOOR	FILE RES-1-3-5A.DWG	

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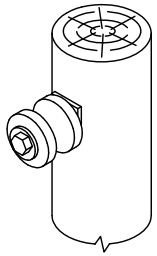
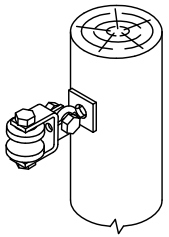
STREET LIGHT MAIN/LV NEUTRAL

COMMUNICATION



INTERMEDIATE CONSTRUCTION

CU	DESCRIPTION
SET54-4	SL/NEUTRAL INTERMEDIATE CONSTRUCTION



TERMINATION CONSTRUCTION

CU	DESCRIPTION
SET55-3	SL/NEUTRAL TERMINATION CONSTRUCTION

ENERGEX LABOUR	
CU	DESCRIPTION
UTLAB67	TERMINATE/JOINT PILOT CABLE
MM231	SWITCHING/HR

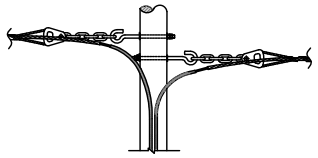
ADD "-OT" SUFFIX TO CU FOR OVERTIME

NOTES

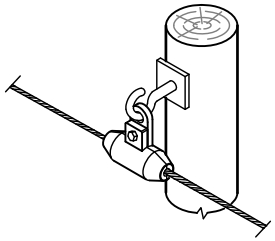
1. FOR ADDITIONAL INFORMATION ON PILOT CABLES AND ACCESSORIES SEE THE UNDERGROUND DISTRIBUTION CONSTRUCTION MANUAL AND THE OVERHEAD CONSTRUCTION MANUAL SECTION 3.
2. FOR OPGW CUs, REFER SHEET 2.

ADSS CABLE CONSTRUCTIONS

STRAIN CONSTRUCTION	
CU	DESCRIPTION
OFPC-STW	OPTICAL FIBRE SINGLE TERM WOOD POLE
OFPC-DTW	OPTICAL FIBRE DOUBLE TERM WOOD POLE
OFPC-STC	OPTICAL FIBRE SINGLE TERM CONC POLE
OFPC-DTC	OPTICAL FIBRE DOUBLE TERM CONC POLE

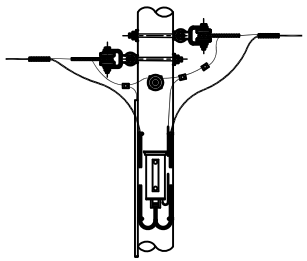


CU	INTERMEDIATE CONSTRUCTION
1-500-2	O.F. SUSPENSION
1-500-3	O.F. DIELECTRIC SUPPORT-WOOD POLE
1-500-4	O.F. DIELECTRIC SUPPORT-CONC. POLE



PILOT CABLE CONSTRUCTIONS

STRAIN CONSTRUCTION	
CU	DESCRIPTION
PCT	PILOT CABLE TERMINATION
PCS	PILOT CABLE SHACKLE
PCJB	PILOT CABLE JUNCTION CONSTRUCTION (EXCLUDES JUNCTION BOX)
EXJBPCMAT	TYPE 1 JUNCTION BOX- WITH TEST LINKS
SC0015254	TYPE 2 JUNCTION BOX- NO INTERNAL FITTINGS, IPCs



INTERMEDIATE CONSTRUCTION	
CU	DESCRIPTION
PCSL	STRAIGHT LINE CONSTRUCTION
PCA	ANGLE CONSTRUCTION

B	ORIGINAL ISSUE				
C	DATE	19/01/11			
	APPD	R. ENGLISH			
	CKD	P. RELF			
	DRN	P. RELF			
	CHANGE STOCK CODES TO CU's				

RESOURCE ESTIMATION GUIDE

OVERHEAD CONSTRUCTION
POLETOP CONSTRUCTIONS
STREET LIGHT, COMMUNICATION & NEUTRAL

APP'D	R.ENGLISH
DATE	15.05.09
RECD	J.TUNNEY
CKD	K.GOSDEN
DWN	G. JAYAWEERA

AUTOCAD

9562-A4 C

SECTION	SUB-SECT.
1	3

SHT 6 OF 6

FILE RES-1-3-6C.DWG

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AAC	BARE
CU	DESCRIPTION
LIBRA	7/3.00 1350
MARS	7/3.75 1350
MOON	7/4.75 1350
PLUTO	19/3.75 1350
SATURN	37/3.00 1350
TAURUS	19/4.75 1350
TRITON	37/3.75 1350

AAAC	BARE
CU	DESCRIPTION
NEON	19/3.75 1120 NEON
IODINE	7/4.75 1120 IODINE

ACSR	BARE
CU	DESCRIPTION
RAISIN	3/4/2.50
APPLE	6/1/ 3.00
BANANA	6/1/ 3.75
CHERRY	6/4.75+7/1.60
LEMON	30/7/3.00

HARD DRAWN COPPER	BARE
CU	DESCRIPTION
SC0015125	7/.064, 7/16
CU7203	7/2.03, 7/.080, 7/14
CU7275	7/2.75, 7/.104, 7/12
CU19214	19/2.14, 19/.083, 19/14
CU19275	19/.104, 19/.101, 19/12

STEEL STAYWIRE	BARE
CU	DESCRIPTION
STAYWIRE25	7/2.75-STAY 25kN MWT
STAYWIRE37	19/2.00-STAY 37kN MWT
STAYWIRE56	19/2.75-STAY 56kN MWT

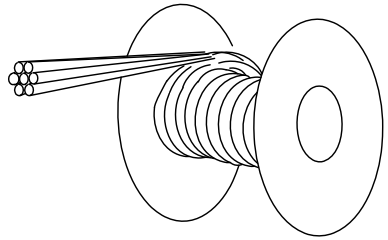
LVABC/SERVICES	
CU	DESCRIPTION
2B6	2C 6mm^{2}CU XLPE
2B25	2C 25mm^{2}AL XLPE
3B25	3C 25mm^{2}AL XLPE
4B25	4C 25mm^{2}AL XLPE
4B35	4C 35mm^{2}AL XLPE
2B95	2C 95mm^{2}AL XLPE
4B95 OR ABCLV95	4C 95mm^{2}AL XLPE
4B95TWIN	TWIN 4C 95mm^{2}AL XLPE

11kV ABC	
CU	DESCRIPTION
ABC1135	35mm^{2}CU XLPE 3C+CAT MET SCR
ABC11120	120mm^{2}CU XLPE 3C+CAT MET SCR

CCT	
CU	DESCRIPTION
11CCT1350	120mm^{2}AL XLPE 1350-MAINS,BRIDGING
SC0020279	120mm^{2}AL XLPE 1350-MAINS, BRIDGING

SEE NOTE 4

COPPER/PVC BRIDGING/EARTH CABLES	
CU	DESCRIPTION
SC0007156	19/1.53 35mm^2 GREEN/YELLOW
SC0007159	19/1.53 35mm^2 BLACK
SC0007163	19/1.78 50mm^2 GREEN/YELLOW
SC0007235	19/1.78 50mm^2 BLACK HD
SC0007172	37/1.78 95mm^2 GREEN/YELLOW
SC0007173	37/1.78 95mm^2 BLACK
SC0007181	37/2.52 185mm^2 BLACK



ENERGEX LABOUR - LVABC/SERVICES	
CU	DESCRIPTION
OTLAB1300	STRING LV SERVICE / SL MAINS PER SPAN
OTLAB1301	RECOVER LV SERVICE / SL MAINS PER SPAN
OTLAB1302	TRANSFER LV SERVICE / SL MAINS PER SPAN
OTLAB1304	DISC SERVICE CONN TO LV MAIN / PER SERV
OTLAB1305	RECONN SERV CONN TO LV MAIN / PER SERV
OTLAB6660	INSTALL TYPICAL FLYING FOX SERVICE
OTLAB1310	STRING 1 SPAN 4B95 SERVICE
OTLAB1311	STRING 1 SPAN PARALLEL 4B95 SERVICE

ADD "-OT" SUFFIX TO CU FOR OVERTIME

ENERGEX LABOUR		
CU		DESCRIPTION
LIVE LINE	REGULAR	
-	OTLAB2020	STRING 1 OPEN WIRE CONDUCTOR/SPAN
-	OTLAB2026	STRING 2 OPEN WIRE CONDUCTOR/SPAN
OTLAB4001	OTLAB2021	STRING 3 OPEN WIRE CONDUCTOR/SPAN
-	OTLAB2024	STRING 3-PHASE CCT/SPAN
OTLAB4022	OTLAB2022	STRING LV ABC/SPAN
-	OTLAB2023	RECOVER 3PH OPEN WIRE/SPAN
OTLAB4007	OTLAB630	XFER ONLY UP TO 4 COND TO NEW INTER POLE
-	OTLAB632	XFER UP TO 4 COND TO NEW ANGLE POLE
OTLAB4008	OTLAB640	XFER UP TO 4 COND TO NEW TERM POLE
-	OTLAB642	XFER UP TO 8 COND TO NEW SHACKLE POLE
-	OTLAB201	SET UP DRUMS OPEN WIRE CONDUCTOR
-	OTLAB202	SET UP DRUMS CCT CONDUCTOR
OTLAB4040	OTLAB763	RETENSION MAINS/SPAN
OTLAB4041	OTLAB10	TRAVEL TIME
OTLAB4043	OTLAB41	PAID BREAKS / MHR OH DIST
OTLAB4042	OTLAB40	PICK UP & SORT MATERIALS
-	OTLAB50	CLEANUP SITE & RETURN MATLS / MHR
MM231		RAPID RESPONSE-SWITCHING / MHR

ADD "-OT" SUFFIX TO CU FOR OVERTIME

NOTES

1. MATERIALS CU'S ARE GENERALLY PER METRE. FOR OPEN WIRE CONSTRUCTION, MULTIPLY LENGTH BY NUMBER OF PHASES.
2. FOR UNDERGROUND CABLES, REFER TO SECTION 3.2 OF THIS MANUAL.
3. FOR ADDITIONAL INFORMATION REFER TO OCM SECTION 8 P.38 & SECTION 0 P.5, AND ODM SECTION8.
4. 11CCT1350 SUPPLIED IN 600m DRUMS.
   SC0020279 SUPPLIED IN 600m DRUMS.

C	ORIGINAL ISSUE	15/12/2014	B. THOMAS	P. RELF	S.GOODRIDGE
B	UPDATED LABOUR CU's ADDED LV SERVICE CU LABOUR TABLE				
		DATE	APPD	CKD	DRN

RESOURCE ESTIMATION GUIDE

OVERHEAD CONSTRUCTION
OVERHEAD CONDUCTORS & CABLES

APP'D	R.ENGLISH		AUTOCAD
DATE	15.05.09	9562-A4	1
RECD	J.TUNNEY	SECTION 1	SUB-SECT. 4
CKD	K.GOSDEN	SHT 1	OF 2
DWN	F.AMANPOOR	FILE	

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ADSS FIBRE OPTIC CABLE CONSTRUCTION COMPATIBLE UNIT CODE GUIDE

AD / B W 12

CABLE TYPE
ADSS- ALL DIELECTRIC SELF SUPPORTING FIBRE OPTIC CABLE

CONSTRUCTION TYPE
B - BLOCK
S - SHACKLE
SR - SHACKLE RAISER
T - TERMINATION
TR - TERMINATION RAISER
HA - HEAVY ANGLE
UGT- UNDERGROUND TERMINATION

POLE/ATTACHMENT
W - WOOD POLE
C - CONCRETE POLE
X - CROSSARM

OUTSIDE DIAMETER
12 - TO SUIT 12.6mm O.D. CABLE
13 - TO SUIT 13.5mm O.D. CABLE

ADSS	
CU	DESCRIPTION
AD72	72 FIBRE SINGLE MODE
AD8	8 FIBRE MULTI MODE
ADSS RESTRICTED USE	
AD12	12 FIBRE SINGLE MODE-TERMITE/RODENT PROTECTED
AD24	24 FIBRE SINGLE MODE-TERMITE/RODENT PROTECTED
AD48	48 FIBRE SINGLE MODE-TERMITE/RODENT PROTECTED

ADSS UNDERGROUND TERMIINATION ARRANGEMENTS	
CU	DESCRIPTION
AD/UGTW	WOOD POLE
AD/UGTC	CONCRETE POLE

OPGW CABLE CONSTRUCTION COMPATIBLE UNIT CODE GUIDE

OP SU / 11

CABLE TYPE
OPGW- OPTICAL FIBRE GROUND WIRE

CONSTRUCTION TYPE
SU - SUSPENSION for PO, SU, SUA, W, WA
SUR- SUSPENSION RAISER for SU, SUA, W, WA
V - SUSPENSION for VDR, VOR
VR - SUSPENSION RAISER for VDR, VOR
S4 - 0° TO 45° SHACKLE
S9 - 45° TO 90° SHACKLE
SR - SHACKLE RAISER
T - TERMINATION
TR - TERMINATION RAISER
J - JOINT
UGT- UNDERGROUND TERMINATION

OUTSIDE DIAMETER
11 - TO SUIT 11.1mm O.D. CABLE

OPGW	
CU	DESCRIPTION
OP72	72 CORE Fault Level 1 sec, 4.9kA
OP48-16KA	48 CORE Fault Level 0.5 sec, 16kA
SC0019820	SPIRAL VIBRATION DAMPER
OPGW RESTRICTED USE	
OP24	24 CORE Fault Level 1 sec, 4.9kA
OTMAT990	24 CORE Fault Level 0.5 sec, 16kA

PILOT CABLE	
CU	DESCRIPTION
EXPCAEMAT	20PR AERIAL

C	ORIGINAL ISSUE				
G	DATE	22/2/2018	APPD	SEAN MCGUINNESS	
	CKD	B. NORDKAMP			
	DRN	Z. RELF			
	OPGW CU'S UPDATED				

RESOURCE ESTIMATION GUIDE

OVERHEAD CONSTRUCTION
OVERHEAD COMMUNICATION CABLES

APP'D	R.ENGLISH		AUTOCAD
DATE	15.05.09	9562-A4	G
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DWN	F.AMANPOOR	FILE RES 1-4-2G.DWG	

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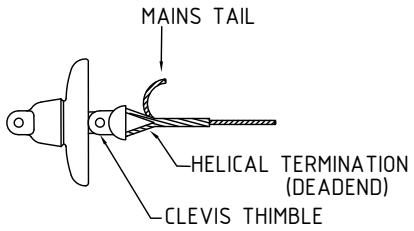
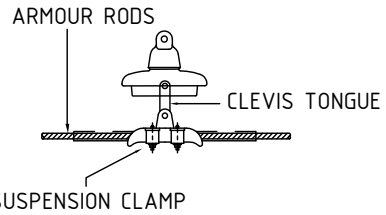
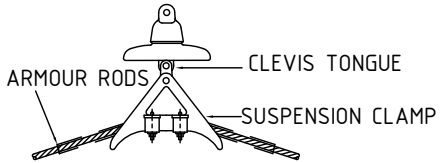
Conductor		CONDUCTOR CODE	TERMINATION/ SHACKLE		STRAIGHT LINE SUSPENSION								ANGLE SUSPENSION							
			TIGHT OR SLACK STRUNG		TIGHT STRUNG				SLACK STRUNG				TIGHT STRUNG				SLACK STRUNG T880			
			HELICAL TERMINATION (DEADEND)	CLEVIS THIMBLE	SUSPENSION CLAMPS	ARMOUR ROD	CLEVIS TONGUE	CLEVIS PIN	SUSPENSION CLAMPS	CLEVIS TONGUE	CLEVIS PIN		ARMOUR ROD	SUSPENSION CLAMPS	CLEVIS TONGUE	CLEVIS PIN	ARMOUR ROD	SUSPENSION CLAMPS	CLEVIS TONGUE	CLEVIS PIN
Cu	7/2.00 (7/.080) (7/14)		SC0006435	SC0002604	SC0002605		SC0002616 (FOG INSULATOR ONLY)	SC0013949 (NORMAL INSULATOR)	SC0002605	SC0002616 (FOG INSULATOR ONLY)	SC0013949 (NORMAL INSULATOR)				SC0002616 (FOG INSULATOR ONLY)	SC0013949 (NORMAL INSULATOR)			SC0002616 (FOG INSULATOR ONLY)	SC0013949 (NORMAL INSULATOR)
	7/2.75 (7/.104) (7/12)		SC0006436	SC0002604	SC0002605				SC0002605											
	19/2.00 (19/.083) (19/14)		SC0006437	SC0002604	SC0002605				SC0002605											
	19/2.75 (19/.104) (19/12)		SC0006438	SC0002604	SC0002605				SC0002605											
AAC	7/3.00 LIBRA	LI	SC0006011	SC0009924	SC0002612	SC0005969			SC0002612				SC0005969	SC0002608				SC0002608		
	7/3.75 MARS	MA	SC0006012	SC0009924	SC0002612	SC0005970			SC0002612				SC0005970	SC0002608				SC0002608		
	7/4.75 MOON	MO	SC0006013	SC0009924	SC0002613	SC0005971			SC0002612				SC0005971	SC0002609				SC0002608		
	19/3.75 PLUTO	PL	SC0006014	SC0009924	SC0002613	SC0005972			SC0002612				SC0005972	SC0002609				SC0002808		
	37/3.00 SATURN	SA	SC0006015	SC0011314	SC0002613	SC0005973			SC0002613				SC0005973	SC0002609				SC0002609		
ACSR	6/1/3.00 APPLE	AP	SC0008372	SC0009924	SC0002612	SC0005969			SC0002612				SC0005969	SC0002608			SC0005969	SC0002608		
	6/1/3.75 BANANA	BA	SC0006010	SC0009924	SC0002612	SC0005970			SC0002612				SC0005970	SC0002608			SC0005970	SC0002608		
	6/4.75+7/1.60 CHERRY	CH	SC0008373	SC0009924	SC0002613	SC0005971			SC0002612				SC0005971	SC0002609			SC0005971	SC0002609		
	30/7/3.00 LEMON	LE	SC0006015	SC0011314	SC0002613	SC0005973			SC0002613				SC0005973	SC0002609			SC0005973	SC0002609		
	3/4/2.50 RAISIN	RA	SC0006019		SC0002612	SC0005974			SC0002612				SC0005974	SC0002608			SC0005974	SC0002608		
STEEL	3/2.75 (3/.104) (3/12)		SC0006441	SC0002604																
	7/2.00 (7/.080) (7/14)		SC0006439																	
	7/2.75 (STAY WIRE)		SC0006442																	
	19/2.00 (STAY WIRE)		SC0006443																	
	19/2.75 (STAY WIRE)		SC0006444																	







B	ORIGINAL ISSUE		
D	DATE	15/12/2014	UPDATE STAYWIRE DEADEND CU's
	APPD	B. THOMAS	
	CKD	P. RELF	
	DRN	S.GOODRIDGE	

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RESOURCE ESTIMATION GUIDE

OVERHEAD CONSTRUCTION
CONDUCTOR FITTINGS
BARE OPEN WIRE

APP'D	R.ENGLISH
DATE	15.05.09
RECD	J.TUNNEY
CKD	K.GOSDEN
DWN	G.JAYAWEERA

AUTOCAD

9562-A4 D

SECTION 1 | SUB-SECT. 5

SHT 1 OF 4

FILE RES-1-5-1C.DWG

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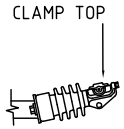
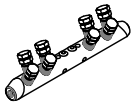
	CONDUCTOR	CONDUCTOR CODE	CLAMP TOP		LUG		COMPRESSION SLEEVES		SHEAR OFF FULL TENSION SPLICES	HELICAL SPLICE	HELICAL TERMINATION (DEADEND)	CONDUCTOR CU
			TIGHT STRUNG	SLACK STRUNG								
			ARMOUR ROD	ARMOUR ROD	TERMINAL	BIMETAL	FULL TENSION	NON TENSION				
Cu	7/2.03 (7/.080) (7/14)				SC0010886		SC0015815				SC0006435	CU7203
Cu	7/2.75 (7/.104) (7/12)				SC0006259		SC0017317				SC0006436	CU7275
Cu	19/2.14 (19/.083) (19/14)				SC0006260		SC0015742				SC0006437	CU19214
Cu	19/2.75 (19/.104) (19/12)				SC0006265		SC0015816				SC0006438	CU19275
AAC	7/3.00 LIBRA	LI	SC0005969	SC0005969		SC0009943	SC0011082		SC0023972		SC0006011	LIBRA
AAC	7/3.75 MARS	MA	SC0005970		SC0005926	SC0009944	OTMAT2001		SC0023972 SC0023973		SC0006012	MARS
AAC	7/4.75 MOON	MO	SC0005971		SC0012788	EXTERM5MAT	SC0005984	SC0005990	SC0023973 SC0023974		SC0006013	MOON
AAC	19/3.75 PLUTO	PL	SC0005972			SC0009946	SC0005985	SC0008669	SC0023974 SC0023975		SC0006014	PLUTO
AAC	37/3.00 SATURN	SA					OTMAT2000	SC0005991	SC0023975		SC0006015	SATURN
ACSR	6/1/3.00 APPLE	AP	SC0005969			SC0009943	SC0011080		SC0023972		SC0008372	APPLE
ACSR	6/1/3.75 BANANA	BA	SC0005970		SC0005926	SC0009944	SC0008277		SC0023975		SC0006010	BANANA
ACSR	6/4.75+7/1.60 CHERRY	CH	SC0005971		SC0012788	EXTERM5MAT	SC0005987	SC0005990			SC0008373	CHERRY
ACSR	30/7/3.00 LEMON	LE					SC0005975	SC0005991				LEMON
ACSR	3/4/2.50 RAISIN	RA	SC0005974	SC0005974						SC0008374	SC0006019	RAISIN
STEEL	3/2.75 (3/.104) (3/12)									SC0006405	SC0006441	
STEEL	7/2.00 (7/.080) (7/14)										SC0006439	
STEEL	7/2.75 (STAY WIRE)									SC0006402	SC0006442	STAYWIRE25
STEEL	19/2.00 (STAY WIRE)										SC0006443	STAYWIRE37
STEEL	19/2.75 (STAY WIRE)										SC0006443	STAYWIRE56

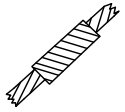


TERMINAL LUG

SLEEVE



SHEAR OFF SPLICE



SPLICE

NOTES

1. TRUNNION CLAMP (16835) REQUIRED FOR COPPER MAINS WITH CLAMP TOP INSULATORS.
2. REFER TO StdsA332 BEFORE SELECTING SHEAR OFF SPLICE

B	ORIGINAL ISSUE				
F	DATE	11/11/2015	APPD	B. THOMAS	ADDED SHEAR OFF SPLICE
	CKD	K. MCKEE	DRN	D. WOOD	

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CONDUCTOR FITTINGS
BARE OPEN WIRE

APP'D	R.ENGLISH
DATE	15.05.09
RECD	J.TUNNEY
CKD	K.GOSDEN
DWN	G.JAYAWEERA

AUTOCAD

9562-A4 F

SECTION	SUB-SECT.
1	5

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FILE RES-1-5-2D.DWG

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CONDUCTOR		CONDUCTOR SIZE (METRIC)	TERMINAL LUG	BI-METAL LUG	COMPRESSION SLEEVE		STRAIN CLAMPS		HELICAL TERMINATION	THIMBLE
					FULL TENSION	NON TENSION	BOLTED	WEDGE		
Cu (BRIDGING)	19/1.53	35mm²	SC0006256	-	-	-	-	-	-	-
	19/1.78	50mm²	SC0006259	-	-	-				
	37/1.78	95mm²	SC0006263	-	-	-				
	37/2.52	185mm²	SC0006266	-	-	-				
ABC	2B6	6mm²	-	-	-	-	-	SC0016566	-	-
	2B25	25mm²	-	SC0016833	-	-	SC0017794	SC0016566		
	3B25	25mm²	-	SC0016833	-	-	SC0017794	SC0016566		
	4B25	25mm²	-	1SC006833	-	-	SC0017794	SC0016566		
	4B35	35mm²	-	SC0014463	-	-	SC0017794	SC0016566		
	2B95 & 4B95	95mm²	SC0014677	SC0015641	SC0012782	-	-	SC0016566		
	HVABC35	35mm²	-	SC0014463	-	-	-	-	SC0006443	SC0006484
	HVABC70	70mm²	-	SC0017254	-	-	-	-	SC0006443	SC0006484
	HVABC120	120mm²	-	EXTERM5MAT	-	-	-	-	SC0006443	SC0006484
CCT	11CCT1350 OR SC0020279	120mm²	SC0012788	EXTERM5MAT	SC0005984	SC0005990	SC0020281 (SC0020282 COVER)		SC0006015	SC0009924
PILOT CABLE	PILOT20	-							SC0006439	-

NOTES

1. ON OLDER STYLE CCT (PRE 2008), USE SC0006015 HELICAL TERMINATIONS AND DO NOT STRIP INSULATION.

A	ORIGINAL ISSUE				
E	DATE 15/12/2014	APPD B. THOMAS	CKD P. RELF	DRN S.GOODRIDGE	UPDATE HVABC DEADEND CU's

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INSULATED CABLES

APP'D	R.ENGLISH	AUTOCAD	
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DWN	G.JAYAWEERA	FILE RES-1-5-3C.DWG	

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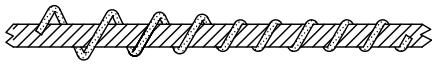
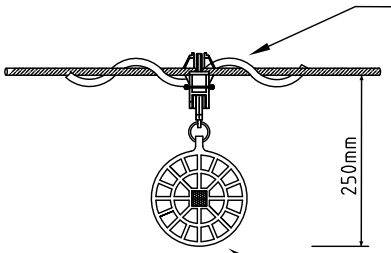
SPIRAL VIBRATION DAMPERS



CU	CONDUCTOR
SC0005913	RAISIN
SC0005914	LIBRA, APPLE
SC0005914	MARS, BANANA
SC0005915	MOON, CHERRY
SC0005910	PLUTO

BIRD DETERRENTS

FOR SMALL BIRDS ONLY eg. PIGEONS



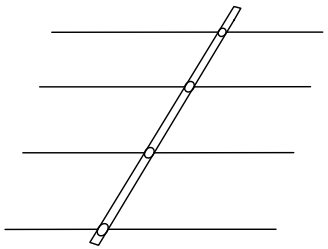
CU	CONDUCTOR DIA. RANGE (mm)
SC0016809	6.35 - 8.29
SC0016810	8.30 - 11.74
SC0016811	11.75 - 14.30
SC0016812	14.32 - 19.30

WHITE WARNING MARKER

FOR LARGE BIRDS eg. PELICANS

CU	CONDUCTOR DIA. RANGE (mm)
SC0016813	ALL CONDUCTORS

CONDUCTOR SPREADERS



HV

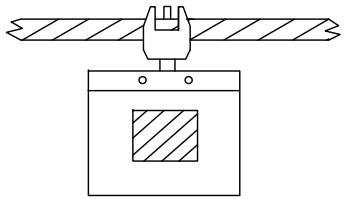
CU	CONDUCTOR DIA. RANGE (mm)
OHMAT101	9 - 21

LV

4 WIRE SPREADER 2.7m LONG PVC ROD & CLIPS

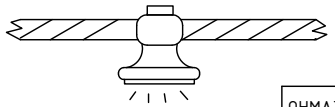
CU	DESCRIPTION
SC0019490	PVC ROD (m)
SC0019491	CLIPS (PER WIRE)
ZZMAT18	LV WIRE SPREADER & 4 CLIPS

MARKER FLAGS



CU	DESCRIPTION
SC0021702	ORANGE-GROUND BASED OPS, eg BOAT RAMPS
SC0021703	WHITE-AERIAL OPS, eg CROP SPRAYING AIRCRAFT

LFIs



OHMAT100	LINE FAULT INDICATOR - CONDUCTOR MOUNTING (3PH SET)

ENERGEX LABOUR		
DESCRIPTION	REGULAR	LIVE LINE
INSTALL LFI's	OTLAB212	-
INSTALL LV SPREADERS	OTLAB223	-
INSTALL HV SPREADERS	-	OTLAB4045

ADD "-OT" SUFFIX TO CU FOR OVERTIME

B	ORIGINAL ISSUE	DATE	15/12/2014	APPD	B. THOMAS
F		CKD	P. RELF	DRN	S.GOODRIDGE
		ADDED CU ZZMAT18			

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RESOURCE ESTIMATION GUIDE

OVERHEAD CONSTRUCTION
CONDUCTOR FITTINGS
CONDUCTOR SPREADERS, VIBRATION DAMPERS, LFIs & BIRD DETERRENTS

APP'D	R.ENGLISH		AUTOCAD
DATE	15.05.09	9562-A4	F
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CKD	K. GOSDEN	SHT 4	OF 4
DWN	G. JAYAWEERA	FILE RES-1-5-4E.DWG	

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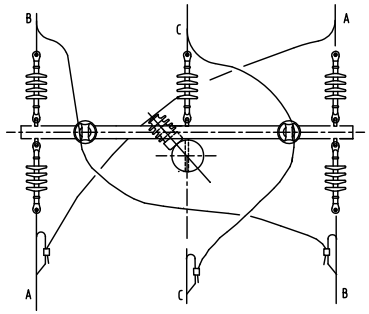

33kV BRIDGING	
CU	DESCRIPTION
SET169-3	BRIDGING POST-INSULATOR ON STEEL X-ARM
SET154-3	BRIDGING POST-INSULATOR ON WOOD X-ARM
SET169-3	BRIDGING POST-INSULATOR TO POLE
SC0017799	POLYMERIC SIDE TIE
SC0017803	POLYMERIC TOP TIE
WP004	10mm ID SPLIT SLEEVING INSULATION
SC0017273	19mm^2 ID SPLIT SLEEVING INSULATION
SC0017474	VINYL MASTIC TAPE

SEE NOTES 4 & 6

LV BRIDGING		
CU		DESCRIPTION
SMALL MAINS (≤MARS)	LARGE MAINS (≥ MOON)	
BR50	BR95	NORMAL, AAC OR ACSR MAINS
BRC50	BRC95	NORMAL, CU MAINS
IS50	IS95	ISOLATOR (DISC. LINK), AAC OR ACSR MAINS
IS50/3	IS95/3	ISOLATOR (DISC. LINK), AAC OR ACSR 3 PHASE ie IS95/3 =3*IS95+BR95
TR50	TR95	TRANSPOSITION, AAC OR ACSR MAINS
JU50	JU95	3-WAY JUMPER, AAC OR ACSR MAINS
JB50	JB95	4-WAY JUMPER, AAC OR ACSR MAINS

SEE NOTES 1, 2 & 5

11kV BRIDGING	
CU	DESCRIPTION
SC0020279	CCT 120mm^2 FOR BRIDGING
SET167-4	BRIDGING POST-INSULATOR ON X-ARM
SET165-3	BRIDGING POST-INSULATOR ON POLE
SC0017803	POLYMER TOP TIE
SC0017799	POLYMER SIDE TIE
WP004	10mm^2 ID SPLIT SLEEVING INSULATION
SC0017273	19mm^2 ID SPLIT SLEEVING INSULATION

SEE NOTES 3, 5 & 7

ENERGEX LABOUR		
CU		DESCRIPTION
LIVE LINE	REGULAR	
OTLAB4036	OTLAB610	BRIDGING PER WIRE
-	OTLAB631	BRIDGING 3 PHASE
-	OTLAB295	ERECT LV DISCONNECTOR LINKS
OTLAB4034	-	BREAK HV BRIDGES
OTLAB4049	-	RE-MAKE HV BRIDGES

ADD "-OT" SUFFIX TO CU FOR OVERTIME

NOTES

1. BRIDGING MODELS ARE PER CONDUCTOR ON OPEN WIRE MAINS, EXCEPT FOR "IS50/3" & "IS95/3".
2. FOR MORE INFORMATION ON LV BRIDGING, REFER ODM SECTION 3 DWG. 6956-A4 OR OCM SECTION 3 PP. 201-222.
3. FOR MORE INFORMATION ON 11kV BRIDGING, REFER OCM SECTION 4 PP. 201 -211.
4. FOR MORE INFORMATION ON 33kV BRIDGING, REFER OCM SECTION 4 PP. 201 -206.
5. FOR DETAILS OF BRIDGING TO POLE-MOUNTED PLANT, REFER TO SECTION 2 OF THIS MANUAL.
   FOR BRIDGING AT UG CABLE TERMINATIONS, REFER TO SECTION 3.6 OF THIS MANUAL.
6. FOR MANY SITUATIONS BRIDGING IS SIMPLY A MATTER OF EXTENDING CONDUCTORS BEYOND THE TERMINATION AND NOMINATING SUITABLE CONNECTORS-REFER SECTION 1.7 OF THIS MANUAL. FOR HIGH VOLTAGE MAINS, INSULATED BRIDING USING CCT OR INSULATED COVERS IS PREFERRED FOR WILDLIFE PROOFING - REFER SECTION 8 PP. 95 & 96.
7. BRIDGING IS INCLUDED IN SHACKLE CONSTRUCTION CUs, ALSO MODELS 11ABC/OW & 11ABC/TO FOR TRANSITION OF OPEN WIRE TO HVABC.

B	ORIGINAL ISSUE				
C	DATE	19/01/11			
	APPD	R. ENGLISH			
	CKD	P. RELF			
	DRN	P. RELF			
	CHANGE STOCK CODES TO CU's				

RESOURCE ESTIMATION GUIDE

OVERHEAD CONSTRUCTION BRIDGING

APP'D	R.ENGLISH
DATE	15.05.09
RECD	J.TUNNEY
CKD	K.GOSDEN
DWN	F.AMANPOOR

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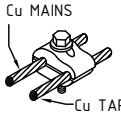
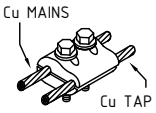
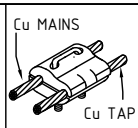
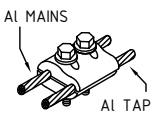
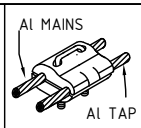
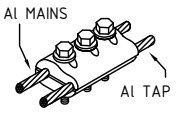
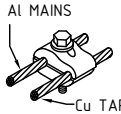
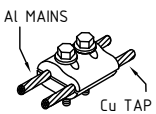
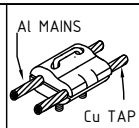
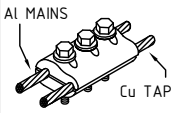
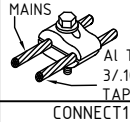
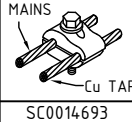
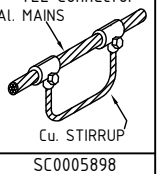
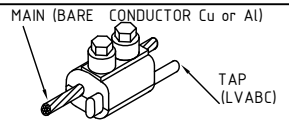
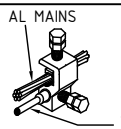
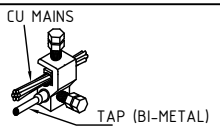
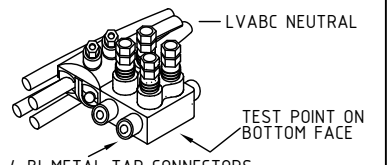
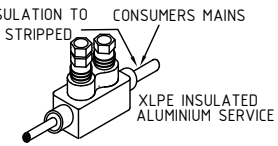
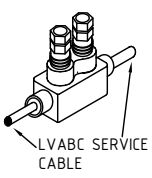
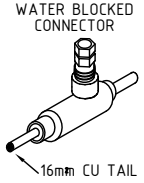
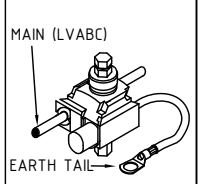
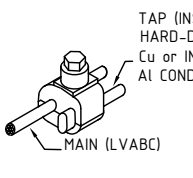
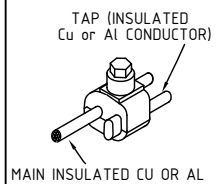
CONNECTOR			Cu - Cu				Al - Al					Al - Cu			
OPEN WIRE TO OPEN WIRE														
CU			SC0006122	SC0015075	SC0015567	SC0015918	CONNECT1	CONNECT2	SC05893D	SC0005909	SC0022547	SC0014693	SC15568D	SC0015569	SC0022548
MAIN	RANGE	mmØ	2.75-10.5	3.55-12.5	5.1-15.7	12.5-21.9	5.1-10.5	5.1-14.0	6.3-15.7	12.5-21.9	7.5-22	7.5-14	6.3-15.7	12.5-21.9	9-22
TAP	RANGE	mmØ	2.75-10.5	3.55-12.5	5.1-15.7	12.5-21.9	5.1-10.5	5.1-14.0	6.3-15.7	12.5-21.9	7.5-22	4-9	3.55-12.5	10.5-17.6	7.5-20

			Steel-Al	Steel - Cu	TEE Connector
					
CU			CONNECT1	SC0014693	SC0005898
MAIN	RANGE	mmØ	5.1-10.5	7.5-14	30-210
TAP	RANGE	mmØ	5.1-10.5	3.55-9	-

CONNECTOR			OPEN WIRE - ABC		OPEN WIRE - SERVICE MAIN		
OPEN WIRE TO INSULATED							
CU			SC0014090	SC0014253	SC0016567		SC0016568
MAIN	RANGE	mm2	50-150	7-95	mm	5-19	3-14
TAP	RANGE	mm2	35-95	35-95	mm	4-10.3	4-10.3

CONNECTOR			LVABC NEUTRAL CONNECTION BLOCK				SERVICE MAIN - BARE WIRE				LVABC-LVABC OR CU		LVABC-SL MAINS
INSULATED TO INSULATED													
			BLACK	RED	WHITE	BLUE							
CU			SC0017000	SC0021310	SC0021311	SC0021312	SC0016569	SC0023730	SC0023731	SC0016570	SC0010603	SC0010604	SC0019926
MAIN	RANGE	mm2	35-95				6-35	6-35	1.5-25	6-35	25-95	35-95	16-95
TAP	RANGE	mm2	6-35				4-35	6-35	16mm CU Tail Fitted (150mm)	4-35	6-35	35-95	1.5-6

A	ORIGINAL ISSUE				
H	DATE 11/11/2015	APPD B. THOMAS	CKD K. MCKEE	DRN D. WOOD	ADDED SERVICE CONNECTORS SC002370 & SC0023731

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RESOURCE ESTIMATION GUIDE

CONSTRUCTION PRACTICE
CONDUCTOR FITTINGS
CONNECTORS

APP'D	R.ENGLISH		AUTOCAD
DATE	15.05.09	9562-A4	H
RECD	J.TUNNEY	SECTION 1	SUB-SECT. 7
CKD	K. GOSDEN	SHT 1	OF 1
DWN	G. JAYAWEERA	FILE RES-1-7-1C.DWG	

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SERVICE FITTING CODE

STANDARD SERVICES

N 2B25 W A Y 80

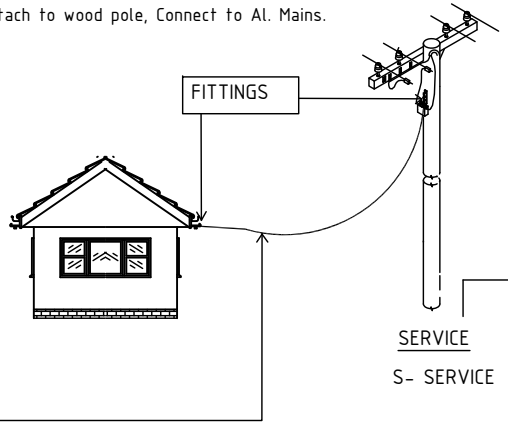
SERVICE	CABLE TYPE	ATTACH TO	CONNECT TO	MAINS BOX	FUSE SIZE
N- NEW SERVICE (HOUSE & POLE END)	2B25	W- WOOD POLE	A- OPENWIRE Al. MAINS	Y- REQ'D	50A
T- TRANSFER SERVICE (POLE END ONLY)	3B25	C- CONCRETE POLE	B- LVABC MAINS	N- NOT REQ'D	80A
	4B25		C- OPENWIRE Cu. MAINS	I- IN LINE CONNECTORS	100A
	4B35				

INTERMEDIATE POLE

I 2B25 XC W

INTERMEDIATE POLE	CABLE TYPE	CONSTRUCTION	ATTACH TO
I- SERVICE TO AN INTERMEDIATE POLE	2B25	A- ANGLE	W- WOOD POLE
	3B25	XC- CROSSCHECK	C- CONCRETE POLE
	4B25	SL- STRAIGHT LINE	
	4B35	S- SHACKLE	

EXAMPLE: N2B25WAY80 = New Service, 2 core bundled conductor 25mm^{2}Al., Attach to wood pole, Connect to Al. Mains.
Mains Box required, 80A Fuse.
I2B25XCW = Intermediate Pole, 2 core bundled conductor 25mm^{2}Al.
Crosscheck arrangement, Attach to wood pole.



SERVICE CABLES	
CU	DESCRIPTION
2B6 OR LVC26X	2C 6mm^{2}CU XLPE-SL SERVICE
2B25	2C 25mm^{2}AL XLPE
3B25	3C 25mm^{2}AL XLPE
4B25	4C 25mm^{2}AL XLPE
4B35	4C 35mm^{2}AL XLPE
2B95	2C 95mm^{2}AL XLPE
4B95	4C 95mm^{2}AL XLPE
4B95TWIN	2*4C 95mm^{2}AL XLPE
STAYWIRE25	STEEL SUPPORT WIRE FOR FLYING FOX SERVICE

LVABC 95mm^2 SERVICES

S W A S 200

SERVICE	ATTACH TO	CONNECT TO	FUSE WITH	FUSE SIZE
S- SERVICE	W- WOOD POLE	A- ALUMINIUM MAINS	S- LVABC SWITCH	160A
	C- CONCRETE POLE	C- COPPER MAINS (MINIMUM SIZE 7/.104)	X- CROSSARM WITH FUSE	200A
			F- EXISTING CROSSARM FUSES ONLY	

EXAMPLE : SWAS200 = New LVABC service, Attach to Pole, Connect to Al. Mains, Fuse with LVABC Switch, 200A Fuse.

A	ORIGINAL ISSUE				
B	DATE 19/01/11	R. ENGLISH	P. RELF	P. RELF	CHANGE STOCK CODES TO CU's
	APPD	CKD	DRN		

RESOURCE ESTIMATION GUIDE

OVERHEAD CONSTRUCTION SERVICES

APP'D	R.ENGLISH		AUTOCAD
DATE	15.05.09	9562-A4	B
RECD	J.TUNNEY	SECTION 1	SUB-SECT. 8
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DWN	F.AMANPOOR	FILE RES-1-8-1B.DWG	

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CONNECTORS	
CU	DESCRIPTION
SC0017000	IPC, NEUTRAL BLOCK FOR LVABC95
SC0016567	IPC, SERVICE TO BARE AL MAIN
SC0016568	IPC, SERVICE TO BARE CU MAIN
SC0010603 (/4)	IPC, SERVICE TO LVABC (SMALL/LVABC)
SC0016569	IPC, SERVICE TO INSULATED CONSUMER MAINS
SC0016570	IPC, SERVICE TO INSULATED CONSUMER MAINS-WITH EARTH TAIL
SC0017247	IPC, SERVICE TO BARE CONSUMER MAINS
SC0006122	PG CONNECTOR-CU SERV. TO SMALL COPPER MAINS
SC15568D	PG CONNECTOR-CU SERV. TO AL MAINS

SUNDRY ITEMS	
CU	DESCRIPTION
SC0017794	BOLTED STRAIN CLAMP;ABC CABLE;4x10-35mm2
SET3-1	SERVICE RAISER TO POLE
SRBI	SERVICE BRACKET-INTERMEDIATE X-ARM
SRBS	SERVICE BRACKET-STRAIN X-ARM
SC0004442	50A FUSE LINK CARTRIDGE
SC0004451	80A FUSE LINK CARTRIDGE
SC0012454	100A FUSE LINK CARTRIDGE
SFA	SERVICE FUSE X-ARM (OPEN WIRE)-WOOD POLE
SFAC	SERVICE FUSE X-ARM (OPEN WIRE)-CONCRETE POLE

REFER NOTE 4

LABOUR	
CU	DESCRIPTION
OTLAB1300	STRING LV SERVICE PER SPAN
OTLAB1301	RECOVER LV SERVICE PER SPAN
OTLAB1302	TRANSFER LV SERVICE PER SPAN
OTLAB1304	DISC SERVICE CONN TO LV MAIN / PER SERV (USED WHEN RECONDUCTORING)
OTLAB1305	RECONN SERV CONN TO LV MAIN / PER SERV (USED WHEN RECONDUCTORING)
OTLAB1310	STRING 1 SPAN 4B95 SERVICE
OTLAB1311	STRING 1 SPAN TWIN 4B95 SERVICE
OTLAB6660	INSTALL TYPICAL FLYING FOX SERVICE
OTLAB295	ERECT LV DISCONNECTOR LINKS
OTSC13	CONTRACT CHANGE POINT OF ENTRY - $ QUOTE

ADD "-OT" SUFFIX TO CU FOR OVERTIME

OTHER SERVICE ITEMS		
CU	DESCRIPTION	
SFOX	FLYING FOX SERVICE-WOOD POLES	SEE NOTE 2
SFOXC	FLYING FOX SERVICE-CONCRETE POLES	
SFOXWC	FLYING FOX SERVICE-WOOD TO CONCRETE POLES	
SBOW	LVABC SERVICE FROM WOOD POLE	
SBOC	LVABC SERVICE FROM CONCRETE POLE	
SBOWDS	TWIN LVABC SERVICE FROM OPEN WIRE MAINS WITH ABC DISC. BOX	
SBOW20PT	TWIN LVABC SERVICE FROM EXISTING TRFR ISOLATION LINKS	
SBOW2PTC	TWIN LVABC SERVICE FROM EXISTING TRFR ISOLATION LINKS-CONCRETE POLE	
SCAP1	UG SERVICE 1 PHASE WOOD POLE	
SCAP3	UG SERVICE 3 PHASE WOOD POLE	
SCAPC1	1PH DROPDOWN SERVICE ON CONC POLE	
SCAPC3	3PH DROPDOWN SERVICE ON CONC POLE	

NOTES

1. SERVICE FITTING CODES DO NOT INCLUDE SERVICE CABLE, BUT DO INCLUDE CONNECTORS.
2. FLYING FOX SERVICE CUs DO NOT INCLUDE STEEL SUPPORT WIRE (STAYWIRE25), THE ELECTRICAL SERVICE CABLE OR FITTINGS (e.g. N2B25WAY80 & 2B25*18m) OR THE PLASTIC SPIRAL WRAPPING (10490).
   ON WOOD POLES, ALSO ADD: SC0016023 - PVC CONDUIT DOWN POLE (A FEW METRES)
   SC0004929 - SADDLES FOR THE ABOVE.
3. REFER OCM SECTION 2 FOR ADDITIONAL DETAILS OF SERVICES.
4. REFER OCM SECTION 8 PP. 33, 34 FOR DETAILS OF CONNECTORS.
5. FOR ADDITIONAL DETAILS OF OH SERVICES TO STREET LIGHTS, REFER SECTION 5.1 OF THIS MANUAL.
6. FOR STANDARD SERVICES>45m LONG, INCLUDE BOLTED STRAIN CLAMPS (SC0017794).

A	ORIGINAL ISSUE			
C	DATE 15/12/2014	APPD B. THOMAS	CKD P. RELF	DRN S.GOODRIDGE
	UPDATED CU's SCAP1C AND SCAP3C ADDED CU OTLAB6660			

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RESOURCE ESTIMATION GUIDE

OVERHEAD CONSTRUCTION SERVICES

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CKD	K.GOSDEN	SHT 2	OF 2
DWN	F.AMANPOOR	FILE RES-1-8-2B.DWG	

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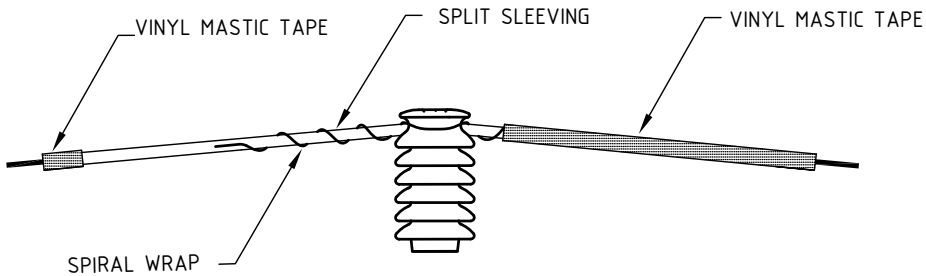
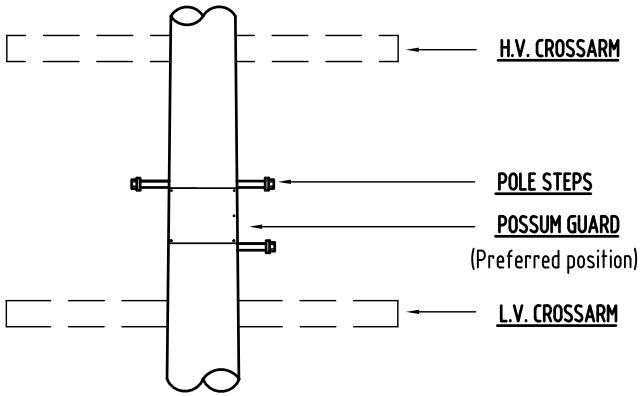
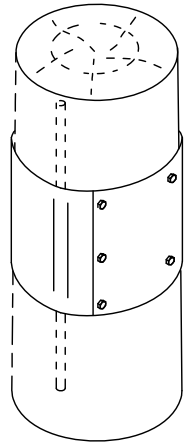
LABOUR	
CU	DESCRIPTION
WP004	10 mm ID INSULATING SPLIT SLEEVING (10m)
WP005	19 mm ID INSULATING SPLIT SLEEVING (10m)
WLPPG	HV POSSUM PROOFING ASSEMBLY
SC0020652	25mm SCREW
SC0022689	WILDLIFE GUARD
SC0017474	38mm VINYL MASTIC TAPE
SC0017799	SPIRAL WRAP SIDE TIE
SC0017803	SPIRAL WRAP TOP TIE



BRIDGING INSULATOR





HV POSSUM PROOFING ASSEMBLY

NOTE
1. REFER TO OCM SECTION 8 PAGES 92 - 96 FOR FURTHER DETAILS ON WILDLIFE PROOFING
2. SCREWS ARE TO BE 20mm FROM EDGES
3. HEX DRIVE SOCKET FOR DRILL IS SC 22279
4. SHINY SIDE OF THE POLE GUARD TO BE INSTALLED INWARD AGAINST THE POLE

A	ORIGINAL ISSUE				
C	DATE 15/12/2014	APPD B. THOMAS	CKD P. RELF	DRN S. GOODRIDGE	ADDED CU's SC0020652 & SC0022689 ADDED NOTES

RESOURCE ESTIMATION GUIDE

OVERHEAD CONSTRUCTION WILDLIFE PROOFING

APP'D	R.ENGLISH
DATE	23/06/11
RECD	
CKD	P.RELF
DWN	P.RELF

AUTOCAD

9562-A4 C

SECTION	SUB-SECT.
1	9

SHT 1 OF 1

FILE RES-1-9-1B.DWG

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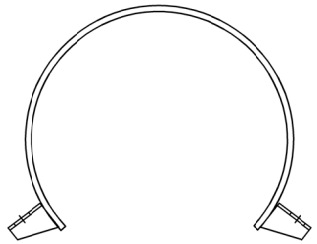
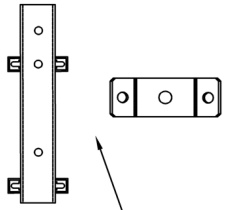
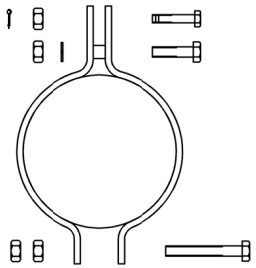
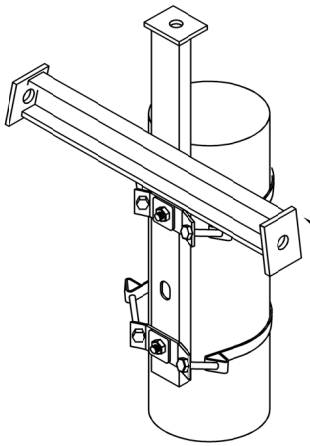
POLE STRAP	
CU	POLE DIAMETER (mm)
SC0024650	200
SC0024651	250
SC0024652	300
SC0024653	350
SC0024654	400
SC0024655	450
SC0024656	500
SC0024657	550
SC0024658	600
SC0024659	650
SC0024660	700



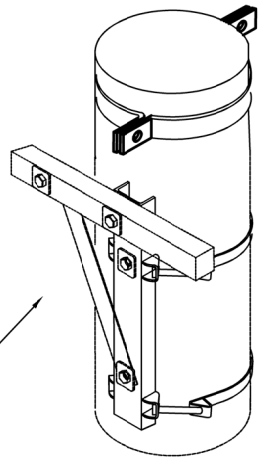




3 BOLT 1 WAY STRAIN	
CU	POLE DIAMETER (mm)
SC0024661	275
SC0024662	300
SC0024663	325
SC0024664	350
SC0024665	375
SC0024666	400
SC0024667	425
SC0024668	450
SC0024669	475
SC0024670	500
SC0024671	525
SC0024672	550
SC0024673	575
SC0024674	600
SC0024675	625
SC0024676	650
SC0024677	675
SC0024678	700



ASSEMBLY	
CU	DESCRIPTION
SC0024648	CROSS ARM ADAPTOR BRACKET
SC0024649	POLE STRAP BRACKET
SET171-1	CONCRETE POLE ADAPTOR BRACKET TO BRACKET
SET171-2	CONCRETE POLE ADAPTOR BRACKET TO COLLAR
SET171-3	CONCRETE POLE ADAPTOR BRACKET COMPLETE
SET171-4	11kV TRIDENT BRACKET TO CONCRETE POLE
SET171-5	11kV TRIDENT BRACKET TO CONCRETE POLE
SET172-1	CROSSARM TO CONCRETE POLE BRACKET
SET172-2	CONCRETE POLE BRACKET TO POLE
SET172-3	CENTER PHASE ATTACHMENT TO CONCRETE POLE
SET172-4	COMPLETE ARRANGEMENT FOR NON STANDARD CONCRETE POLE
SET269-1	POLE TOP LOAD BREAK SWITCH TO POLE
SET269-2	MID POLE LOAD BREAK SWITCH TO POLE



NOTES

1. For full details see Section 1 Pages 171 & 172 of the OHCM.

A ORIGINAL ISSUE

energex

RESOURCE ESTIMATION GUIDE

OVERHEAD CONSTRUCTION CONCRETE POLE ATTACHMENTS

APP'D	B. THOMAS
DATE	07/08/2017
RECD	Z. RELF
CKD	B. NORDKAMP
DWN	P.RELF

AUTOCAD

9562-A4 A

SECTION	SUB-SECT.
1	10

SHT 1 OF 1

FILE RES-1-10-1A.DWG

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SECTION 2 POLE MOUNTED PLANT

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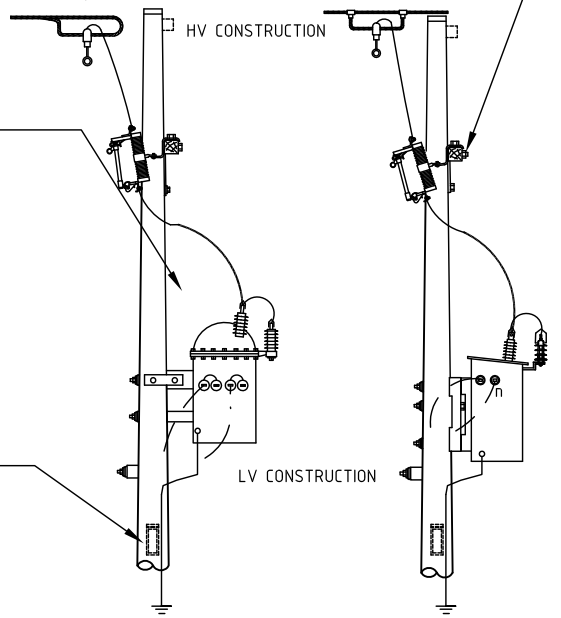
11kV MAINS CONNECTION - PER WIRE		
DESCRIPTION	AL MAINS	CU MAINS
LIVE LINE CLAMP & STIRRUP	PAGE7-53-3	PAGE7-53-1
LIVE LINE CLAMP TO EX. STIRRUP	PAGE7-53-4	PAGE7-53-2

EDOs	
11EDO2	2 PHASE
11EDO3	3 PHASE

RATING kVA	POLE MOUNTED TRANSFORMERS		SUNDRY ITEMS				EDO FUSES PER PHASE	
	DESCRIPTION (TX PREWIRED WITH HV/LV SURGE ARREST.)		WOOD OPEN	CONC OPEN	WOOD LVABC	CONC LVABC	TYPE	CU
25	11kV/250V, 1 PHASE, BOLT MTG, 7 TAP	S17521	11PT/25B				8T	SC0014228
25	11kV/415V, 3 PHASE, BOLT MTG, 7 TAP	S22442	11PT/25		11PT/25WA		8T	SC0014228
63	11kV/415V, 3 PHASE, BOLT MTG, 7 TAP	S22443	11PT/63		11PT/63WA		8T	SC0014228
100	11kV/415V, 3 PHASE, BOLT MTG, 7 TAP	S21650	11PT/100	11PT/100C	11PT/100WA	11PT/100WAC	8T	SC0014228
200	11kV/415V, 3 PHASE, BOLT MTG, 7 TAP	S21651	11PT/200	11PT/200C	11PT/200WA	11PT/200WAC	25K	SC0013730
315	11kV/415V, 3 PHASE, BOLT MTG, 7 TAP	S21652	11PT/315	11PT/315C	11PT/315WA	11PT/315WAC	25K	SC0013730
500	11kV/415V, 3 PHASE, BOLT MTG, 7 TAP	S21653	11PT/500	11PT/500C			40K	SC0013731

SEE NOTE 5



ENERGEX LABOUR		
DESCRIPTION	CU	
	REGULAR	LIVE LINE
INSTALL 1 PHASE PT, EDO'S, EARTHS	OTLAB1102	-
INST 25-63kVA 3 PHASE PT, EDO'S, EARTHS	OTLAB1103	OTLAB4004
INST 100-500kVA 3 PH PT, EDO'S, EARTHS	OTLAB1100	OTLAB4005
UPGRADE 1PH PT TO 3PH PT	OTLAB1111	-
UPGRADE 3PH POLE T'FMER STN	OTLAB1110	OTLAB4006
UPGRADE 1PH PT TO 1PH PT	OTLAB1114	-
RECOVER PT	OTLAB1101	OTLAB4002
CONVERT EX PT STN TO BOLT ON TYPE	OTLAB1116	-
FIT DIST TFMR SMART METERING / POLE	OTLAB4440	-
INSTALL 3PH LIVE LINE CLAMPS (L/L)	-	OTLAB4012
CHANGE PT TAP POSITION	OTLAB1118	-
REPLACE LV FUSE LINK	OTLAB1119	-
REPLACE LV FUSELINK & LOAD TAILS	OTLAB1129	-
CHANGE HV EDO Fuses	OTLAB1134	-
Fit EX Clamp to Neutral, R/P Claw Clamps	OTLAB1135	-
REMOVE OLD & FIT NEW LA"S	OTLAB1136	-
Install Neutral Bus (& TR LV Isolation)	OTLAB1137	-
Remove MDI's & Install Smart Meters	OTLAB1138	-
Replace LV Bridging Between TR - Links	OTLAB1139	-
BORER LIFTER LIFT OR LOWER PLANT	OTLAB2016	-
INSTALL LV MEN NEW POLE	OTLAB216	OTLAB4032
INSTALL LV MEN EXISTING POLE	OTLAB217	OTLAB4033
RAPID RESPONSE-SWITCHING / MHR	MM231	

ADD "-OT" SUFFIX TO CU FOR OVERTIME

LV FUSING FOR TRANSFORMER PROTECTION	
DESCRIPTION	CU
MAIN FUSE - SPLIT SUPPLY FROM 200 kVA PT	FS200/200
MAIN FUSE - SPLIT SUPPLY FROM 200 kVA PT	FS200/315
MAIN FUSE - SPLIT SUPPLY FROM 315 kVA PT	FS315/315
MAIN FUSE - SPLIT SUPPLY FROM 315 kVA PT	FS315/500
MAIN FUSE - SPLIT SUPPLY FROM 500 kVA PT	FS500/500

POLE TRANSFORMER UPRATE SUNDRY ITEMS	
DESCRIPTION	CU
UPRATE 100kVA TO 200kVA PT	11PT100-200
UPRATE 100kVA TO 315kVA PT	11PT100-315
UPRATE 10kVA 1 PHASE TO 25kVA 3 PHASE PT	11PT101-253
UPRATE 200kVA TO 315kVA PT	11PT200-315
UPRATE 200kVA TO 500kVA PT	11PT200-500
UPRATE 25kVA 1 PHASE TO 63kVA 3 PHASE PT	11PT251-633
UPRATE 25kVA TO 63 kVA PT	11PT253-633
UPRATE 315kVA TO 500kVA PT	11PT315-500
UPRATE 50kVA TO 100kVA PT	11PT503-100
UPRATE 63kVA TO 100kVA PT	11PT633-100

EARTHING & SUNDRY ITEMS		
DESCRIPTION	WOOD POLE CU	CONC POLE CU
EARTHING - SEPARATE	PTSEP	-
EARTHING - COMMON	PTCOM	PTCOMC
FIT STAKE EARTH TO EXISTING POLE	ADE OR MENEX	
LV METERING UNIT ONLY	SC0022308	
LV METERING +ACCESSORIES (NEW)	PTSMNW	PTSMNC
LV METERING +ACCESSORIES (RETRO-FIT)	PTSMRW	PTSMRC

NOTES

1. EDO FUSES ARE SUPPLIED IN THE SUNDRY ITEMS CU.
2. TRANSFORMERS 100kVA & OVER TO BE INSTALLED ON CONCRETE POLES EXCEPT IN SEPARATELY EARTHED AREAS. (USE 20kN POLES FOR 500kVA TRANSFORMERS).
3. FOR ADDITIONAL MATERIAL CU's SEE THE OVERHEAD CONSTRUCTION MANUAL SECTION 7 PP.1-16, 601 & 602.
4. TO CONVERT AN OLD HANGER BRACKET PT TO A BOLT ON USE ADAPTOR BKT. SET248-2.
5. TRANSFORMERS ARE NOT INCLUDED FOR THESE CU's - ADD TRFR. STOCK CODE.

A	ORIGINAL ISSUE			
F	DATE 15/12/2014	B. THOMAS	P. RELF	S. GOODRIDGE
	APPD	CKD	DRN	
	UPDATED EXISTING CU's ADD ADDITIONAL LABOUR CU's TX FUSING ADDED			

RESOURCE ESTIMATION GUIDE

POLE-MOUNTED PLANT
POLE TRANSFORMERS

APP'D	R.ENGLISH		AUTOCAD
DATE	15.05.09	9562-A4	F
RECD	J.TUNNEY	SECTION 2	SUB-SECT. 1
CKD	K.GOSDEN	SHT 1	OF 1
DWN	G.JAYAWEERA	FILE RES-2-1-1C.DWG	

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LABOUR		
CU		DESCRIPTION
LIVE LINE	REGULAR	
OTLAB4003	OTLAB1200	AIRFIT HV AIR BREAK SWITCH
-	OTLAB1210	INSTALL ABS-GROUND FIT
OTLAB1313	OTLAB1303	RECOVER ABS
OTLAB4046	-	INSTALL TEMP ABS SWITCH (L/L)
OTLAB4032	OTLAB216	INSTALL EARTH - NEW POLE
OTLAB4033	OTLAB217	INSTALL EARTH - EXISTING POLE
OTLAB4042	OTLAB40	PICK UP+SORT MATERIAL/MHR
-	OTLAB50	CLEANUP SITE & RETURN MATLS / MHR
OTLAB4041	OTLAB10	TRAVEL TIME / MHRS OH DIST
MM231		RAPID RESPONSE-SWITCHING / MHR

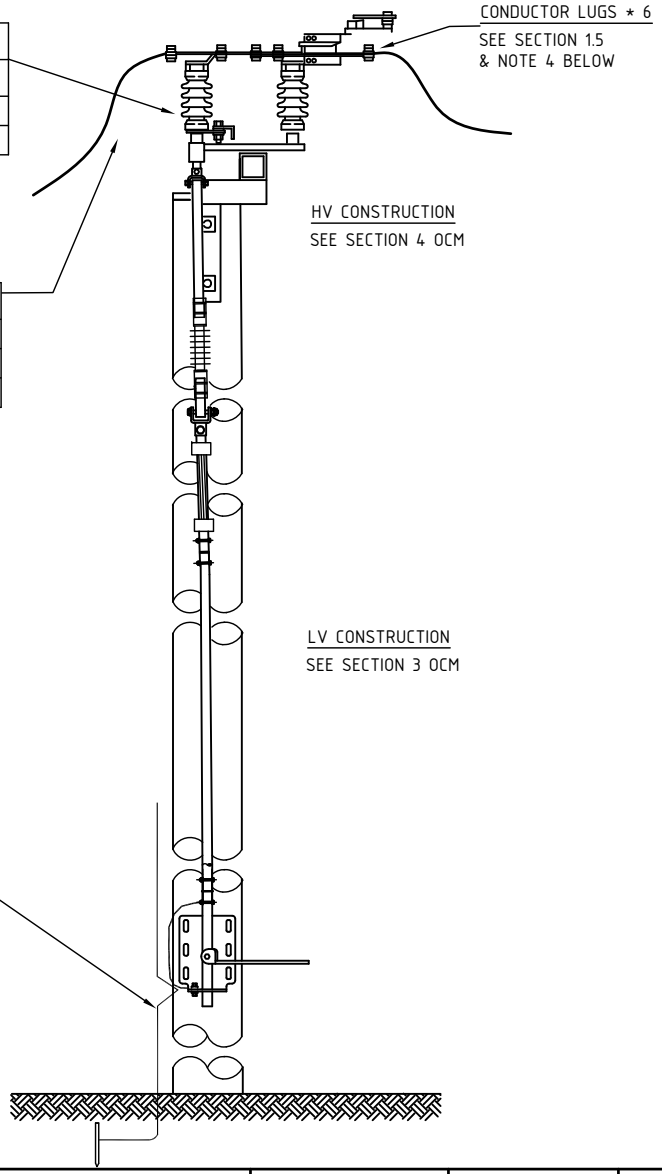
ADD "-OT" SUFFIX TO CU FOR OVERTIME

AIR BREAK SWITCH	
CU	DESCRIPTION
11ABSUMPLP	11 kV UNITISED ABS
33ABSUMPLP	33 kV UNITISED ABS

REFER NOTES 1 & 2

BRIDGING ABS TO MAINS-PER WIRE	
PAGE7-145-1	OPEN WIRE TO ABS PALM
PAGE7-145-4	HVABC TO ABS PALM
SC0020279	120mm^2 BRIDGING CCT-SEE NOTE 3

EARTHING	
CU	DESCRIPTION
ABSE	COMMON EARTH, NEW WOOD POLE
ABSES	SEPARATE EARTH, NEW WOOD POLE
ABSE1	REMOTELY CONTROLLED, SEPARATE EARTH, NEW WOOD POLE
ABSE2	REMOTELY CONTROLLED, COMMON EARTH, NEW WOOD POLE
ABSE3	ABS & CABLE GUARD, COMMON EARTH, NEW WOOD POLE
ABSE5	ABS & CABLE GUARD, SEPARATE EARTH, NEW WOOD POLE
ADE	ADDITIONAL EARTH/STAKE EARTH FOR EXISTING POLE
CGEC	CABLE GUARD EARTH (COMMON)
CGES	CABLE GUARD EARTH (SEPARATE)



NOTES
1. USE SAME CUs FOR POLETOP AND MID-POLE MOUNTING.
2. CU INCLUDES PADLOCK, BRACKETS, HANDLE, BOLTS TO WOOD POLE AND 32mm DIA. 6.5m LONG GALVANIZED STEEL PIPE DOWNROD.
3. CONDUCTOR TAILS MAY BE USED FOR BRIDGING. IF CCT IS USED, HOWEVER, CONNECTORS WILL BE REQUIRED AS PER SECTION 1.7.
4. ADD 6 CONDUCTOR LUGS AS PER SECTION 1.5 OF THIS MANUAL. FOR ALUMINIUM CONDUCTORS, USE BI-METAL LUGS TO ATTACH TO COPPER PALMS.
5. REFER TO OCM SECTION 7 PAGE 101 FOR FURTHER DETAILS

B	ORIGINAL ISSUE	DATE 15/12/2014	B. THOMAS	P.RELF	S. GOODRIDGE
F	UPDATED EXISTING CUs ADD ADDITIONAL LABOUR CU's		APPD	CKD	DRN

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RESOURCE ESTIMATION GUIDE

POLE-MOUNTED PLANT SWITCHES AIR BREAK SWITCH

APP'D	R.ENGLISH
DATE	15.05.09
RECD	J.TUNNEY
CKD	K.GOSDEN
DWN	F.AMANPOOR

AUTOCAD

9562-A4 F

SECTION	SUB-SECT.
2	2

SHT 1 OF 5

FILE RES-2-2-1E.DWG

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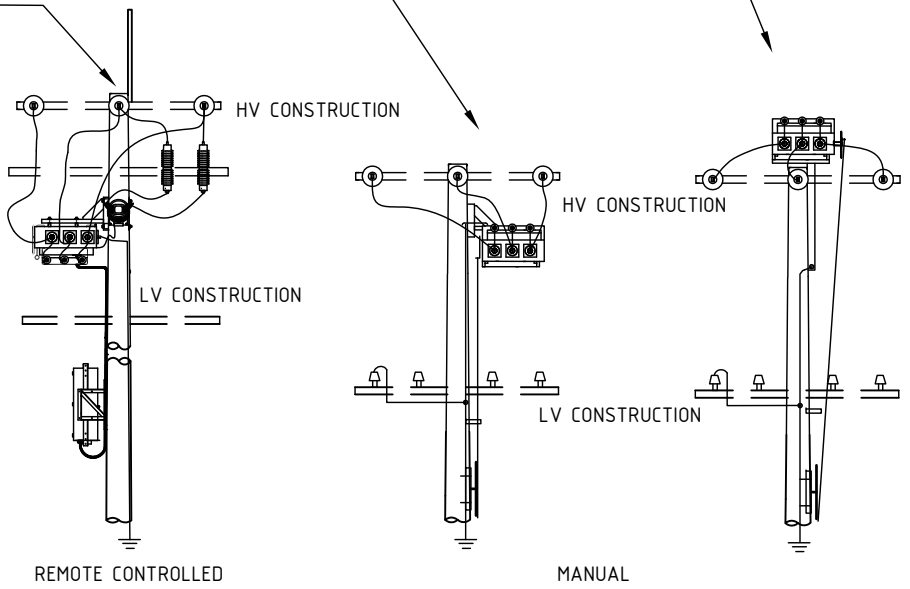
LOAD BREAK SWITCH - INCLUDES BRIDGING	
DESCRIPTION	CU
11KV MANUAL LBS- POLE TOP FULLY FITTED ILJIN	11LBSPTFFIS
11KV MANUAL LBS- MID POLE FULLY FITTED ILJIN	11LBSMPFFIS
MID POLE MOUNT, REMOTE CONTROL OPERATION FULLY FITTED. REFER NOTE 3.	11LBSRMPFF

11kV MAINS CONNECTION PER WIRE	
COPPER	2 x SC0015567
ALUMINIUM	2 x SC0015569



LABOUR		
DESCRIPTION	CU	
	LIVE LINE	REGULAR
ERECT 11KV LBS (MANUAL OPERATED)	-	OTLAB1210-1
ERECT 11KV LBS (REMOTE CONTROL)	OTLAB4017	OTLAB1124
RECOVER 11kV LOAD BREAK SWITCH	OTLAB4018	OTLAB1125
AIR FIT OPEN WIRE STRAIN CONSTRUCTION	OTLAB4013	OTLAB291
GROUND FIT OPEN WIRE STRAIN CONSTRUCTION	-	OTLAB290
TRANSFER CONDUCTOR TO STRAIN CONSTRUCTION	OTLAB4008	OTLAB642
CUT + SHUT PER WIRE	OTLAB4037	OTLAB215
RETENSION MAINS/SPAN	OTLAB4040	OTLAB763
BORER LIFTER LIFT OR LOWER PLANT	-	OTLAB2016
INSTALL MEN - NEW POLE	OTLAB4033	OTLAB216
INSTALL MEN - EXISTING POLE	OTLAB4032	OTLAB217
PICK UP + SORT MATERIALS/MHR	OTLAB4042	OTLAB40
CLEANUP SITE & RETURN MATLS / MHR	-	OTLAB50
TRAVEL TIME / MHRS OH DIST	OTLAB4041	OTLAB10
REMOTE LBS TESTING AND COMMISSIONING	ZSLAB901	
RAPID RESPONSE-SWITCHING / MHR	MM231	

ADD "-OT" SUFFIX TO CU FOR OVERTIME

EARTHING	
DESCRIPTION	CU
SEPARATE EARTH FOR MANUAL SWITCH	HVE
COMMON EARTH FOR MANUAL SWITCH	HVEC
SEPARATE EARTH FOR REMOTELY CONTROLLED SWITCH	HVE3
COMMON EARTH FOR REMOTELY CONTROLLED SWITCH	HVE4
FIT STAKE EARTH TO EXISTING POLE	MENEX OR ADE

NOTES

1. CUs APPLY TO WOOD POLE MOUNTING.
2. FOR ADDITIONAL CONSTRUCTION DETAILS, REFER OCM SECT.7 PP. 97,98 & 402.
3. 11LBSRMPFF CU INCLUDES VT, EDOS, SURGE ARRESTERS AND ALL CCT LEADS.

A	ORIGINAL ISSUE				
G	DATE 15/12/2014	APPD B. THOMAS	CKD P. RELF	DRN S. GOODRIDGE	UPDATED EXISTING CU's ADD ADDITIONAL LABOUR CU's

RESOURCE ESTIMATION GUIDE

POLE-MOUNTED PLANT
SWITCHES
11kV LOAD BREAK SWITCHES

APP'D	R.ENGLISH
DATE	15.05.09
RECD	J.TUNNEY
CKD	K.GOSDEN
DWN	F.AMANPOOR

AUTOCAD
9562-A4 G
SECTION 2 | SUB-SECT. 2
SHT 2 OF 5
FILE RES-2-2-2F.DWG

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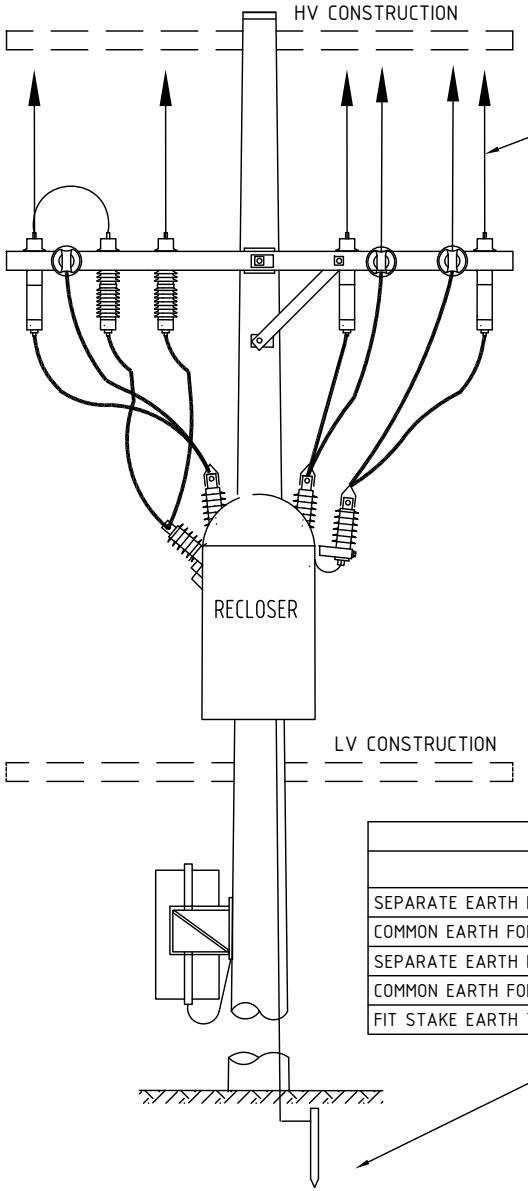
RECLOSER + SUNDRIES	
DESCRIPTION	CU
11kV RECLOSER, NOJA - REMOTE OPERATION & SUNDRIES	11REC/NOJA
11kV RECLOSER, NOJA - REMOTE OPERATION FULLY FITTED & SUNDRIES	11REC/NOJAFF
33kV RECLOSER, NULEC SERIES "N" - REMOTE OPERATION	33REC/630
33kV RECLOSER, NOJA OSM38 - REMOTE OPERATION FULLY FITTED	33REC/NOJAFF

LABOUR		
DESCRIPTION	CU	
	LIVE LINE	REGULAR
INSTALL HV RECLOSER (EXCL T&C)	OTLAB4015	OTLAB1120
RECOVER 11KV, 33KV RECLOSER	OTLAB4016	OTLAB1122
AIR FIT OPEN WIRE STRAIN CONSTRUCTION	OTLAB4013	OTLAB291
GROUND FIT OPEN WIRE STRAIN CONSTRUCTION	-	OTLAB290
TRANSFER CONDUCTOR TO STRAIN CONSTRUCTION	OTLAB4008	OTLAB642
CUT + SHUT PER WIRE	OTLAB4037	OTLAB215
RETENSION MAINS/SPAN	OTLAB4040	OTLAB763
INSTALL MEN - NEW POLE	OTLAB4033	OTLAB216
INSTALL MEN - EXISTING POLE	OTLAB4032	OTLAB217
PICK UP + SORT MATERIALS/MHR	OTLAB4042	OTLAB40
CLEANUP SITE & RETURN MATLS / MHR	-	OTLAB50
TRAVEL TIME / MHRS OH DIST	OTLAB4041	OTLAB10
TEST 33/11KV RECLOSE-NON DOC PROT PH 1-8	ZSLAB927	
TEST 33/11KV RECLOSER - DOC PROT PH 1-8	ZSLAB928	
RAPID RESPONSE-SWITCHING / MHR	MM231	

ADD "-OT" SUFFIX TO CU FOR OVERTIME



11kV MAINS CONNECTION (PER WIRE)	
COPPER	PAGE7-54-1
ALUMINIUM	PAGE7-54-2

EARTHING	
DESCRIPTION	CU
SEPARATE EARTH FOR MANUAL SWITCH	HVE
COMMON EARTH FOR MANUAL SWITCH	HVEC
SEPARATE EARTH FOR REMOTELY CONTROLLED SWITCH	HVE1
COMMON EARTH FOR REMOTELY CONTROLLED SWITCH	HVE2
FIT STAKE EARTH TO EXISTING POLE	MENEX OR ADE

NOTES

1. CUs APPLIY TO WOOD POLE MOUNTING.
2. FOR ADDITIONAL CONSTRUCTION DETAILS, REFER OCM SECT.7 PP. 201-204, 211,212,251,252,255,256,605,606,607,615 & 616.
3. FULLY FITTED INCLUDES ARRESTERS AND CCT LEADS

B	ORIGINAL ISSUE	DATE	15/12/2014	APPD	B. THOMAS
F	UPDATE EXISTING CU's ADD ADDITIONAL LABOUR CU's			CKD	P. RELF
				DRN	S. GOODRIDGE

RESOURCE ESTIMATION GUIDE

POLE-MOUNTED PLANT SWITCHES RECLOSERS

APP'D	R.ENGLISH		AUTOCAD
DATE	15.05.09	9562-A4	F
RECD	J.TUNNEY	SECTION 2	SUB-SECT. 2
CKD	K.GOSDEN	SHT 3	OF 5
DWN	F.AMANPOOR	FILE	

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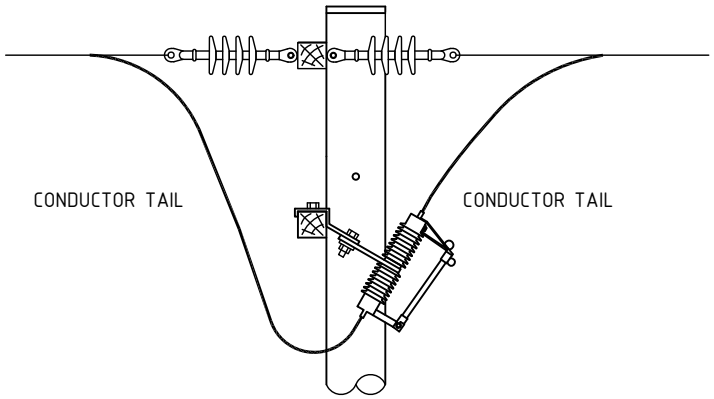
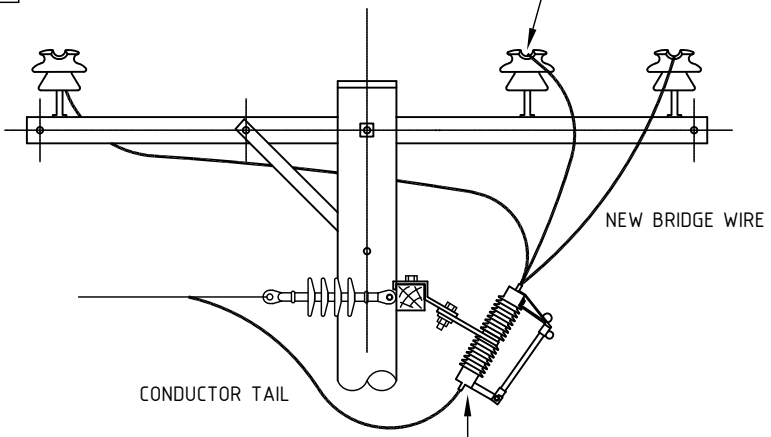
ENERGEX LABOUR		
DESCRIPTION	CU	
	LIVE LINE	REGULAR
ERECT EDO'S / MASTER DROPOUTS	OTLAB4044	OTLAB296
BRIDGING 3PH	OTLAB4036	OTLAB631
PICK UP & SORT MATERIALS / MHR OH DIST	OTLAB4042	OTLAB40
CLEANUP SITE & RETURN MATLS / MHR	-	OTLAB50
TRAVEL TIME / MHRS OH DIST	OTLAB4041	OTLAB10
RAPID RESPONSE-SWITCHING / MHR	MM231	

MAINS CONNECTION	
DESCRIPTION	CU
CONNECTOR FOR ALUM. MAINS-PER WIRE	SC15568D
CONNECTOR FOR COPPER MAINS-PER WIRE	SC0015567
19/1.53 COPPER BRIDGING CABLE/m	SC0007159
CABLE,POWER,ELEC;ARIEL,120mm2;CCT BRIDGE	SC0020279





EDOs	
DESCRIPTION	CU
EDO UNIT & FITTING, EXCLUDING X-ARM - PER PHASE	SET254-1
EDOs & CROSSARM-2 PHASES	11EDO2
EDOs & CROSSARM-3 PHASES	11EDO3
11KV SPARKLESS DROP OUT CONSTRUCTION 1PH	11SDO2
11KV SPARKLESS DROP OUT CONSTRUCTION 3PH	11SDO3
11KV EDO (GANGED) CONST	11EDOG
11KV ISOLATING SWITCH CONSTRUCTION	11ISO
EDO FUSES 8A "T"	SC0014228
EDO FUSES 20A "K"	SC0013405
EDO FUSES 25A "K"	SC0013730
EDO FUSES 40A "K"	SC0013731

NOTES

1. FOR ADDITIONAL CONSTRUCTION DETAILS REFER OCM PP.4-206, 1-254.

A	ORIGINAL ISSUE					
C	DATE 15/12/2014	APPD B. THOMAS	CKD P. RELF	DRN S. GOODRIDGE	UPDATED EXISTING CU's ADDED LABOUR CU's IN NEW TABLE	

RESOURCE ESTIMATION GUIDE

POLE-MOUNTED PLANT SWITCHES MASTER DROPOUT FUSES-MDOs

APP'D	R.ENGLISH		AUTOCAD
DATE	15.05.09	9562-A4	C
RECD	J.TUNNEY	SECTION 2	SUB-SECT. 2
CKD	K.GOSDEN	SHT 4	OF 5
DWN	F.AMANPOOR	FILE RES-2-2-4B.DWG	

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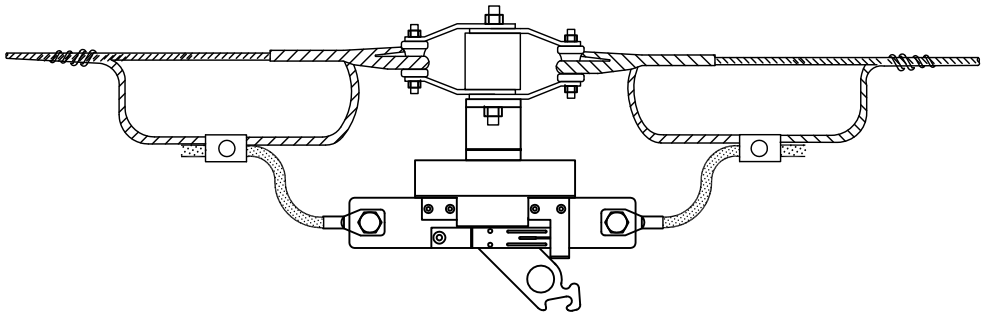
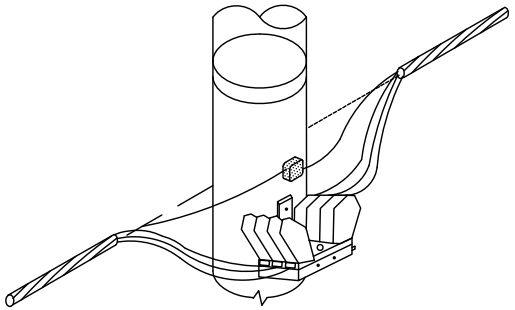
OPEN WIRE



LVABC



LV OPEN WIRE	
CU	DESCRIPTION
IS95	DISCONNECT LINK + BRIDGING PER PHASE
IS95/3	DISCONNECT LINK + 3 PH BRIDGING

LV ABC	
CU	DESCRIPTION
LVABC/DS2	LV ABC DISCONNECT SWITCH WITH 200A FUSES
LVABC/DS2T	LV ABC DISC SW WITH 315A FUSES TWIN ABC
LVABC/DS4	LV ABC DISCONNECT SWITCH WITH 630A LINKS
LVABC/DS4T	LV ABC DISC SW WITH 630A LINKS TWIN ABC

ENERGEX LABOUR	
REGULAR	DESCRIPTION
OTLAB295	ERECT LV DISCONNECTOR LINKS (3 PHASE) INCL. ABC
OTLAB40	PICK UP & SORT MATERIALS / MHR OH DIST
OTLAB50	CLEANUP SITE & RETURN MATLS / MHR
OTLAB10	TRAVEL TIME / MHRS OH DIST

ADD "-OT" SUFFIX TO CU FOR OVERTIME

A	ORIGINAL ISSUE			
B	DATE 15/12/2014	APPD B. THOMAS	CKD P. RELF	DRN S. GOODRIDGE	UPDATED EXISTING CU's ADD ADDITIONAL LABOUR & MATERIAL CU's

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RESOURCE ESTIMATION GUIDE

POLE-MOUNTED PLANT
SWITCHES
LV DISCONNECTORS

APP'D	R.ENGLISH		AUTOCAD
DATE	15.05.09	9562-A4	B
RECD	J.TUNNEY	SECTION 2	SUB-SECT. 2
CKD	K.GOSDEN	SHT 5	OF 5
DWN	F.AMANPOOR	FILE RES-2-2-5A.DWG	

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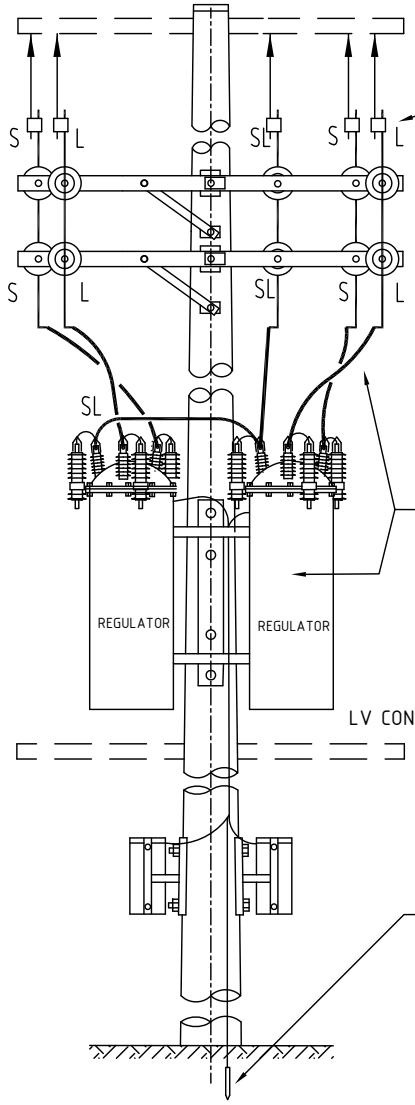
LABOUR	
DESCRIPTION	CU
INSTALL 11kV REGULATOR	OTLAB1121
RECOVER 11kV REGULATOR	OTLAB1123
TRANSFER CONDUCTORS TO STRAIN CONSTRUCTION	OTLAB642
AIR FIT STRAIN CONSTRUCTION TO POLE	OTLAB291
CUT + SHUT PER WIRE	OTLAB215
INSTALL MEN - NEW POLE	OTLAB216
INSTALL MEN - EXISTING POLE	OTLAB217
RETENSION MAINS/SPAN	OTLAB763
PICK UP + SORT MATERIALS/MHR	OTLAB40
CLEANUP SITE & RETURN MATLS / MHR	OTLAB50
TRAVEL TIME / MHRS OH DIST	OTLAB10
BORER LIFTER LIFT OR LOWER PLANT	OTLAB2016
TEST + COMMISSION 11 /33kV REGULATOR	ZSLAB901
RAPID RESPONSE-SWITCHING / MHR	MM231

ADD "-OT" SUFFIX TO CU FOR OVERTIME

HV CONSTRUCTION



11kV MAINS CONNECTION PER WIRE	
COPPER	PAGE7-54-1
ALUMINIUM	PAGE7-54-2

REGULATOR & SUNDRIES	
DESCRIPTION	CU
200A REGULATOR UNIT	ZS30-110 * 2
SUNDRIES INCL. SURGE ARRESTORS, BRIDGING, XARMS, BOLTS, DROPPERS	11REG/200R

EARTHING	
DESCRIPTION	CU
HV EQUIPMENT EARTH - SEPARATE	HVE
HV EQUIPMENT EARTH - COMMON	HVEC
FIT STAKE EARTH TO EXISTING POLE	MENEX OR ADE

NOTES

1. CU APPLIES TO WOOD POLE MOUNTING. (INSTALL ON 20kN WOOD POLES).
2. FOR ADDITIONAL DETAILS, REFER OCM SECT.7 PP. 302,351 & 605.
3. REMOTE CONTROL CAN BE ADDED - USE SAME CU AS FOR LOCAL OPERATION UNIT.
4. ALLOW FOR CHANGING TAPS ON AFFECTED TRANSFORMERS AFTER REGULATOR IS INSTALLED - OTLAB1118.
5. REGULATOR ZS30-110 QTY 2 OPEN DELTA (2 TANKS) NOT INCLUDED IN 11REG/200R

A	ORIGINAL ISSUE	15/12/2014	B. THOMAS	P. RELF	S. GOODRIDGE
E	UPDATED EXISTING CU's ADD ADDITIONAL LABOUR CU's				

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RESOURCE ESTIMATION GUIDE

POLE-MOUNTED PLANT REGULATORS 11kV OPEN WIRE 200A

APP'D	R.ENGLISH
DATE	15.05.09
RECD	J.TUNNEY
CKD	K.GOSDEN
DWN	F.AMANPOOR

AUTOCAD

9562-A4 E

SECTION	SUB-SECT.
2	3

SHT 1 OF 1

FILE RES-2-3-1D.DWG

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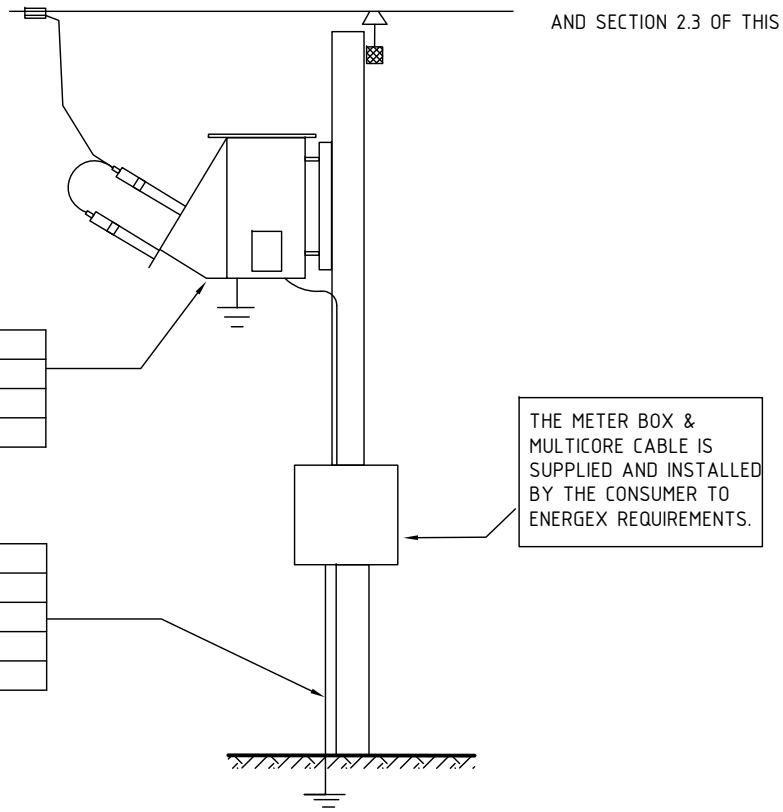
LABOUR		
CU		DESCRIPTION
REGULAR	LIVE LINE	
OTLAB1126	OTLAB4019	ERECT 11kV METERING UNIT
OTLAB1127	OTLAB4020	RECOVER 11kV METERING UNIT
OTLAB642	OTLAB4008	TRANSFER CONDUCTORS TO STRAIN
OTLAB280	OTLAB4011	AIR FIT INTERMEDIATE CONSTRUCTION TO POLE
OTLAB290	OTLAB4013	AIR FIT STRAIN CONSTRUCTION TO POLE
OTLAB763	OTLAB4040	RETENSION MAINS/SPAN
OTLAB216	OTLAB4032	INSTALL EARTH - NEW POLE
OTLAB217	OTLAB4033	INSTALL EARTH - EXISTING POLE
OTLAB631	OTLAB4036	BRIDGING 3PH
OTLAB40	OTLAB4042	PICK UP & SORT MATERIALS / MHR OH DIST
OTLAB50	-	CLEANUP SITE & RETURN MATLS / MHR
OTLAB10	OTLAB4041	TRAVEL TIME / MHRS OH DIST
MM231		RAPID RESPONSE-SWITCHING / MHR

NOTES

1. CU INCLUDES METERING TRANSFORMER, BRIDGING, MULTICORE CABLE AND BRACKET FOR METER BOX, AS WELL AS HELICAL TERMINATIONS TO SUIT MOON (11kV) OR PLUTO (33kV) CONDUCTOR. FOR OTHER CONDUCTOR TYPES INCLUDE 4 HELICAL TERMINATIONS TO SUIT AS PER SECTION 1-5 OF THIS MANUAL.
2. CUs APPLY TO WOOD POLE MOUNTING.
3. FOR DETAILS OF CONSTRUCTION, REFER OCM SECT.7 PP.501, 502, 606 & 607.

METERING UNIT	
DESCRIPTION	CU
11kV POLE MU	11MTU
33kV POLE MU	33MTU

EARTHING	
DESCRIPTION	CU
SEPARATE	HVE1
COMMON	HVE2
FIT STAKE TO EXISTING WOOD POLE	ADE OR MENEX



A	ORIGINAL ISSUE				
C	DATE 15/12/2014	APPD B. THOMAS	CKD P. RELF	DRN S. GOODRIDGE	UPDATED EXISTING CU's ADD ADDITIONAL LABOUR CU's

RESOURCE ESTIMATION GUIDE

POLE-MOUNTED PLANT METERING UNITS - 11kV & 33kV

APP'D	R.ENGLISH
DATE	15.05.09
RECD	J.TUNNEY
CKD	K.GOSDEN
DWN	F.AMANPOOR

AUTOCAD

9562-A4 C

SECTION 2 | SUB-SECT. 4

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FILE RES-2-4-1B.DWG

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SECTION 3 UNDERGROUND CONSTRUCTION

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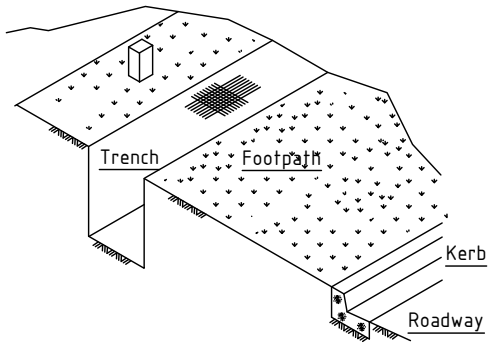
CONTRACT TRENCHING AND BACKFILL		
CU	DESCRIPTION	CONDUIT CONFIGURATION
SOIL TRENCHING		
UGSC101	0.45m * 0.8m/m	UP TO 2 CONDUITS + COMMS
UGSC102	0.45m * 1.0m/m	UP TO 4 CONDUITS + COMMS
UGSC103	0.45m * 1.2m/m	UP TO 6 CONDUITS + COMMS
UGSC106	0.65m * 1.2m/m	UP TO 9 CONDUITS + COMMS
ROAD TRENCHING		
UGSC101R	0.45m * 0.8m/m	UP TO 2 CONDUITS + COMMS
UGSC102R	0.45m * 1.0m/m	UP TO 4 CONDUITS + COMMS
UGSC103R	0.45m * 1.2m/m	UP TO 6 CONDUITS + COMMS
UGSC106R	0.65m * 1.2m/m	UP TO 9 CONDUITS + COMMS
MRD ROAD TRENCHING		
UGSC101M	0.45m * 0.8m/m	UP TO 2 CONDUITS + COMMS
UGSC102M	0.45m * 1.0m/m	UP TO 4 CONDUITS + COMMS
UGSC103M	0.45m * 1.2m/m	UP TO 6 CONDUITS + COMMS
UGSC106M	0.65m * 1.2m/m	UP TO 9 CONDUITS + COMMS
ROCK EXCAVATION		
UGSC107S	CONTRACT ROCK EXCAVATION SOIL M^2	
UGSC107R	CONTRACT ROCK EXCAVATION ROAD M^2	
UGSC107M	CONTRACT ROCK EXCAVATION MRD ROAD M^2	
VACUUM EXCAVATION		
UDCON0001	VACUUM EXCAVATION CONTRACTOR / HR	

ENERGEX TRENCHING AND BACKFILL		
CU	DESCRIPTION	CONDUIT CONFIGURATION
SOIL TRENCHING		
UTLAB2	0.45m * 1.0m/m	UP TO 4 CONDUITS + COMMS
UTLAB3	0.45m * 1.2m/m	UP TO 6 CONDUITS + COMMS
UTLAB4	0.45m * 1.4m/m	UP TO CONDUITS + COMMS
UTLAB5	0.45m * 1.6m/m	UP TO CONDUITS + COMMS
UTLAB6	0.65m * 1.2m/m	UP TO 9 CONDUITS + COMMS
UTLAB62	0.65m * 1.4m/m	UP TO CONDUITS + COMMS
UTLAB621	0.65m * 1.6m/m	UP TO CONDUITS + COMMS
UTLAB622	0.65m * 1.8m/m	UP TO CONDUITS + COMMS
FOLLOW UP TRENCHING		
UTLAB2BC	0.95m * 0.4m OVER 450T MINOR ROAD/M	
UTLAB3BC	1.25m * 0.4m OVER 650T MINOR ROAD/M	
UTLAB4BC	0.95m * 0.85m OVER 450T MINOR ROAD/M	
UTLAB6BC	1.25m * 0.85m OVER 450T MINOR ROAD/M	

SURFACE CUTTING - CONTRACT	
CU	DESRCIPTION
UGSC3	BITUMEN/m -50mm CUT
UGSC5	CONCRETE/m -50mm CUT
CIVSP6	CONCRETE/m -100mm CUT

SURFACE REINSTATEMENT		
CU		DESCRIPTION
CONTRACT	ENERGEX	
FOOTHPATHS		
CIVSR7	UTLAB200	CONCRETE/m^2
CIVSR12	UTLAB201	GRASS/m^2
CIVSR6B	UTLAB202	PAVERS/m^2
CIVSR4	-	BITUMEN 75mm/m^2
CIVSR20	UTLAB203	BITUMEN - COLD MIX/m^2
CIVSR13	-	DECO/m^2
CARRIAGEWAYS		
CIVSR8	UTLAB204	GRAVEL/m^2
CIVSR5	-	BITUMEN 50mm/m^2
CIVSR4	-	BITUMEN 75mm/m^2
UGSC6	-	BITUMEN 150mm/m^2
DRIVEWAYS		
CIVSR7	UTLAB200	CONCRETE/m^2
CIVSR8	UTLAB204	GRAVEL/m^2
KERB & CHANNEL REINSTATEMENT		
CIVSR11	UTLAB205	CONCRETE/m

ADD "-OT" SUFFIX TO CU FOR OVERTIME



OTHER EXCAVATION & BACKFILL	
CONTRACT	
CU	DESCRIPTION
UGSC20	DISPOSAL OF SPOIL/m^3
UGSC114	LOCAL GOVT. FEES & CHARGES - PERMITS, DUMPING -$ AMOUNT
ZS200-24	ENVIRONMENTAL OFFSET $$
CONTQUOTE	CONTRACTOR QUOTE $$
CIVEX30	EXCAVATION EARTH/JOINT PIT
CIVEX31	BACKFILL EARTH/JOINT PIT
UGSC10	BUILD CONCRETE PIT WITH GATIC LIDS
UGMP21	CONTRACT PIT WATER REMOVAL/PIT
UGSC123	CONTRACT EXCAVATION CONC. PIT OVER EXISTING CABLES
UTLAB23	CONTRACT HAND TRENCHING-SOFT SOIL 0.6m * 0.8m/m
UTLAB24	CONTRACT HAND TRENCHING-HARD SOIL 0.6m * 0.8m/m

CONTRACT IMPORTED BACKFILL	
CU	DESRCIPTION
CVBROADBASE	ROADBASE/m^3
CVBSNDLEANMX	LEANMIX/m^3
CVBSAND	BEDDING SAND/m^3
CVBDECO	DECO/m^3
CVBLOAM	LOAM/m^3
UGMAT53D	FLOWABLE FILL/m^3

UNDERBORE - CONTRACT	
CU	DESCRIPTION
CONTQUOTE	CONTRACTOR QUOTE $$

MISCELLANEOUS	
CU	DESRCIPTION
CIVSR1A	CONTRACT SITE CLEAN UP
MM124	CIVIL WORKS SUPERVISION
UGSC1	CONTRACT TRAFFIC CONTROL-MHR
UGSC2	CONTRACT TRAFFIC CONTROL-2MEN/MHR
UGMP1	HIRE BACKHOE/BOBCAT & TRUCK/HR
CONTQUOTE	CONTRACT CLEARING $$ AMOUNT
CLEARING1	LIGHT CONTRACT CLEARING/km
CLEARING2	MEDIUM CONTRACT CLEARING/km
CLEARING3	HEAVY CONTRACT CLEARING/km
OTLAB770	UG SITE INDUCTION
MM1004	ENERGEX SURVEYING - 2 MEN/hr

EXAMPLE: To calculate the cubic metre volume of trench backfill, multiply WIDTH x DEPTH x LENGTH (allowing for the size of the conduits and 300mm sand cover).
eg.0.6mx1.0mx15m Trench (100mm Conduits + 300mm sand cover = 1.0m-0.4m = 0.6m) Therefore 0.6x0.6x15m = 5.4m^3. Round this amount up or down to suit as Ellipse only takes whole amounts.

A	ORIGINAL ISSUE	DATE	15/05/2015	
F		APPD	B. THOMAS	
		CKD	D.WOOD	
		DRN	M.MILLER	
	UPDATED CONTRACT CU'S REVIEWED U/BORE TABLE ADDED ENERGEX TRENCH & BACKFILL TABLE			

RESOURCE ESTIMATION GUIDE

UNDERGROUND CONSTRUCTION
CIVIL WORKS
EXCAVATION & REINSTATEMENT - LABOUR

APP'D	R.ENGLISH		AUTOCAD
DATE	15.05.09	9562-A4	F
RECD	J.TUNNEY	SECT 3	SUB-SECT. 1
CKD	K.GOSDEN	SHT 1	OF 2
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CONDUITS	
CU	DESCRIPTION
CVCOND40HY	CONDUIT 40mm HD ORANGE PVC/m
CVCOND80LT	CONDUIT 80mm LD ORANGE PVC/m
CVCOND100LT	CONDUIT 100mm LD ORANGE PVC/m
CVCOND125LT	CONDUIT 125mm X 4.5M, LD ORANGE PVC/m
CVCOND125LT6	CONDUIT 125mm X 6.0M, LD ORANGE PVC/m
CVCOND150LT	CONDUIT 150mm LD ORANGE PVC/m
SC0022258	CONDUIT,100mm X 4.5M,MD,WHITE,COMMS /M
CVCOND100COM	CONDUIT,100mm X 6.0M,MD,WHITE,COMMS /M

CONDUIT BENDS	
CU	DESCRIPTION
SC0021477	BEND,100X15X1.8M RAD,1 SOCK,MD,PVC,WHITE
SC0021478	BEND,100X30X1.8M RAD,1 SOCK,MD,PVC,WHITE
SC0021479	BEND,100X45X1.8M RAD,1 SOCK,MD,PVC,WHITE
SC0021480	BEND,100X90X0.75M RAD,1 SOCK,MD,PVC,WHITE

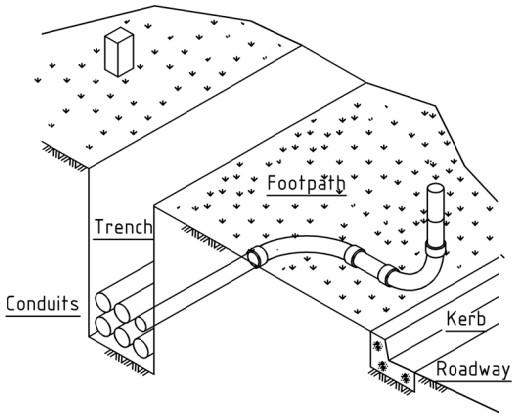
CABLE PROTECTION & WARNING	
CU	DESCRIPTION
WSP1	CABLE WARNING 'BURIED CABLES IN VICINITY' (GALV STEEL POST)
WSP2	CABLE WARNING 'BURIED CABLES' (GALV STEEL POST)
CABMARK2	BRASS 'E' CABLE KERB MARKER IN POSITION
CABMARK5	CABLE MARKER ON A CONCRETE BLOCK (275mm long)
1350-2	CABLE MARKER ON A CONCRETE BLOCK (150mm long)
CABMARK8	CABLE WARNING TAPE (150mm WIDE) /M
CIVBF10A	CABLE PROTECTION 300mm STRIP/M
CVPROTS200	CABLE PROTECTION 200mm STRIP/M
CIVBF10B	CABLE PROTECTION 150mm STRIP/M
LVJPRO1	LV CABLE JOINT PROTECTION 1 (CONC. SLAB + PVC COVER)
LVJPRO2	LV CABLE JOINT PROTECTION 2 (CONC. SLAB + BRICKS)
CIVJTPROT	JOINT PROTECTION SLAB
PITBKTS	SUPPORT BRACKET FOR UG PITS (SHORT)
PITBKTL	SUPPORT BRACKET FOR UG PITS (LONG)
CIVBF10	CABLE BRICKS/M (URD)
SC0024715	CABLE MARKER (UG CABLE CAST AL - SHALLOW)
SC0024717	CABLE MARKER (UG CABLE CAST AL - SHALLOW)

CONDUIT BENDS	CLASS/ANGLE (CLASS 6=LD) (CLASS 12=HD)					
SIZE & RADIUS	6/15°	6/30°	6/45°	6/90°	9/90°	12/90°
40 NB 300 RAD. (2 SOCK.)					B40X90X300	B40X90X300HD
40 NB 300 RAD. LONGLEG					B40X90X300LL	
40 NB 600 RAD. (2 SOCK.)					B40X90X600HD	
80 NB 450 RAD. (1 SOCK.)				B80X90X4501S		
80 NB 450 RAD. (2 SOCK.)				B80X90X4502S		
80 NB 1200 RAD.			B80X45X1200			
80 NB 1830 RAD.		B80X30X1830	B80X45X1830			
100 NB 1130 RAD.			B100X45X1130			
100 NB 1830 RAD.	B100X15X1830	B100X30X1830	B100X45X1830			
125 NB 1130 RAD.			B125X45X1130			
125 NB 1830 RAD.	B125X15X1830	B125X30X1830	B125X45X1830			
150 NB 1130 RAD.			B150X45X1130			
150 NB 1830 RAD. (1 SOCK.)			B150X45X1830			

ENERGEX LABOUR	
CU	DESCRIPTION
UTLAB15	1 ROW X 1 CONDUIT/M
UTLAB16	1 ROW X 2 CONDUITS/M
UTLAB17	2 ROWS X 2 CONDUITS/M
UTLAB18	3 ROWS X 2 CONDUITS/M
UTLAB19	3 ROWS X 3 CONDUITS/M
UTLAB20	INSTALL CONDUIT BEND (PER BEND)
MM201	EXTRA UG CIVIL MAN HOURS

ADD "-OT" SUFFIX TO CU FOR OVERTIME

SUNDRY MATERIALS	
CU	DESCRIPTION
CABLELUBE	CABLE LUBRICANT PER/M
DRAWWIRE2	POLYPROPYLENE DRAW ROPE (ROLL)
SC0013165	40mm PLUGS
SC0004915	80mm PLUGS
SC0019596	100mm PLUGS
SC0015790	125 AND 150mm PLUGS
1300-1-1	OPTICAL FIBRE TERMINATION PIT - STANDARD
1300-1-2	OPTICAL FIBRE TERMINATION PIT - LARGE
1301-1-1	OPTICAL FIBRE JOINTING PIT - STANDARD
CDS100	CABLE DUCT SEAL 100mm
CDS125	CABLE DUCT SEAL 125mm
SC0003770	CONDUIT GLUE
SC0023050	100mm WHITE SLIP COUPLING



NOTES

1. 4.5m Conduit Lengths are available.

A	ORIGINAL ISSUE		
G	DATE 01/08/2017	APPD B. THOMAS	CKD B. NORDKAMP
	DRN Z. RELF	ADDED SHALLOW DEPTH UG CABLE MARKERS	

RESOURCE ESTIMATION GUIDE

UNDERGROUND CONSTRUCTION
CIVIL WORKS
CONDUITS & ACCESSORIES

APP'D	R.ENGLISH		AUTOCAD
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CKD	K.GOSDEN	SHT 2	OF 2
DWN	F.AMANPOOR	FILE RES-3-1-2G.DWG	

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33kV CABLES				
CU	DESCRIPTION			
	CSA	COND.	CORES	INSUL./CONST.
33C1185XLH	185mm²	CU	1C	XLPE/CCu/MDPE
4C1630WXWMMT	630mm²	CU	1C	XLPE/CCu/MDPE
4C1630WXWMOT	630mm²	CU	1C	XLPE/LY/MDPE
SC0022894	630mm²	CU	1C	XLPE/LAT/LLDPE/MDPE
SC0022895	800mm²	CU	1C	XLPE/LAT/LLDPE/MDPE
4A1000WTXMMT	1000mm²	AL	1C	XLPE/LAT/LLDPE/MDPE

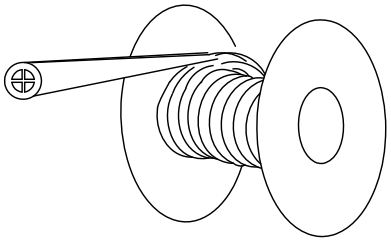
REFER NOTE 1

11kV CABLES				
CU	DESCRIPTION			
	CSA	COND.	CORES	INSUL./CONST.
11AT400XSH	400mm²	AL	3X1C TR	XLPE/SCREEN/HDPE
11AT240XSH	240mm²	AL	3X1C TR	XLPE/SCREEN/HDPE
11CT240XSH	240mm²	CU	3X1C TR	XLPE/SCREEN/HDPE
11CT185XSH	185mm²	CU	3X1C TR	XLPE/SCREEN/HDPE
11AT95XSH	95mm²	AL	3X1C TR	XLPE/SCREEN/HDPE
11A335XSH	35mm²	AL	3C	XLPE/SCREEN/HDPE
11C3300PSH	300mm²	CU	3C	PLY/SCREEN/HDPE
11C3185PSH	185mm²	CU	3C	PLY/SCREEN/HDPE

LV & SL CABLES				
CU	DESCRIPTION			
	CSA	COND.	CORES	INSUL./CONST.
LVC4300XH	300mm²	CU	3.5C	XLPE/SWA/HDPE
LVC1300XPV	300mm²	CU	1C	XLPE/PVC
LVA4240XH	240mm²	AL	4C	XLPE/PVC/MDPE
LVA4240XPV	240mm²	AL	4C	XLPE/PVC
LVC4185XPM	185mm²	CU	4C	XLPE/PVC/MDPE
SC0007181	185mm²	CU	1C	PVC
LVC470XH	70mm²	CU	4C	XLPE/PVC/HDPE
LVC416XPV	16mm²	CU	4C	XLPE/PVC
LVC216PVPV	16mm²	CU	2C	PVC/PVC
LVC24PVPV	4mm²	CU	2C	PVC/PVC

EARTH CABLE	
CU	DESCRIPTION
SC0008351	70mm² CU/PVC GREEN/YELLOW
UGMAT63	70mm² CU/XPLE/PVC BLACK
ZSEG002	120mm² CU/PVC GREEN/YELLOW
ZSEG004	70mm² CU BARE

C & I EARTHING	
CU	DESCRIPTION
EG00326	BARE CU EARTHING CONDUCTOR STRIP
EG00706	EARTH CONNECTION TO EQUIPMENT IN C&I SUBS



LABOUR	
CU	DESCRIPTIONS
UTLAB42	SET UP OF LV/11kV CABLES IN DUCTS - PER METRE
UTLAB98	SET UP OF LV/11kV CABLES IN DUCTS
UTLAB96	PULL LV/11KV CABLE IN DUCTS - PER METRE
UTLAB40	SETUP & PULL PILOT CABLE - PER METRE
UTLAB35	DIRECT LAY 11kV/LV CABLE - PER METRE
UTLAB109	SET UP FOR RECOVERY OF UG CABLES
UTLAB107	RECOVER UG CABLE - PER METRE
UTLAB121	UG CREW PICK UP & SORT MATERIALS (2MEN)/HR
ZSLAB902	MEGGER & INJECTION TEST PLY CABLES - PER RUN
UTLAB124	MEGGER TEST XLPE CABLES - PER RUN
UTLAB125	CABLE IDENTIFICATION & SPIKING

ADD "-OT" SUFFIX TO CU FOR OVERTIME

UG FIBRE OPTIC & PILOT CABLES	
CU	DESCRIPTIONS
UG FIBRE OPTIC CABLES	
PWMAT15	ADSS - 12SM+4MM FIBRE SINGLE MODE - TERMITE/RODENT PROT
SC0019878	ADSS - 12 FIBRE MULTI MODE - TERMITE/RODENT PROT
PWMAT16	ADSS - 24SM +4MM FIBRE SINGLE MODE - TERMITE/RODENT PROT
SC0021858	ADSS - 72 FIBRE SINGLE MODE - TERMITE/RODENT PROT
UG FIBRE OPTIC - RESTRICTED USE	
SC0020650	ADSS - 48 FIBRE SINGLE MODE - TERMITE/RODENT PROT
UG PILOT CABLES	
PWMAT14	PILOT CABLE - 20 PAIR
PWMAT31	PILOT CABLE - 20 PAIR JOINT
PWMAT32	PILOT CABLE - 20 PAIR TERMINATION

NOTES

1. CABLE CUs ARE GENERALLY PER METRE. FOR 1C 33kV CABLES, THE CUs AUTOMATICALLY MULTIPLY BY 3.

B	ORIGINAL ISSUE			
H	DATE 15/05/2015	APPD B.THOMAS	CKD D.WOOD	DRN M. MILLER
	UPDATED EARTH TABLE ADDED PILOT CABLES & UPDATED 11KV AND LV TABLES			

RESOURCE ESTIMATION GUIDE

UNDERGROUND CONSTRUCTION CABLES

APP'D	R.ENGLISH		AUTOCAD
DATE	15.05.09	9562-A4	H
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PILLAR TYPE	SCHEMATIC CU
URD BASE & TURRET ONLY	LVSP0
1 WAY URD	120 LVSP1-6 240 LVSP2-6
2 WAY URD	120 120 LVSP3-6; 240 240 LVSP4-6; 120 240 LVSP5-6
3 WAY URD	120 120 120 LVSP6-6; 120 240 120 LVSP7-6; 120 240 240 LVSP8-6; 240 240 240 LVSP9-6
4 WAY URD	120 120 120 120 LVSP10-6; 120 240 120 240 LVSP11-6; 240 240 240 240 LVSP21-6
CROSS ROAD	16 LVSP12-6
2 WAY LINK	120 120 LVSP13-6; 240 240 LVSP14-6; 120 240 LVSP15-6; 240 240 LVSP14-6N
2 +½ WAY LINK	240 240 240 LVSP57
3 WAY LINK	240 240 240 LVSP58; 185 185 185 LVSP59

* - NEW VERT CFS PILLAR

120mm² AL/XLPE CABLE NOW OBSOLETE.

NOTES

1. FOR STREET LIGHT SUPPLY ADD SUFFIX "SL" TO CU, e.g. "LVSP4-6" BECOMES "LVSP4-6SL" (DO NOT APPLY TO CFS PILLARS. FOR CFS PILLARS WITH SL FEED, ADD 1043-3 (ADDITIONAL FUSEHOLDER ON FRAME)).
2. WHERE NO FUSES ARE REQUIRED, ADD SUFFIX "NF". (THIS DOES NOT APPLY TO CROSS ROAD PILLARS OR LINK PILLARS).
3. PILLAR CUs INCLUDE 16mm² HOOK-UP CABLE. EXTERNAL SUBDIVISION CONTRACTORS MUST ORDER CABLE SEPARATELY.
4. CROSS-ROAD PILLAR CUs INCLUDE LUGS FOR BOTH ENDS OF 16mm² CABLES FEEDING THEM.
5. SEE SHEET 2 FOR COMMERCIAL/INDUSTRIAL PILLARS.

FUSE LINKS	
DESCRIPTION	CU
32A(SL)	SC0004434
80A	SC0004451
100A	SC0012454

SUNDRIES	
CU	DESCRIPTION
LV4CMEN	MEN
LVSPL240	240mm² AL LUG SET
LVSPL120	120mm² AL LUG SET
LVSPL016	16mm² CU LUG SET
LVSPL070	70mm² CU LUG SET
LVSPL185	185mm² CU LUG SET
1350-1	GALV. PIPE BOLLARD
LVSPCIVIL	PILLAR FOUNDATION
LVSPC2W3	CONVERT 2-WAY PILLAR TO 3-WAY
SC0006508	PHASE BAR FOR 3 WAY URD SERVICE PILLAR
1039-1	6-FUSE PANEL
1039-2	6-FUSE+SL PANEL
1043-1	ADDITIONAL FUSE HOLDER-PANEL MOUNTED
1043-3	ADDITIONAL FUSE HOLDER-FRAME MOUNTED
1045-1	NEUTRAL LINK
LVSPH10	40mm BOLT SET OF 4
LVSPH11	50mm BOLT SET OF 4
LVC416XPV	16mm² CU 4C CABLE (X-ROAD & INSIDE PILLARS)
SC0007181	185mm² CU 1C PVC CABLE
SC015832	400A CFS UNIT
CFS250	ADD 250A CFS UNIT TO EXISTING PILLAR

LABOUR	
CU	DESCRIPTION
UTLAB88	INSTALL LV PILLAR WITH TERMINATIONS
UTLAB108	RECOVER LV PILLAR
UTLAB83	TERMINATE LV CABLE AT EXISTING PILLAR
UTLAB96	PULL LV CABLES IN CONDUITS
UTLAB72	INSTALL MEN AT LV PILLAR
UTLAB73	INSTALL PROTECTIVE BOLLARDS
UTLAB121	PICK UP & SORT MATERIALS (2MEN)/HR
UTLAB123	CLEAN UP SITE & RETURN MATERIAL (MHR)

ADD "-OT" SUFFIX TO CU FOR OVERTIME

A	ORIGINAL ISSUE			
F	DATE 11/11/2015	APP'D B.THOMAS	CKD K. MCKEE	DRN D. WOOD
	ADDED 3 WAY LINK PILLARS UPDATED CU'S			

RESOURCE ESTIMATION GUIDE

UNDERGROUND CONSTRUCTION
PILLARS
RESIDENTIAL SERVICE & LINK

APP'D	R.ENGLISH		AUTOCAD
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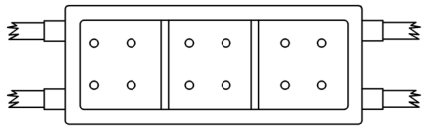
PILLAR TYPE	SCHEMATIC CU
C & I/ LINK PILLAR - BASE & COVER ONLY	LVSP00
C & I PILLAR - BASE, COVER & FRAME ONLY	LVSP20
C & I PILLAR - BASE, COVER, FRAME & CFS ONLY	CFS LVSP20CFS
C & I PILLAR - BASE, COVER, FRAME & 6 FUSES ONLY	LVSP20-6
C & I PILLAR - BASE, COVER, FRAME, CFS & 3 FUSES ONLY	CFS LVSP20-CFS
2 WAY C & I - 6 FUSE	120 120 LVSP16-6 240 240 LVSP17-6 240 120 LVSP18-6
2 WAY C & I - CFS	120 120 LVSP16-CFS 240 240 LVSP17-CFS 240 120 LVSP18-CFS 240 240 LVLP400CFS * - NEW VERT CFS PILLAR
4 WAY C & I - CFS - FOR ADDITIONAL REQUIREMNETS SEE UGCM SECT E5.9-5.10	240 240 / 240 240 LVLGSPCI * - NEW VERT CFS PILLAR

FUSE & LINKS FOR CFS UNITS x 3	
DESCRIPTION	STOCK CODE
100A	DSLVF10
125A	DSLVF121
160A	DSLVF161
200A	DSLVF20
250A	DSLVF25
315A	DSLVF31
400A	DSLVF40
SOLID LINK	SC0016865 (SINGLE)



DISCONNECT BOX	
CAST IRON 4-WAY UNIT INSIDE PIT	SC0006584
CAST IRON 2-WAY UNIT INSIDE PIT	SC0023883
400A LINK	SC0023884

INDOOR CFS UNIT		
250A INDOOR CFS UNIT	70mm² CU XLPE/PVC/HDPE	LVST70
400A INDOOR CFS UNIT	185mm² CU XPLE & PLY - 240mm² Al XLPE	LVST185

SEE NOTES & LABOUR DETAILS ON SHEET 1.

120mm² AL/XLPE CABLE NOW OBSOLETE.

A	ORIGINAL ISSUE			
D	DATE 01/08/2017	APPD B. THOMAS	CKD B. NORDKAMP	DRN Z. RELF	UPDATED CU'S FOR FUSE LINKS FOR CFS UNITS

RESOURCE ESTIMATION GUIDE

UNDERGROUND CONSTRUCTION PILLARS

COMMERCIAL/INDUSTRIAL SERVICE & DISC. BOX

APP'D	R.ENGLISH
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CKD	K.GOSDEN
DWN	F.AMANPOOR

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LV CABLE STRAIGHT & TRANSITION JOINT MATRIX											
Conductor Size & Cable Type	16 Cu 4/c XLPE/PVC	25 Cu PLY	25 Cu 4c XLPE/PVC	70 Cu PLY	70 Cu 4c XLPE /PVC/HDPE	185 Cu PLY	185 Cu XLPE /SWA/HDPE	120 Al 4/Cxlpe/pvc	240 Al 4/c XLPE/PVC	300 Cu 1c XLPE/PVC	300 Cu XLPE /SWA/HDPE
300 Cu 1c XLPE/PVC & SWS						LJSC30PC18D	LJSC30XC18D		LJSC30XA24D	LJSC30SC30D	LJXC30SC30D
300 Cu XLPE/SWA/HDPE						LJXC30PC18D	LJXC30XC18D		LJXC30XA24D		LJXC30XC30D
300 Al PLYPVC & SWS					LJPA30XC70D		LJPA30XC18D		LJPA30XA24D	LJPA30SC30D	LJPA30XC30D
258 Al PLYPVC & SWS					LJPA25XC70D		LJPA25XC18D		LVXNJ240/258	LJXA25SC30D	LJPA25XC30D
240 Al XLPE 3/c N/S					LJXA24XC70D	LVXNJ123/185	LVJ185SWA243	LVJ3240/4120	LVJ240A1; LVJ4C240/120	LJXA24SC30D	LJXA24XC30D
240 Al XLPE 4/c				LJXA24PC70D	LJXA24XC25D	EXJNT9MAT; LVXNJ120/185	EXJNT7MAT; LVJ185SWA244	LJXA24XA12D	LVJ240A1; LVJ4C240/120		
185 Cu PLYHDPE & SWS	LJPC18XC16D	LJPC18PC25D	LJPC18XC25D	LJPC18PC70D	LJPC18XC70D	LVHSJ185; LVHSJ185L;		EXJNT9MAT; LVXNJ120/185		LJPC18SC30D	
185 Cu XLPE/SWA/HDPE				LJXC18PC70D	LJXC18XC70D	EXJNT6MAT	LVJ185SWA	LVJ120/185			
161 Cu PLYSWS					LJPC61XC70D	LVHSJ185; LVHSJ185L;	LVXNJ185/161	EXJNT9MAT; LVXNJ120/185	EXJNT9MAT; LVXNJ120/185	LJPA15XC30D	
150 Al PLYPVC & SWS					LJPA15XC70D			LVXNJ120/150			
129 Al CONSAC				LJCA29PC70D	LJCA29XC70D			LVXNJ120/12C			
129 Al PVC & SWS 4/c				LVHSJ185; LVHSJ185L;	LJPA29XC70D			LVXNJ120/12P			
120 Al XLPE 3/C + N/S				LVXNJ1203/70	LJNA12XC70D			LVJ1204C/3NS			
120 Al XLPE 4/c	LJXA12XC16D	LJXA12PC25D	LJXA12XC25D	LVXNJ120/70	LJXA12XC70D			LJXNA12XA12D			
70 Cu PLYHDPE & SWS				LVHSJ70; LVHSJ70L							
70 Cu 4c XLPE/PVC/HDPE				LJPC70XC70D	LJXC70XC70D						
35 Al CONSAC	LJCA35XC16D	LVXNJ25/35	LJCA35XC25D								
25 Cu PLYHDPE & SWS	LJPC25XC16D	LJPC25PC25D									
25 Cu 4c XLPE/PVC	LJXC25XC16D	LJXC25PC25D	LJXC25XC25D	LJXC25PC70D	LJXC25XC70D						
16 Cu PLYSWS	LVXNJ16/16	LJPC16PC25D	LJPC16XC25D		LJPC16XC70D						
16 Cu 4c XLPE/PVC	LJXC16XC16D	LJXC16PC25D									

B	ORIGINAL ISSUE				
D	DATE 15/05/2015	APPD B.THOMAS	CKD D.WOOD	DRN M . MILLER	UPDATED TABLE & CU'S

RESOURCE ESTIMATION GUIDE

UNDERGROUND CONSTRUCTION
CABLE JOINTS
LV JOINTS AND TERMINATIONS

APP'D	R.ENGLISH	AUTOCAD	
DATE	15.05.09	9562-A4	D
RECD	J.TUNNEY	SECT 3	SUB-SECT. 4
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DWN	F.AMANPOOR	FILE	

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LV STOP-END JOINTS (LIVE END SEALS - (RESIN TYPE))	
Cable	
To suit cable from 70 mm2 up to 185 mm2 Cu or Al PLYHDPE or PLYSWS, or XLPE/PVC/HDPE, or XLPE/SWA/HDPE	LVDEJ185; LVEJ185; LVE170
To suit cable from 16 mm2 up to 65 mm2 Cu or Al PLYHDPE or PLYSWS, or XLPE/PVC/HDPE	LVDEJ16; LVDEJ25; LVDEJ70; LVEJ25
To suit cable from 240 mm2 up to 300 mm2 Cu or Al PLYHDPE or PLYSWS, or XLPE/PVC/HDPE or XLPE/SWA/HDPE	LSJPCAV2D

LV SERVICE TEE JOINTS (HEAT SHRINK TYPE)		
Main Cable	Service Tee Cable	
120/240 mm2 Al XLPE/PVC	16/70 mm2 Cu XLPE or PLY	LVHSJ240T16; LVHSJ240T25; LVHSJ240T70; LVPBJ4C240
185 mm2 Cu PLYHDPE & SWS	16/70 mm2 Cu XLPE or PLY	LVHSJ185T16; LVHSJ185T25; LVHSJ185T70;

LV RE-ENTERABLE SERVICE TEE JOINTS (RESIN TYPE)		
Main Cable	Service Tee Cable	
120/240 mm2 Al XLPE/HDPE	16/70 mm2 Cu XLPE or PLY, or 240 mm2 Al XLPE, or 185 mm2 Cu PLY, or 185 mm2 Cu XLPE/SWA/HDPE,	EXJNT8MAT LVJ240T240
185 mm2 Cu PLYHDPE &SWS	16/70 mm2 Cu XLPE or PLY, or 240 mm2 Al XLPE, or 185 mm2 Cu PLY, or 185 mm2 Cu XLPE/SWA/HDPE	EXJNT8MAT LVJ240T240
185 mm2 Cu XLPE/SWA/HDPE	16/70 mm2 Cu XLPE or PLY, or 240 mm2 Al XLPE, or 185 mm2 Cu PLY, or 185 mm2 Cu XLPE/SWA/HDPE	EXJNT8MAT LVJ240T240
300 mm2 Cu XLPE/SWA/HDPE	70 mm2 Cu XLPE or PLY, or 240 mm2 Al XLPE, or 185 mm2 Cu PLY, or 185 mm2 Cu XLPE/SWA/HDPE, or 300 mm2 Cu XLPE/SWA/HDPE	LVJ300T300

LV PARALLEL JOINTS (BUTT JOINTS) - (RESIN TYPE)		
Cable 1	Cable 2	
185 mm2 Cu PLYHDPE or SWS	185 mm2 Cu PLYHDPE or SWS	LJPCAV4PCAV4
185 mm2 Cu PLYHDPE or SWS	185 mm2 Cu XLPE/SWA/HDPE	LJPCAV4PCAV4
185 mm2 Cu PLYHDPE or SWS	300 mm2 Cu XLPE/SWA/HDPE	LJPCAV4PCAV4
185 mm2 Cu PLYHDPE or SWS	240 mm2 Al XLPE/PVC	LJPCAV4PCAV4
185 mm2 Cu XLPE/SWA/HDPE	185 mm2 Cu XLPE/SWA/HDPE	LJPCAV4PCAV4
185 mm2 Cu XLPE/SWA/HDPE	300 mm2 Cu XLPE/SWA/HDPE	LJPCAV4PCAV4
185 mm2 Cu XLPE/SWA/HDPE	240 mm2 Al XLPE/PVC	LJPCAV4PCAV4
185 mm2 Cu XLPE/SWA/HDPE	300 mm2 Cu XLPE/SWA/HDPE	LJXCAV2XCAV2
185 mm2 Cu XLPE/SWA/HDPE	240 mm2 Al XLPE/PVC	LJXCAV2XCAV2
240 mm2 Al XLPE/PVC	240 mm2 Al XLPE/PVC	LJPCAV4PCAV4
300 mm2 Cu XLPE/PVC	300 mm2 Cu XLPE/PVC	LJQC30QC30
300 mm2 Cu XLPE/PVC	300 mm2 Cu XLPE/SWA/HDPE	LJXCAV2XCAV2

LV SERVICE TERMINATIONS - BELL JOINT	
DESCRIPTION	CU
4mm CU 2C PVC/PVC	SLM887-2
16mm CU 2C PVC/PVC	SLM887-2
16mm CU 2C XLPE/PVC 3Ø SERVICE CABLES	SLM887-2 2 x SC0017021

B	ORIGINAL ISSUE				
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RESOURCE ESTIMATION GUIDE

UNDERGROUND CONSTRUCTION
CABLE JOINTS
LV JOINTS AND TERMINATIONS

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LV PARALLEL BRANCH JOINTS (RESIN TYPE)							
	Branch Cable						
Main Cable (may be joined)	16 mm2 Cu XLPE or PLY	70 mm2 Cu XLPE or PLY	120 mm2 Al XLPE/PVC	185 mm2 Cu PLYHDPE & SWS	185 mm2 Cu XLPE/SWA/HDPE	240 mm2 Al XLPE/PVC	300 mm2 Cu XLPE/SWA/HDPE
300 mm2 Cu XLPE/SWA/HDPE	LVCAV5CAV6	LVCAV5CAV6	LVCAV5CAV6				
240 mm2 Al XLPE/PVC	LVCAV5CAV6	LVCAV5CAV6	LVCAV5CAV6	LVCAV5CAV6	LVCAV5CAV6	LVCAV5CAV6	
185 mm2 Cu PLYHDPE & SWS	LVCAV5CAV6	LVCAV5CAV6		LVCAV5CAV6	LVCAV5CAV6	LVCAV5CAV6	
185 mm2 Cu XLPE/SWA/HDPE	LVCAV5CAV6	LVCAV5CAV6		LVCAV5CAV6	LVCAV5CAV6	LVCAV5CAV6	
300 mm2 Cu XLPE/SWA/HDPE		LVC30CAV6		LVC30CAV6	LVC30CAV6	LVC30CAV6	LVC30CAV6

LV INDOOR & OUTDOOR TERMINATION TYPES			
Conductor mm2 & Type	Cable Type	Outdoor termination	Indoor Termination
1c 300 stranded Cu	XLPE/PVC	LTSC30D	LESC30D
3.5 c 300 stranded copper	XLPE/SWA/HDPE	LTQC30D	LEQC30D
4c 240 stranded or solid Al	XLPE/PVC	LTSA24D	LTSA24D
3.5c 185 stranded copper	XLPE/SWA/HDPE	EXTERM8MAT	EXTERM8MAT
3.5c 185 stranded copper	PLYHDPE & PLYSWS	LTPC18D	LTPC18D
120 stranded or solid Al	XLPE/PVC	LTSA12D	LTSA12D
70 stranded copper	PLYHDPE & PLYSWS	LTPC70D	LTPC70D
4c 70 stranded copper	XLPE/PVC/HDPE	LTWC70D	LEWC70D
25 stranded copper	PLYHDPE & PLYSWS	LTPC70D	LTPC70D
16 stranded copper	PLYSWS	LTPC16D	LEPC16D
4c 16 stranded copper	XLPE/PVC	LTSC16D	LTSC16D

LV CABLE TERMINATIONS		
DESCRIPTION	PMT LV TERM	LV SERVICE BOARD TERM
16mm^{2}4C CU XLPE		LVST4C16
16mm^{2}4C CU PLY		LVST16 (20553)
25mm^{2}CU 4C PLYHDPE		LVST25
70mm^{2}CU 4C PLYHDPE		LVST70
70mm^{2}CU 4C CU4CXLPE	LVPT4C70	LVST70
120mm^{2}AL 4C XLPE	LVPT4C120	LVST4C120
185mm^{2}CU 4C PLYHDPE	LVPT185	LVST185
185mm^{2}4C CU XLPE	LVPT4C185	LVST4C185
240mm^{2}AL 4C XLPE	LVPT4C240	LVST4C240
240mm^{2}AL 4C PLYHDPE	LVPT240	LVST240

B	ORIGINAL ISSUE				
E	DATE 15/05/2015	APPD B.THOMAS	CKD D.WOOD	DRN M . MILLER	UPDATED CU'S

energex

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UNDERGROUND CONSTRUCTION
CABLE JOINTS
LV JOINTS AND TERMINATIONS

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11 kV Cable Straight and Transition Joints □ 3 Core															
Conductor Size & Cable Type	16 Cu PLY	25 Cu PLY	38 Cu PLY (0.06 in)	50 Al PLY	65 Cu PLY (0.1 in)	70 Cu PLY	95 Cu PLY	120 Al PLY	150 Al PLY	161 Cu PLY (0.25 in)	185 Cu PLY	240 Cu PLY	258 Al PLY (0.4 in)	300 Cu PLY	300 Al PLY
25 Cu PLY		11HSJ025/025					11HSJ025/095								
95 Cu PLY				11HSJ095/050	11HSJ095/065	11HSJ070/095	11HSJ095/095	11HSJ095/120		11HSJ095/162	11HSJ095/185				
161 Cu PLY										11HSJ162/162	11HSJ162/185				
185 Cu PLY						11HSJ70/185		11HSJ185/12A	11HSJ185/15A		11HSJ185/185	11HSJ185/240		11HSJ185/300	11HSJ185/30A
240 Cu PLY								11HSJ240/12A				11HSJ240/240			
300 Cu PLY											11HSJ185/300	11HSJ240/300		11HSJ300/300	11HSJ300/30A
400 Cu PLY															
35 Al XLPE	11XNJ035/016	11XNJ035/025		11XNJ035/50A			11XNJ035/095								
95 Al XLPE		11XNJ095/025				11XNJ095/070	11XNJ95A/95C	11XNJ095/12A			11XNJ095/185				
240 Al XLPE							11XNJ240/095	11XNJ240/12A	11XNJ240/15A	11XNJ240/162	11XNJ240/185	11XNJ240/24C	11XNJ240/25	11XNJ240/30A	11XNJ240/30A
185 Cu XLPE										11HSTJ18-16P	11HSTJ18-18P	11HSTJ18-24P	11HSTJ18-25A	11HSTJ18-30P	11HSTJ18-30A
240 Cu XLPE							2JXC24PC95D			11HSTJ24-16P	11HSTJ24-18P	11HSTJ24-24P	11HSTJ24-25A	11HSTJ24-30P	11HST24-30A
630 Cu XLPE															
800 Cu XLPE															
95 Al XLPE Triplex		11XT95A/25CP				11XT95A/70CP	11XT95-24ACP	11XT95-24ACP			11XT95-24ACP	11XT95-24ACP			
240 Al XLPE Triplex							11XT95-24ACP	11XT95-24ACP	11XT95-24ACP	11XT95-24ACP	11XT95-24ACP	11XT24/258AP	11XT24/258AP	11XT24/300P	11XT24/300P
185 Cu XLPE Triplex										11XT95-24ACP	11XT95-24ACP	11XT24/258AP	11XT24/258AP	11XT24/300P	11XT24/300P
240 Cu XLPE Triplex										11XT95-24ACP	11XT95-24ACP	11XT24/258AP	11XT24/258AP	11XT24/300P	11XT24/300P
400 Al XLPE Triplex											11XT40TA18PC	11XT24/300P	11XT24/300P	11XT24/300P	11XT24/300P

11 kV Cable Straight and Transition Joints □ 3 Core														
Conductor Size & Cable Type	35 Al XLPE	95 Al XLPE	95 Al XLPE Triplex	240 Al XLPE	240 Al XLPE Triplex	185 Cu XLPE	185 Cu XLPE Triplex	240 Cu XLPE	240 Cu XLPE Triplex	400 Al XLPE Triplex	630 Cu XLPE	800 Cu XLPE	33 kV 630 Cu XLPE	400 Cu PLY
25 Cu PLY	11XNJ035/025	11XNJ095/025												
95 Cu PLY	11XNJ035/095													
161 Cu PLY														
185 Cu PLY														
240 Cu PLY		11XNJ095/240												
300 Cu PLY														
400 Cu PLY														11HSJ400/400
35 Al XLPE	11XLJ035/035													
95 Al XLPE	11XLJ035/095	11HSJ95X-24												
240 Al XLPE		11HSJ95X-24		11HSJ95X-24										
185 Cu XLPE		11HSJ95X-24		11HSJ95X-24		11HSJ95X-24		11HSJ95X-24						
240 Cu XLPE		11HSJ95X-24		11HSJ95X-24		11HSJ95X-24		11HSJ95X-24						
630 Cu XLPE											11XLJ630/630		2JXC63XC63D	
800 Cu XLPE											11XLJ630/800	11XLJ800/800		
95 Al XLPE Triplex	11ST95A/95AX	11ST95A/95AX	11ST24/24X											
240 Al XLPE Triplex		11ST24/24TX		11ST24/24TX	11ST24/24X	11ST24/24TX		11ST24/24TX						
185 Cu XLPE Triplex		11ST24/24TX		11ST24/24TX		11ST24/24TX	11ST24/24X	11ST24/24TX						
240 Cu XLPE Triplex		11ST24/24TX		11ST24/24TX		11ST24/24TX		11ST24/24TX	11ST24/24X					
400 Al XLPE Triplex		2JTA40XA95D	2JTA40TA95D	2JTA40XC24D	2JTA40TCAV7D	2JTA40XC18D	2JTA40TCAV7D	2JTA40XC24D	2JTA40TCAV7D	2JTA40TCAV7D				

A	ORIGINAL ISSUE		
F	DATE 24/07/12	APPD R. ENGLISH	CKD J.TUNNEY
	DRN P.RELF	Correct CU's for 185 Triplex and 240 Triplex	

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UNDERGROUND CONSTRUCTION
CABLE JOINTS
11kV JOINTS AND TERMINATIONS

APP'D	R.ENGLISH
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11kV DEAD BREAK Screened Separable Elbows		
Cable Description	Normal Current Rating of Separable Connector (Amps Minimum)	Complete Termination Kit Containing Three Elbows
240 mm2 Al XLPE/CWS/HDPE Triplex	400	2DBSWCAV4D
400 mm2 Al XLPE/CWS/HDPE Triplex	400	2DBSTA40D
185 mm2 Cu XLPE/CWS/HDPE Triplex	400	2DBSWCAV4D
240 mm2 Cu XLPE/CWS/HDPE Triplex	400/600	2DBSWCAV4D
630 mm2 Cu XLPE/CWS/HDPE	800	2DBSWC63D

11 kV RESIN STOP Joints	
Cable Description	
To suit cable from 25 mm2 up to 185 mm2 Cu PLY HDPE or SWS	2SJPCV1D
To suit cable from 240 mm2 up to 300 mm2 Cu PLY HDPE or SWS	2SJPCV2D
To suit cable from 35 mm2 up to 185 mm2 Al or Cu XLPE/CWS/HDPE 3 core or Triplex	11EJ35X-24X
To suit cable 240 mm2 Al or Cu XLPE/CWS/HDPE 3 core or Triplex cable	11EJ35X-24X
To suit cable 400 mm2 Al TRXLPE/CWS/MDPE Triplex cable	2SJTA40D

JOINTS FOR WET CABLES

11 kV Cable Straight Joints FOR WET CABLES ONLY								
3 Core Cables								
Conductor Size & Cable Type	3c 95 Cu PLY/ HDPE	3c 185 Cu PLY/ HDPE	3c 240 Cu PLY/ HDPE	3c 300 Cu PLY/ HDPE	3c 95 Al XLPE/CWS/ PVC/HDPE	3c 240 Al XLPE/CWS/ PVC/HDPE	3c 185 Cu XLPE/CWS/ PVC/HDPE	3c 240 Cu XLPE/CWS/ PVC/HDPE
3c 95 Al XLPE/CWS/PVC/HDPE	2WWCAV5PCV1D	2WWCAV5PCV1D	2WWCAV5PCV2D	2WWCAV5PCV2D	2WWC95TCAV5D	2WWCAV4TCAV5	2WWCAV4TCAV5	2WWCAV4TCAV5
3c 240 Al XLPE/CWS/PVC/HDPE	2WWCAV5PCV1D	2WWCAV5PCV1D	2WWCAV5PCV2D	2WWCAV5PCV2D		2WWCAV4WCAV4	2WWCAV4WCAV4	2WWCAV4WCAV4
3c 185 Cu XLPE/CWS/PVC/HDPE	2WWCAV5PCV1D	2WWCAV5PCV1D	2WWCAV5PCV2D	2WWCAV5PCV2D			2WWCAV4WCAV4	2WWCAV4WCAV4
3c 240 Cu XLPE/CWS/PVC/HDPE	2WWCAV5PCV1D	2WWCAV5PCV1D	2WWCAV5PCV2D	2WWCAV5PCV2D				2WWCAV4WCAV4

TRIPLEX Cables					
	3 x 1 c 95 Al TR-XLPE/CWS/ HDPE	3 x 1 c 240 Al TR-XLPE/CWS/ HDPE	3 x 1 c 185 Cu TR-XLPE/CWS/ HDPE	3 x 1 c 240 Cu TR-XLPE/CWS/ HDPE	3 x 1 c 400 Cu TR-XLPE/CWS/ HDPE
3c 95 Al XLPE/CWS/PVC/HDPE	2WWC95TCAV5D	2WWC95TCAV5D	2WWC95TCAV5D	2WWC95TCAV5D	2WWCAV4TA40D
3c 240 Al XLPE/CWS/PVC/HDPE	2WWCAV4TCAV5	2WWCAV4TCAV5	2WWCAV4TCAV5	2WWCAV4TCAV5	2WWCAV4TA40D
3c 185 Cu XLPE/CWS/PVC/HDPE	2WWCAV4TCAV5	2WWCAV4TCAV5	2WWCAV4TCAV5	2WWCAV4TCAV5	2WWCAV4TA40D
3c 240 Cu XLPE/CWS/PVC/HDPE	2WWCAV4TCAV5	2WWCAV4TCAV5	2WWCAV4TCAV5	2WWCAV4TCAV5	2WWCAV4TA40D

A	ORIGINAL ISSUE							
B	DATE 01/04/11	APPD R.ENGLISH	CKD P.RELF	DRN P.RELF				

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UNDERGROUND CONSTRUCTION
CABLE JOINTS
11kV JOINTS AND TERMINATIONS

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11kV PARALLEL BRANCH JOINTS									
Conductor Size & Cable Type - Branch Cable	25 Cu PLY	50 Al PLY	70 Cu PLY	95 Cu PLY	120 Al PLY	150 Al PLY	161 Cu PLY	185 Cu PLY	240 Cu PLY
25 Cu PLY	11PBJ20469								
95 Cu PLY				11PBJ20469					
120 Al PLY									
161 Cu PLY									
185 Cu PLY							11PBJ20469	11PBJ20469	
240 Cu PLY									11PBJ18/30PL
300 Cu PLY									
35 Al XLPE		11PBJ17624							
95 Al XLPE 3c & Triplex			11PBJ17624	11PBJ17624	11PBJ17624	11PBJ17624	11PBJ17624	11PBJ17624	11PBJ17626
240 Al XLPE 3c & Triplex							11PBJ17625	11PBJ17625	11PBJ17626
185 Cu XLPE 3c & Triplex									
240 Cu XLPE 3c & Triplex									
400 Al XLPE Triplex							11PBJ20371	11PBJ20371	11PBJ20371

Conductor Size & Cable Type - Branch Cable	258 Al PLY	300 Cu PLY	300 Al PLY	35 Al XLPE	95 Al XLPE 3c & Triplex	240 Al XLPE 3c & Triplex	185 Cu XLPE 3c & Triplex	240 Cu XLPE 3c & Triplex	400 Al XLPE Triplex
25 Cu PLY				11PBJ17624	11PBJ17624				
95 Cu PLY	11XT24/300P	11XT24/300P	11XT24/300P				11PBJ17624	11PBJ20479	11PBJ20371
120 Al PLY	11XT24/300P	11XT24/300P	11XT24/300P		11PBJ17624	11PBJ17625	11PBJ17624	11PBJ20479	11PBJ20371
161 Cu PLY	11XT24/300P	11XT24/300P	11XT24/300P				11PBJ17624	11PBJ20479	11PBJ20371
185 Cu PLY	11XT24/300P	11XT24/300P	11XT24/300P				11PBJ17624	11PBJ20479	11PBJ20371
240 Cu PLY	11PBJ18/30PL	11PBJ18/30PL	11PBJ18/30PL				11PBJ20473	11PBJ20473	11PBJ20371
300 Cu PLY		11PBJ18/30PL	11PBJ18/30PL				11PBJ20473	11PBJ20473	11PBJ20371
35 Al XLPE				11PBJ17627					
95 Al XLPE 3c & Triplex	11PBJ17626	11PBJ17626	11PBJ17626		11PBJ17627	11PBJ17628	11PBJ17627	11PBJ19356	11PBJ20372
240 Al XLPE 3c & Triplex	11PBJ17626	11PBJ17626	11PBJ17626			11PBJ17628	11PBJ17628	11PBJ19356	11PBJ20372
185 Cu XLPE 3c & Triplex	11PBJ17626	11PBJ17626	11PBJ17626				11PBJ17627	11PBJ19356	11PBJ20372
240 Cu XLPE 3c & Triplex	11PBJ17626	11PBJ17626	11PBJ17626					11PBJ19356	11PBJ20372
400 Al XLPE Triplex								11PBJ20372	11PBJ19356

11 kV Parallel BUTT Joints □ 3 Core & 3x1 CoRE TRIPLEX Cables					
Conductor Size & Cable Type	25 – 185 Cu PLY HDPE or SWS	240 – 300 Cu PLY HDPE or SWS	35 – 185 Al or Cu XLPE/CWS/HDPE (3c or Triplex)	240 Al or Cu XLPE/CWS/HDPE (3c or Triplex)	400 Al XLPE/CWS/HDPE (Triplex)
25 – 185 Cu PLY HDPE or SWS	2JPCV1PCV1D	2JPCV1PCV2D	2JPCV1XCAV3D	2JPCV1XCA24D	2JPCV1TA40D
240 – 300 Cu PLY HDPE or SWS		2JPCV2PCV2D	2JPCV2XCAV3D	2JPCV2XCA24D	2JPCV2TA40D
35 – 185 Al or Cu XLPE/CWS/HDPE (3c or Triplex)			2JXCAV3XCAV3	2JXCAV3XCA24	2JXCAV3TA40D
240 Al or Cu XLPE/CWS/HDPE (3c or Triplex)				2JXCA24XCA24	2JXCA24TA40D
400 Al XLPE/CWS/HDPE (Triplex)					2JXTA40TA40D

A	ORIGINAL ISSUE	DATE 01/08/2017	B. THOMAS	B. NORDKAMP	Z. RELF
E	CU'S CORRECTED	APPD	CKD	DRN	

RESOURCE ESTIMATION GUIDE

UNDERGROUND CONSTRUCTION
CABLE JOINTS
11kV JOINTS AND TERMINATIONS

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11kV TERMINATIONS									
Conductor Size	Cable Type	No. of Cores	Safelink Indoor Kit only With and Without CTs	Safelink Indoor Kit without CTs Intergrated PMT RMU	Indoor Kit without CTs Free Standing RMU	Indoor Kit without CTs Hazemeyer PMT Term.	Outdoor Kit only	Outdoor Wood Pole CU Including Pole Hardware	Outdoor Concrete Pole CU Including Pole Hardware
95 Aluminium	TRXLPE/CWS/HDPE 3 x 1 core Triplex	3	11SGTI240T	1CFC9524XLG	1SGTPM9524XG	1HAZ9524ACT	11SGTO240T	1PTTRIPXW	11PTTRIPXC
240 Aluminium	TRXLPE/CWS/HDPE 3 x 1 core Triplex	3	11SGTI240T	1CFC9524XLG	1SGTPM9524XG	1HAZ9524ACT	11SGTO240T	1PTTRIPXW	11PTTRIPXC
400 Aluminium	TRXLPE/CWS/HDPE 3 x 1 core Triplex	3	11SGTI40T	1CFC40XLG	1SGTPM40XG		11SGTO40T	1PTTRIPXW2	11PTTRIPXC2
185 Copper	TRXLPE/CWS/HDPE 3 x 1 core Triplex	3	11SGTI240T	1CFC9524XLG	1SGTPM9524XG	1HAZ9524ACT	11SGTO240T	1PTTRIPXW	11PTTRIPXC
240 Copper	TRXLPE/CWS/HDPE 3 x 1 core Triplex	3	11SGTI240T	1CFC9524XLG	1SGTPM9524XG	1HAZ9524ACT	11SGTO240T	1PTTRIPXW	11PTTRIPXC

Safelink – 11 kV Indoor and Outdoor Termination Types – 3 core cables or 1 core cables					
Conductor Size	Cable Type	Number of Cores	RMU With CTs	RMU Without CTs	Outdoor Wood Pole
240 (Compacted) aluminium	XLPE/HDPE	3	11SGTM240XCT	11CFC240XL	11PTM240XL
95 (Compacted) aluminium	XLPE/HDPE	3	11SGTM095XCT	11CFC095XL	11PTM095XL
35 (Compacted) aluminium	XLPE/HDPE	3	11SGTM035XCT	11CFC035XL	11PTM035XL
300 & 400 copper	PLYSWS & PCAPVC	3	11SGTM400CT		
300 copper	PLYHDPE & PLYSWS	3	11SGTM300CT	11CFC/DFD300	11PTM300
258 & 300 aluminium	PLYPVC & PLYSWS	3	11SGTM300ACT		
240 copper	PLYHDPE & PLYSWS	3	11SGTM240CT	11CFC/DFD240	11PTM240
185 copper	PLYHDPE & PLYSWS	3	11SGTM185CT	11CFC/DFD185	11PTM185
240 copper	XLPE/HDPE	3	11SGTM240XCT	11CFC240XL	11PTM240XL
185 copper	XLPE/HDPE	3	11SGTM185XCT	11CFC185XL	11PTM185XL
161 copper (0.25in)	PLYSWS	3	11SGTM161CT		
120 & 150 aluminium	PLYSWPVC	3	11SGTM120ACT		11PTM150
65, 70 & 95 copper	PLYHDPE & PLYSWS	3	11SGTM095CT	11CFC/DFD095	11PTM095
25 copper	PLYHDPE & PLYSWS	3	11SGTM025CT	11CFC/DFD025	11PTM025
1000 copper	PLYPVC	1			11SGTM1000PO
800 copper	XLPE/HDPE	1	11SGTM800XCT	11SGTM800XL	11SGTM8000/D
630 copper	PLYPVC	1	11SGTM630CT	11SGTM630	11SGTM630POD
630 copper	XLPE/PVC & XLPE/HDPE	1	11SGTM630XCT	11SGTM630XL	11SGTM6300/D
400 copper	PLYPVC	1	11SGTM400CT	11SGTM400	11SGTM4000/D

OTHER 11kV CABLE TERMINATIONS			
CABLE SIZE/TYPE	PMT WITH OIL FILLED RMU	HAZEMEYER RMU	COMPOUND BOX
25mm²CU 3C PLY, SWS & HDPE	11SGPMT25	11HT25	11SGTM25C
95mm²CU 3C PLY, SWS & HDPE	11SGPMT95	11HT95	11SGTM95C
185mm²CU 3C PLYHDPE & SWS	11SGPMT185	11HT185	11SGTM185C
300mm²CU 3C PLYSWS			11SGTM300C
35mm²AL 3C XLPE CABLE	11SGPMT035	11HAZ035	
95mm²AL 3C XLPE CABLE	11SGPMT095	11HAZ095	
240mm²AL 3C XLPE CABLE	11SGPMT240	11HAZ240	
TRIPLEX (3x1C) XPLE CABLES 95mm²AL, 240mm²AL, 185mm²CU, 240mm²CU	1SGTPM9524XG	1HAZ9524ACT	

11kV CABLE TERMINATIONS FOR TYPE "C" BUSHINGS i.e. Areva & ABB Safeplus AFLR Switchgear	
CABLE SIZE/TYPE	Right-Angle Dead Break Elbow 11kV Termination & Bootkit
95mm Al 3x1C TRIPLEX	2DBSTA95D
185mm Cu 3x1C TRIPLEX	2DBSTA24D
240mm Al & Cu 3x1C TRIPLEX	2DBSTA24D
400mm Al 3x1C TRIPLEX	2DBSTA40D

Notes:
1. All other Cable Sizes/Types require the relevant Switchgear Termination kit & must be installed with the Right-Angle Dead Break Elbow Bootkit (CU – 1CCF9524XLG)
2. The only approved cables to be installed in ABB Safeplus AFLR Switchgear are TripleX Cables

A	ORIGINAL ISSUE		
E	DATE 01/08/2017	APPD B. THOMAS	
		CKD B. NORDKAMP	
		DRN Z. RELF	
		UPDATED TABLES	

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11kV JOINTS AND TERMINATIONS

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33kV STRAIGHT & TRANSITION JOINT MATRIX								33kV SCREEN-BREAK JOIMATRIX						
Conductor Size and Cable Type	161 Cu HSL	300 Cu PLY	240 Cu XLPE	185 Cu XLPE	400 Cu XLPE	630 Cu XLPE	800 Cu XLPE	161 Cu HSL	300 Cu PLY	240 Cu XLPE	185 Cu XLPE	400 Cu XLPE	630 Cu XLPE	800 Cu XLPE
161 Cu PLY (.25 in2 HSL)				-	4JXC40PC61T	4JXC63PC61T								
185 Cu PLY				4JXC18PC18T	4JXC40PC18T	4JXC63PC18T								
400 Cu PLY					4JXC40PC40T	4JXC63PC40T								
500 Al XLPE						4JXC63XC51T								
630 Al PLY						4JXC63PC63T								
185 Cu XLPE				4JXC18XC18T										
400 Cu XLPE					4JXC40XC40T	4JXC63XC40T								
630 Cu XLPE		42JXC63PC30T	42JXC63XC24T			4JXC63XC63T							4JSBXC63XC63	
800 Cu XLPE						4JXC63XC80T	4JXC80XC80T						4JSBXC63XC80	4JSBXC80XC80

33kV TERMINATION TYPES MATRIX					
Conductor mm2	Cable Type	Outdoor Termination	Indoor Termination	Insulated Plug-in Connector Type 2	Insulated Separable Tee Connector 630 Amp Bolted Type
800 stranded Cu	XLPE/LY/HDPE	33UGMAT45; 4TXC80T	4EXC80T		
630 stranded Cu	XLPE/LY/HDPE	4TXC63T	33UGMAT38; 4EXC63T		
400 stranded Cu	XLPE/LY/HDPE	33UGMAT44; 4TXC40T	4EXC40T		
185 stranded Cu	XLPE/LY/HDPE		4EXC18T	4IPCXC18T	4ISTXC18T
50 stranded Al	XLPE/CWS/HDPE			4IPCWA18T	4ISTWA50T
95 stranded Cu	XLPE/CWS/HDPE			4IPCWC95T	4ISTWC95T
400 stranded Cu	PLY/HDPE	4TPC40T	4EPC40T		
185 stranded Cu	PLY/HDPE	33UGMAT37; 4TPC18T	4EPC18T		
161 stranded Cu 0.25 in2	PLYPVC HSL				

NOTE
NOT FOR DISTRIBUTION DESIGN USE.
TRANSMISSION USE ONLY.

A	ORIGINAL ISSUE	DATE	15/05/2015	B.THOMAS
C	UPDATED TABLES	DRN	M . MILLER	CKD D.WOOD

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UNDERGROUND CONSTRUCTION
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33kV JOINTS AND TERMINATIONS

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PILOT CABLE JOINTS	
CU	DESCRIPTION
PIJ10	10 PAIR STRAIGHT JOINT
PIJ20	20 PAIR STRAIGHT JOINT

CU	DESCRIPTION
LVEJ25	HEATSHRINK, 16mm² - 25mm² CU PLY & XLPE
LVEJ70	HEATSHRINK, 70mm² - 185mm² CU PLY & XLPE

JOINT PROTECTION	
CU	DESCRIPTION
LVJPR01	LV JOINT PROTECTION - CONC. SLAB + PVC COVER
LVJPR02	LV JOINT PROTECTION - CONC. SLAB + BRICKS
CIVJTPROT	JOINT PROTECTION SLAB
1352-1	JOINT PROTECTION SLAB SUPPORT
1352-2	JOINT PROTECTION SLAB EXTENSION

ENERGEX LABOUR	
CU	DESCRIPTION
UTLAB21	EXCAVATE & BACKFILL JOINT PIT
UTLAB22	REINSTATE JOINT PIT
UTLAB23	HAND TRENCH 600 * 800 SOFT SOIL/M
UTLAB24	HAND TRENCH 600 * 800 HARD SOIL/M
UTLAB14	TRENCH 200 * 750 EXC & BACKFILL/M
UTLAB86	LV PARALLEL JOINT 4C CABLE
UTLAB85	LV STRAIGHT JOINT 4C CABLE
UTLAB86	LV TEE JOINT 4C CABLE
UTLAB70	LV LIVE END JOINT
UTLAB80	TERMINATE LV CABLES
UTLAB68	11kV STRAIGHT JOINT 3C CABLE
UTLAB69	11kV PARALLEL BRANCH JOINT 3C CABLE
UTLAB63	TERMINATE 11kV 3C CABLES
UTLAB64	TERMINATE 11kV 3*1C CABLES
UTLAB106	RECOVER UG JOINT
UTLAB67	JOINT/TERMINATE PILOT CABLE
UTLAB104	RECOVER SG/TR TERMINATION
UTLAB125	CABLE IDENTIFICATION & SPIKING
UTLAB76	BREAKDOWN BITUMEN JOINT
MM200	SLEEVE THROUGH BITUMEN JOINT
UTLAB78	BREAKDOWN BITUMEN TERMINATION - SWITCHGEAR
UTLAB78	BREAKDOWN BITUMEN TERMINATION - TRANSFORMER
ZSLAB902	MEGGER & INJECTION TEST PLY CABLE
UTLAB124	MEGGER TEST XLPE CABLE

ADD "-OT" SUFFIX TO CU FOR OVERTIME

NOTES:

1. REFER UDCM FOR ADDITIONAL INFORMATION.

B	ORIGINAL ISSUE	DATE	13/01/14	APPD	A. SMITH DE PEREZ
E	CORRECT LV PARALLEL JOINT. UPDATE BITUMAN CU'S	CKD	P.JUDGE	DRN	P. RELF

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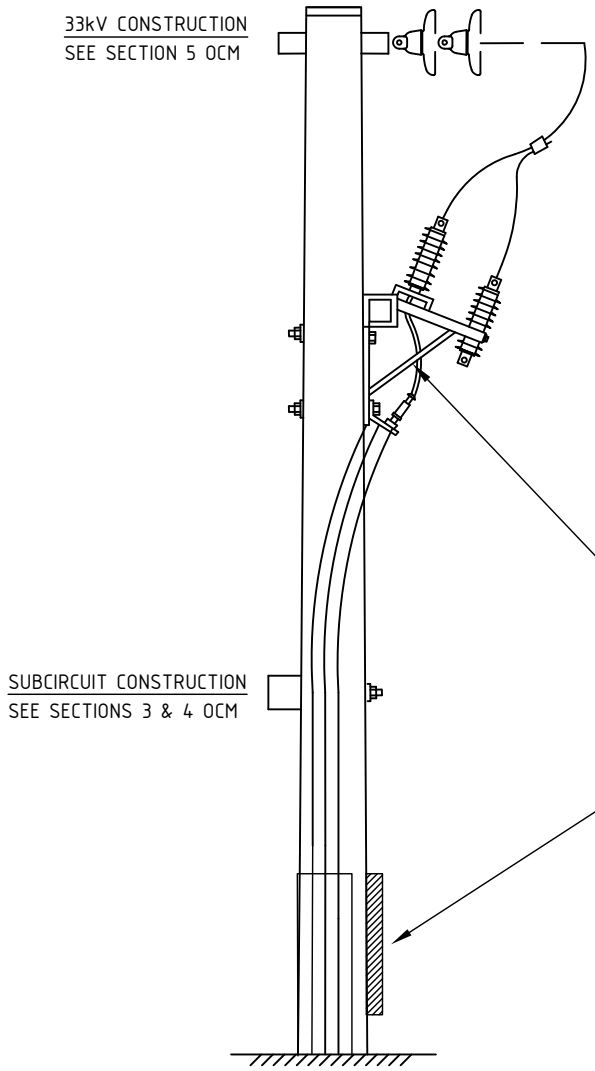

ENERGEX LABOUR	
CU	DESCRIPTION
UTLAB66	TERMINATION 33kV CABLE 3C - INCL. BRIDGING
UTLAB105	RECOVER POLE TERMINATION
OTLAB216	INSTALL MEN-NEW POLE
OTLAB217	INSTALL MEN-EXISTING POLE
OTLAB631	BRIDGING 3 PHASE
UTLAB121	PICK UP & SORT MATERIALS - 2MEN/HR

ADD "-OT" SUFFIX TO CU FOR OVERTIME

CABLE TERMINATION	
33PETM400	400mm^2 CABLE
33PETM630XL	630mm^2 CABLE
33TMS	SUNDRIES - TAPE, SOLDER

HARDWARE, GUARD, STRAPS, EARTH STAKE ETC.
33PETMSW400
33PETMSW630

B	ORIGINAL ISSUE				
D	DATE	28/08/12			
	APPD	R. ENGLISH			
	CKD	J. TUNNEY			
	DRN	P. RELF			
	REMOVE TRAVEL TIME CU's				

RESOURCE ESTIMATION GUIDE

UNDERGROUND CONSTRUCTION
CABLE TERMINATIONS ON POLES
33kV CABLES

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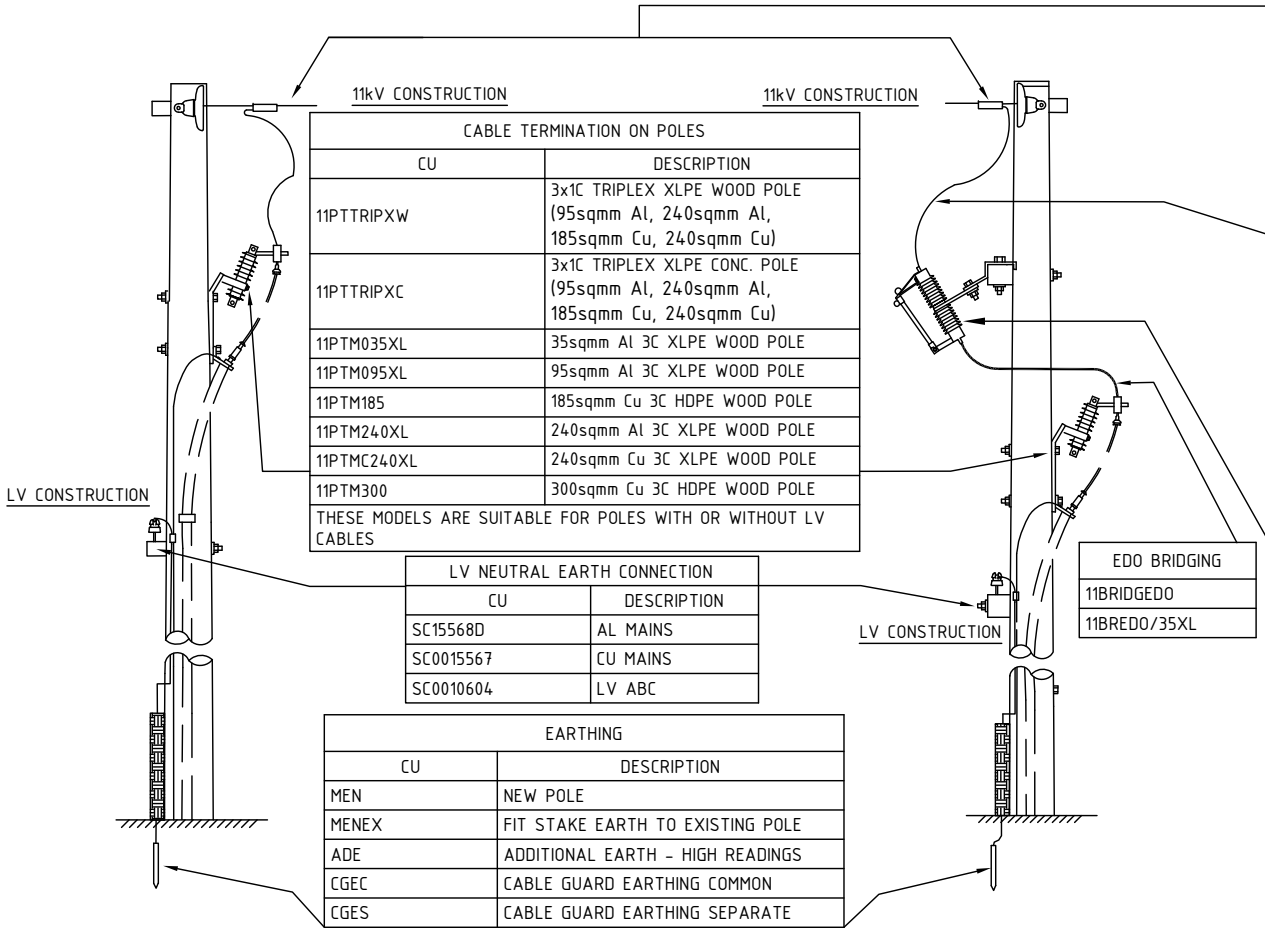

CABLE TERMINATION ON POLES	
CU	DESCRIPTION
11PTTRIPXW	3x1C TRIPLEX XLPE WOOD POLE (95sqmm Al, 240sqmm Al, 185sqmm Cu, 240sqmm Cu)
11PTTRIPXC	3x1C TRIPLEX XLPE CONC. POLE (95sqmm Al, 240sqmm Al, 185sqmm Cu, 240sqmm Cu)
11PTM035XL	35sqmm Al 3C XLPE WOOD POLE
11PTM095XL	95sqmm Al 3C XLPE WOOD POLE
11PTM185	185sqmm Cu 3C HDPE WOOD POLE
11PTM240XL	240sqmm Al 3C XLPE WOOD POLE
11PTMC240XL	240sqmm Cu 3C XLPE WOOD POLE
11PTM300	300sqmm Cu 3C HDPE WOOD POLE
THESE MODELS ARE SUITABLE FOR POLES WITH OR WITHOUT LV CABLES	

LV NEUTRAL EARTH CONNECTION	
CU	DESCRIPTION
SC15568D	AL MAINS
SC0015567	CU MAINS
SC0010604	LV ABC

EARTHING	
CU	DESCRIPTION
MEN	NEW POLE
MENEX	FIT STAKE EARTH TO EXISTING POLE
ADE	ADDITIONAL EARTH - HIGH READINGS
CGEC	CABLE GUARD EARTHING COMMON
CGES	CABLE GUARD EARTHING SEPARATE

EDO BRIDGING
11BRIDGEDO
11BREDO/35XL

BRIDGING TO CONDUCTORS (PER PHASE)	
CU	DESCRIPTION
PAGE7-53-1	LLC TO COPPER MAIN
PAGE7-53-2	LLC TO COPPER STIRRUP
PAGE7-53-3	LLC TO ALUMINIUM MAIN OR STIRRUP
PAGE7-54-1	CONNECTOR TO COPPER MAIN OR STIRRUP
PAGE7-54-2	CONNECTOR TO ALUMINIUM MAIN OR STIRRUP

MAINS CONNECTIONS	
XLPE CABLES	PLY CABLES
11BRMA/XL	11BRIDGE95AL
11BRMO/XL	11BRIDGE95AA
11BRPL/XL	11BRIDGE95CU
11BRAL/240XL	11BRIDG185CU
11BRCU/240XL	11BRIDG185AL
11BRAL/095XL	11BRIDG185AA
11BRPL/095XL	11BRIDG300AL
11BRCU/095XL	11BRIDG300AA
	11BRIDG300CU
11BRIDGE95AL SUITABLE FOR 25 PLY TERMINATION	

EDO CONSTRUCTION	
CU	DESCRIPTION
11EDO3	WOOD ARM WOOD POLE 3PH
11EDOG	3PH GANGED EDO

ENERGEX LABOUR	
CU	DESCRIPTION
UTLAB63	TERMINATE 11kV CABLE 3*1 CORE - INCL. BRIDGING
UTLAB105	RECOVER POLE TERMINATION
OTLAB216	INSTALL MEN-NEW POLE
OTLAB217	INSTALL MEN-EXISTING POLE
OTLAB296	ERECT EDOs
OTLAB631	BRIDGING 3 PHASE
UTLAB121	PICK UP & SORT MATERIALS - 2MEN/HR

11kV UG TERMINATION (NO EDO)

11kV UG TERMINATION (WITH EDO)

NOTES

1. FOR ADDITIONAL CONSTRUCTION DETAILS, REFER OCM SECT.7 PP. 53 & 54.

ADD "-OT" SUFFIX TO CU FOR OVERTIME

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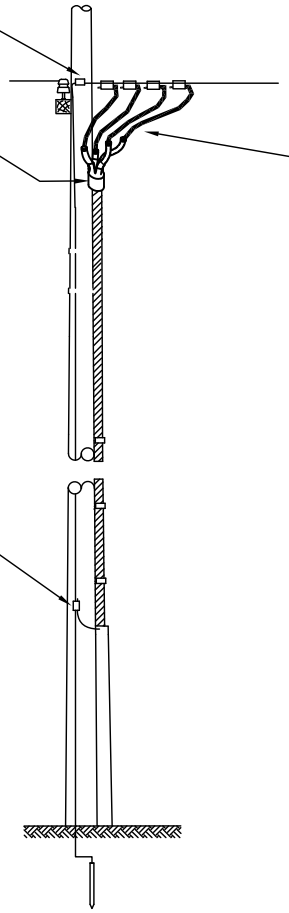
LV CABLE TERMINATIONS	
LV TERMINATION ONLY WITH CABLE GUARD	LV & 11kV TERMINATIONS NO SEPARATE CABLE GUARD
LVT25	LVT25/HV
LVT70	LVT70/HV
LVT120	LVT120/HV
LVT185	LVT185/HV
LVT240	LVT240/HV
LVT4C16	LVT4C16/HV
LVT4C70	LVT4C70/HV
LVT4C120	LVT4C120/HV
LVT4C185	LVT4C185/HV
LVT4C240	LVT4C240/HV
THE CUs ABOVE APPLY TO WOOD POLES. FOR CONCRETE POLE TERMINATIONS, ADD THE SUFFIX "C" TO THE MAIN COMPATIBLE UNIT. e.g. "LVT25C" OR "LVT25C/HV".	

CONNECTOR LV EARTH TO NEUTRAL	
CU	DESCRIPTION
SC15568D	AL MAINS
SC0015567	CU MAINS
SC0010604	LV ABC

MAINS CONNECTIONS BRIDGING (3 PHASES)	
CU	DESCRIPTION
LVBR25/70AOH	BRIDGE 25/70mm PLY/Al OH
LVBR25/70COH	BRIDGE 25/70mm PLY/Cu OH
LVBR25/70ABC	BRIDGE 25/70mm PLY/LVABC
LVBR70X/AOH	BRIDGE 70mm XLPE/Al OH
LVBR185/AOH	BRIDGE 185mm PLY/Al OH
LVBR185/COH	BRIDGE 185mm PLY/Cu OH
LVBR185/ABC	BRIDGE 185mm PLY/LVABC
LVBR120/AOH	BRIDGE 120mm PLY/Al OH
LVBR120/COH	BRIDGE 120mm PLY/Cu OH
LVBR120/ABC	BRIDGE 120mm PLY/LVABC
LVBR16/AOH	BRIDGE 16mm PLY/Al OH
LVBR16/COH	BRIDGE 16mm PLY/Cu OH
LVBR16/ABC	BRIDGE 16mm PLY/LVABC
LVBR240/AOH	BRIDGE 240mm XLPE/Al OH
LVBR240/COH	BRIDGE 240mm XLPE/Cu OH
LVBR240/ABC	BRIDGE 240mm XLPE/LVABC



EARTHING	
CU	DESCRIPTION
MEN	NEW POLE - BUTT EARTH
MENEX	FIT STAKE EARTH TO EXISTING POLE
ADE	ADDITIONAL EARTH - HIGH READINGS
CGEC	CABLE GUARD EARTHING COMMON
CGES	CABLE GUARD EARTHING SEPARATE
SC0008351	70mm^2 CU/PVC EARTH CABLE
SC0015337	CABLE SADDLE TO SUIT 20mm-90mm DIAMETER CABLE

ENERGEX LABOUR	
CU	DESCRIPTION
UTLAB80	TERMINATE LV CABLE - INCL. BRIDGING
UTLAB105	RECOVER POLE TERMINATION
OTLAB216	INSTALL MEN-NEW POLE
OTLAB217	INSTALL MEN-EXISTING POLE
OTLAB631	BRIDGING 3 PHASE
UTLAB121	PICK UP & SORT MATERIALS - 2MEN/HR

ADD "-OT" SUFFIX TO CU FOR OVERTIME

SL UG TERMINATIONS	
DESCRIPTION	CU
2C 4mm CABLE	SLUGT04/2
2C 16mm CABLE	SLUGT16/2
4C 16mm CABLE	SLUGT16/4

ORIGINAL ISSUE	DATE 15/05/2015	APPD B.THOMAS	CKD D.WOOD	DRN M. MILLER	UPDATE TO EARTH TABLE
UE					

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LV CABLES

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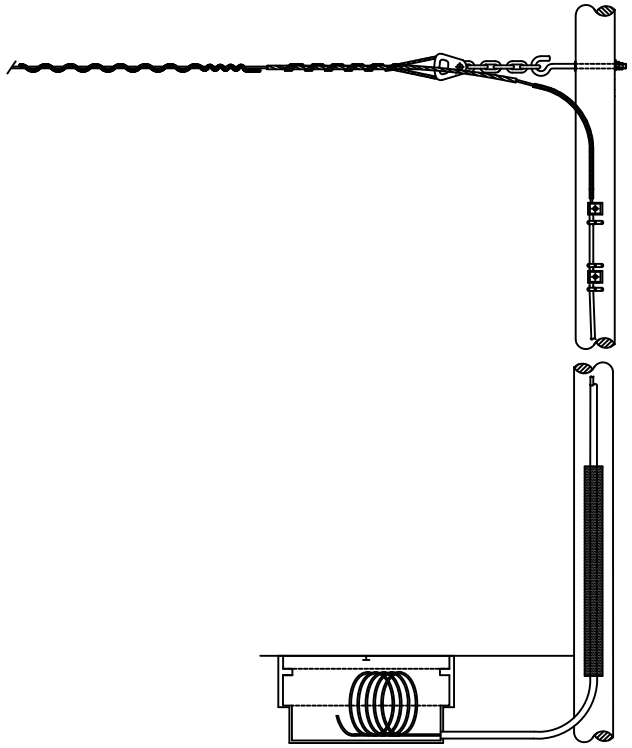
ADSS CABLE PITS	
CU	DESCRIPTION
AD/UGTW	ADSS UG TERM WOOD POLE
AD/UGTC	ADSS UG TERM CONCRETE POLE

ADSS/PILOT CABLE, JOINTS & TERMINATIONS	
CU	DESCRIPTION
PWMAT14	PILOT CABLE - 20 PAIR
PWMAT15	FIBRE OPTIC CABLE (12SM + 4MM)
PWMAT16	FIBRE OPTIC CABLE (24SM + 4MM)
PIJT20	20 PAIR UG JOINT
PWMAT32	20 PAIR UG TERMINATION

ENERGEX LABOUR	
CU	DESCRIPTION
UTLAB40	PULL PILOT CABLES/m
UTLAB67	TERMINATE/JOINT PILOT CABLE

ADD "-OT" SUFFIX TO CU FOR OVERTIME



WOOD POLE DETAIL

A	ORIGINAL ISSUE	22/02/2018	SEAN MCGUINNESS	B. NORDKAMP	Z. RELF
D	ADSS CABLE PIT REVIEW				

RESOURCE ESTIMATION GUIDE

UNDERGROUND CONSTRUCTION
CABLE TERMINATIONS ON POLES
COMMUNICATION CABLES

APP'D	R.ENGLISH
DATE	15.05.09
RECD	J.TUNNEY
CKD	K.GOSDEN
DWN	F.AMANPOOR

AUTOCAD
9562-A4 D

SECT	SUB-SECT.
3	6

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FILE RES-3-6-4D.DWG

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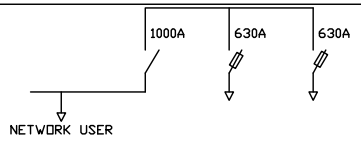
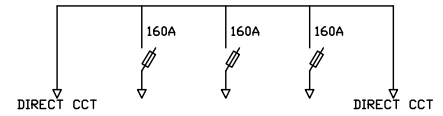
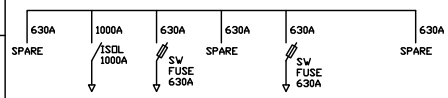
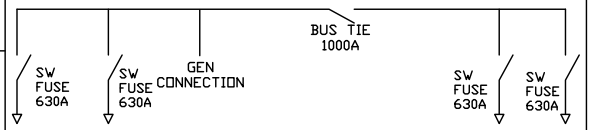
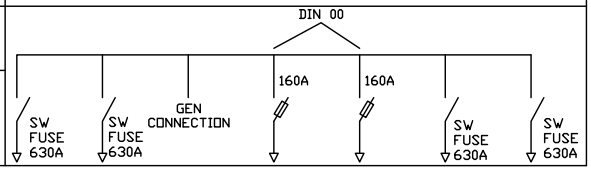
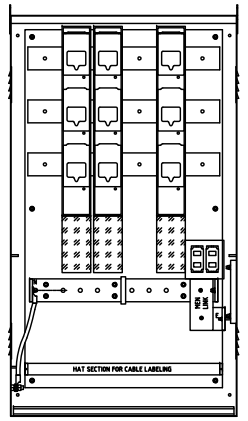
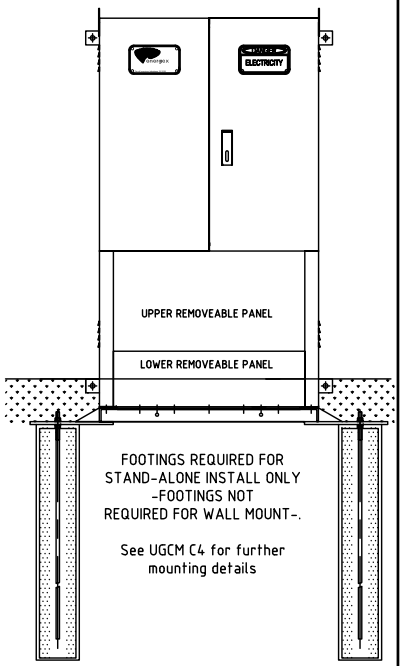
LV DISTRIBUTION CABINETS			
CU	No OF MODULES	DESCRIPTION	LV SINGLE LINE DIAGRAM
SC0021876	4	2 x 400A ISOLATORS, 1 x 630A FUSE SWITCH (FOR LARGE SINGLE CUSTOMERS UP TO 630A/PHASE. PROVISION FOR 2 NETWORK CABLES)	
Mountings :	Wall mounted : SC0022754 Ground mounted : SC0023161 + SC0022031		
SC0021877	2.5	3 x 160A FUSE SWITCH, PROVISION FOR 2 CABLE TERMINATIONS DIRECT TO BUSBAR. (SPECIAL APPLICATION FOR MAXIMUM OF 3 x 160A/PHASE SUPPLY. PROVISION FOR 2 NETWORK CABLES)	
Mountings :	Wall mounted : SC0022754 Ground mounted : SC0023161 + SC0022031		
SC0021878	6	1 x 1000A ISOLATOR, 2 x 630A FUSE SWITCH, 3 SPARE MODULES. (PROVISION HAS BEEN MADE FOR AN ADDITIONAL ISOLATOR & 2 SWITCH FUSES.	
Mountings :	Wall mounted : SC0022755 Ground mounted : SC0022030 + SC0022031		
SC0021879	6	4 x 630A ISOLATORS, 1 x 1000A ISOLATOR – BUS TIE (4 CIRCUIT BOARD WITH A BUS TIE BETWEEN 2 CIRCUITS. THIS BOARD HAS PROVISION FOR GENERATOR CONNECTION.	
Mountings :	Wall mounted : SC0022755 Ground mounted : SC0022030+ SC0022031		
SC0021880	6	4 x 630A ISOLATORS, 2 x 160A FUSE SWITCH, (4 CIRCUIT BOARD & 2 x 160A/THREE PHASE SUPPLIES WITH PROVISION FOR GENERATOR CONNECTION	
Mountings :	Wall mounted : SC0022755 Ground mounted : SC0022030 + SC0022031		

EXAMPLE SHOWN IS SC0021878



FRONT (DOOR OPEN)



FOOTINGS REQUIRED FOR STAND-ALONE INSTALL ONLY -FOOTINGS NOT REQUIRED FOR WALL MOUNT-.

See UGCM C4 for further mounting details

LABOUR			
DESCRIPTION	RESOURCE TYPE	CU	HOURS
Prepare foundation	PW/Civil Labour	UTLAB199-1	8 h
Install cabinet	UG Labour	UTLAB199	8 h
Terminate LV cable	UG Labour	UTLAB80	4 h

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RESOURCE ESTIMATION GUIDE

UNDERGROUND CONSTRUCTION

LV DISTRIBUTION SUPPLY CABINETS

APP'D	B. THOMAS	AUTOCAD
DATE	15/05/2015	9562-A4 A
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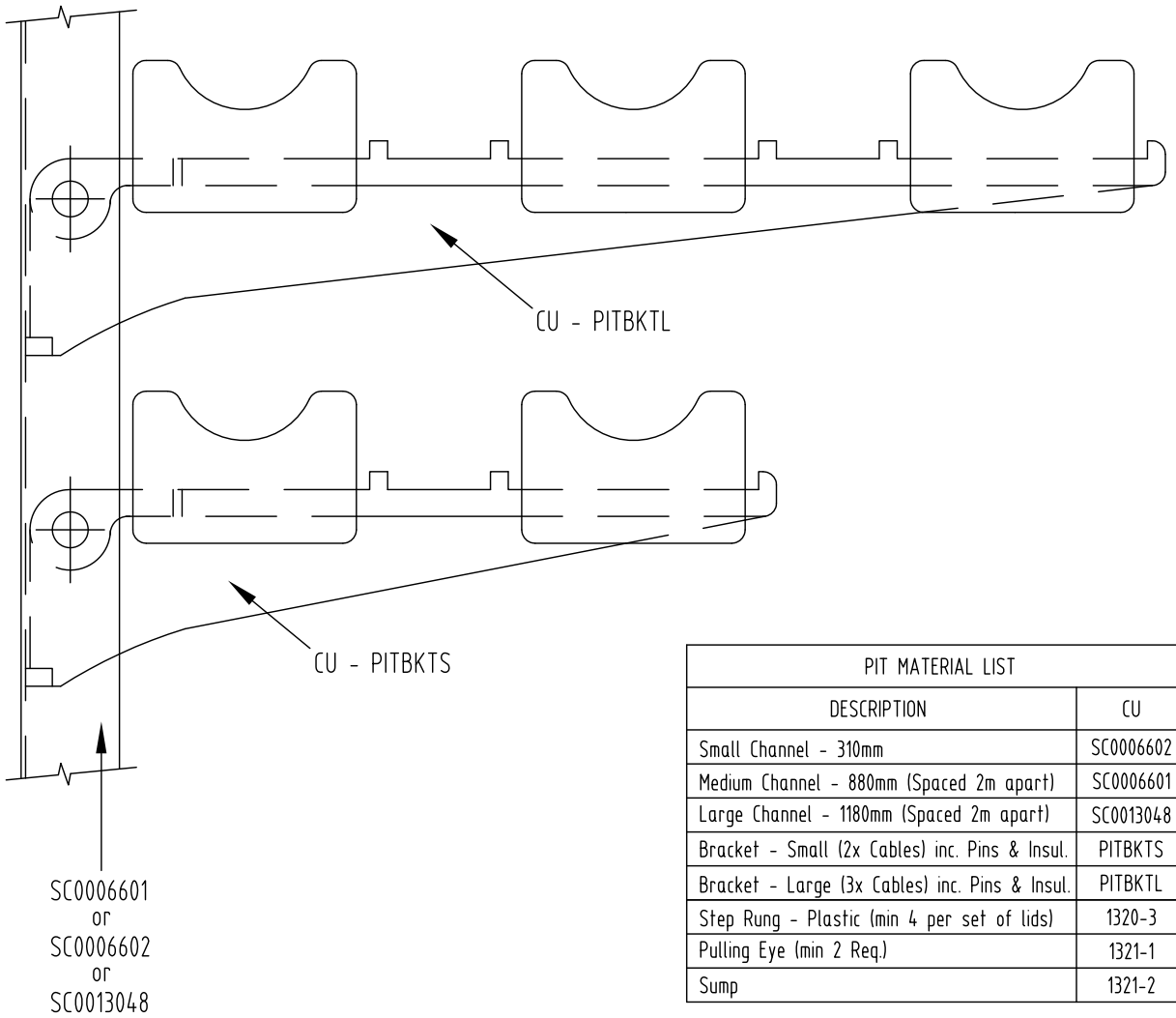

Pit Type	Configuration	Description	WORKSPLANS/CU
1		Straight Pit with two access covers	PIT TYPE 1
2		Straight Pit with three access covers	PIT TYPE 2
3		Straight Pit with central bell mouth	PIT TYPE 3
4		Straight Pit with offset bell mouth	PIT TYPE 4
5		Disconnection Pit	PIT TYPE 5
6		Straight Shallow Pit with continuous trench cover and bell mouth.	PIT TYPE 6

SEE UNDERGROUND CONSTRUCTION MANUAL SECTION C5 FOR MORE DETAILED NOTES.
- ORDER LIDS REQUIRED FROM BELOW PIT LID LIST.
- Pit Type 6 has continuous lids and will be ordered and installed by the Pit Builder

PIT MATERIAL LIST	
DESCRIPTION	CU
Small Channel - 310mm	SC0006602
Medium Channel - 880mm (Spaced 2m apart)	SC0006601
Large Channel - 1180mm (Spaced 2m apart)	SC0013048
Bracket - Small (2x Cables) inc. Pins & Insul.	PITBKTS
Bracket - Large (3x Cables) inc. Pins & Insul.	PITBKTL
Step Rung - Plastic (min 4 per set of lids)	1320-3
Pulling Eye (min 2 Req.)	1321-1
Sump	1321-2

PIT LIDS LIST	
DESCRIPTION	CU
Footpath Lids	
Pit Double Lid Footpath - LITE LIFT	1323-6
Roadway Lids	
Pit Double Lid Roadway - LITE LIFT	1323-6D

DUCT SEAL MATERIAL LIST	
DESCRIPTION	CU
Rayflate Cable Duct Seals 100mm Conduits	CDS100
Rayflate Cable Duct Seals 125mm Conduits	CDS125
Plumber Plugs for empty 100mm Conduits	SC0022870
Plumber Plugs for empty 125mm Conduits	SC0022871
Inflation Hand Tool for Duct Seals	SC0017555

Install Seals in Lead-In Pit & Substation Rooms
Plug any unused conduits with appropriate sized Plumber Plugs

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RESOURCE ESTIMATION GUIDE

UNDERGROUND CONSTRUCTION
PIT TYPES, LIDS & MATERIALS
PITS

APP'D	B. THOMAS	AUTOCAD
DATE	11/11/2015	9562-A4 A
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DWN	T. FARRELL	FILE

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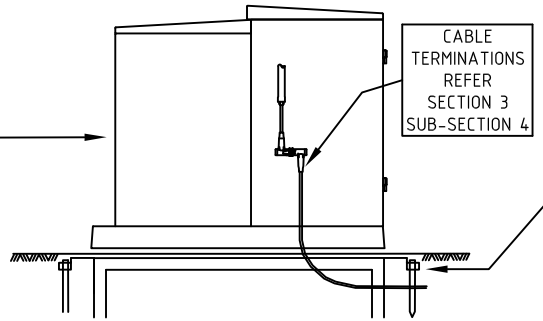
SECTION 4 GROUND MOUNTED PLANT AND SUBSTATIONS

RATING (kV.A)	SQUARE TYPE PADMOUNT TRANSFORMERS (AREVA)	
	DESCRIPTION	CU
315	11kV/415V - 11kV SIEMENS 8DJH RMU (RRT) & JEAN MULLER LV BOARD (1000amp Transformer Isolator & 4x Single Fuse Switches-SEE NOTES)	S25117
500	11kV/415V - 11kV SIEMENS 8DJH RMU (RRT) & JEAN MULLER LV BOARD (1000amp Transformer Isolator & 4x Single Fuse Switches-SEE NOTES)	S25118
750	11kV/415V - 11kV SIEMENS 8DJH RMU (RRT) & JEAN MULLER LV BOARD (2000amp Transformer Isolator & 4x Single Fuse Switches-SEE NOTES)	S25119
1000	11kV/415V - 11kV SIEMENS 8DJH RMU (RRT) & JEAN MULLER LV BOARD (2000amp Transformer Isolator ONLY & Order Fuse Switches as Req.	S25120

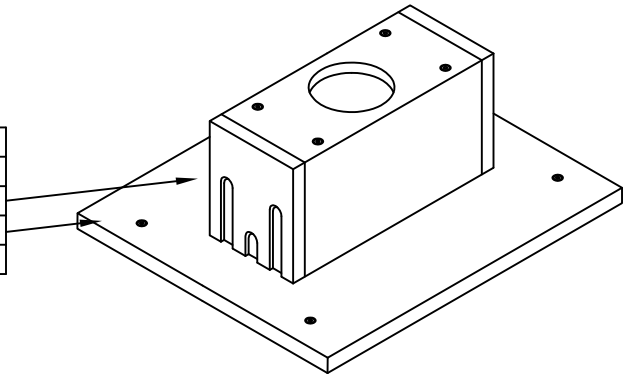
RATING (kV.A)	RECTANGLE TYPE PADMOUNT TRANSFORMERS (WILSON - ABB)	
	DESCRIPTION	CU
315	11KV/415V - 11KV ABB SAFELINK2 RMU (CFC) & JEAN MULLER LV BOARD (1000amp Transformer Isolator & 4x Single Fuse Switches-SEE NOTES)	S21654
500	11kV/415V - 11kV ABB SAFELINK2 RMU (CFC) & JEAN MULLER LV BOARD (1000amp Transformer Isolator & 4x Single Fuse Switches-SEE NOTES)	S21655
750	11kV/415V - 11kV ABB SAFELINK2 RMU (CFC) & JEAN MULLER LV BOARD (2000amp Transformer Isolator & 4x Single Fuse Switches-SEE NOTES)	S21656
1000	11kV/415V - 11kV ABB SAFELINK2 RMU (CFC) & JEAN MULLER LV BOARD (2000amp Transformer Isolator ONLY & Order Fuse Switches as Req.)	S21658



PADMOUNTED TRANSFORMER EARTHING	
DESCRIPTION	CU
RECTANGULAR PMT EARTH GRID(12 RODS)	DSPMTEGS
RECTANGULAR PMT EARTH GRID(6 RODS)	DSPMTEG
RECTANGULAR PMT EARTH GRID FOR ROCK (12 RODS)	DSPMTEGR
ADDITIONAL EARTHING (1 ROD, COUPLING & DRIVER)	DSPMTEGSR
SQUARE PMT COMMON EARTHING FOR ROCK	DSSQPMEG
SQUARE PMT COMMON EARTH	DSSQPMCEG
SQUARE PMT SEPARATE EARTHING	DSPMSEGS
SQUARE PMT ADDITIONAL SEPARATE EARTHING (2 RODS)	DSPMSE

	11kV FUSE SET SELECTION (3 FUSES)	
TFMR RATING (kVA)	AIR/EPOXY/SF6 INSULATED SWITCHGEAR eg. RM6, SM6, SAFELINK SAFEPLUS AFLR, SAFERING	OIL INSULATED SWITCHGEAR eg. LUCY, L & C GEC, ABB SDAF
100	DSHVF1SLK	DSHVF1
315	DSHVF3SLK	DSHVF3
500	DSHVF5SLK	DSHVF5
750 (LOW Z)	DSHVF7SLK	DSHVF7
750 (HIGH Z)	DSHVF7AH	DSHVF7H
1000 (LOW Z)	DSHVF10SLK	DSHVF10
1000 (HIGH Z)	DSHVF10AH	DSHVF10H
1500 (LOW Z)	DSHVF15A	DSHVF15
1500 (HIGH Z)	N/A	DSHVF15H

FOUNDATION	
DESCRIPTION	CU
UNICULVERT	SC0019959
BASE SLAB	SC0019960
PROTECTIVE BOLLARD	1350-1



CABLE FAULT INDICATORS	
CU	DESCRIPTION
UGMAT42	CABLE FAULT INDICATOR OPTO-E 3.0 (INDOOR)
SC0021144	CABLE FAULT INDICATOR OPTO-E 3.0 (OUTDOOR HOUSING)

11kV INSULATING BOOT KITS	
CU	DESCRIPTION
SC0021511	INSULATING BOOT KIT FOR ABB SAFELINK RMU, BOTTOM ENTRY
1CCF9524XLG	INSULATING BOOT KIT FOR AREVA FBX RMU, BOTTOM ENTRY

NOTES

1. LV BOARDS SUPPLIED ARE GENERALLY SUPPLIED WITH 1 x TRANSFORMER ISOLATOR, 4 * SWITCH FUSES & 1 x GENERATOR CONNECTION, UNLESS A SPECIAL REQUEST FROM DESIGN IS MADE.
1000 kVA PMTs ARE EQUIPPED WITH A 2000A ISOLATOR ONLY, NO FUSE SWITCHES.
2. FOR ADDITIONAL CONSTRUCTION INFORMATION REFER UDCM
3. ALL NEW SQ. & REC. PADMOUNTS COME WITH CABLE FAULT INDICATORS

B	ORIGINAL ISSUE	22/02/2018	SEAN MCGUINNESS	B. NORDKAMP	Z. RELF	UPDATED SQ PMT CU'S
H	DATE		APPD	CKD	DRN	

RESOURCE ESTIMATION GUIDE

GROUND-MOUNTED PLANT & SUBS.

PADMOUNT TRANSFORMERS

SQ. & REC. PADMOUNT TRANSFORMERS
PADMOUNT FOUNDATIONS & EARTHING

APP'D	R.ENGLISH	AUTOCAD	
DATE	15.05.09	9562-A4	H
RECD	J.TUNNEY	SECTION 4	SUB-SECT. 1
CKD	K.GOSDEN	SHT 1	OF 2
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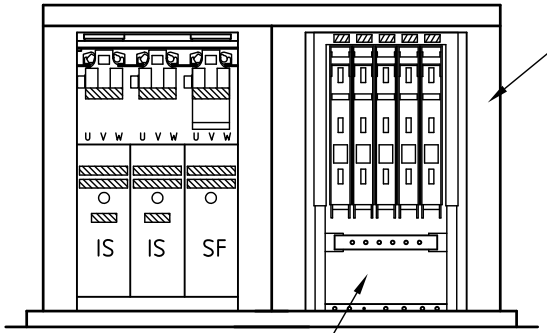
MISCELLANEOUS LV SWITCHBOARD ITEMS	
DESCRIPTION	CU
ABB	
ABB BUSBAR LINK	SC0018930
ABB SPLICE - FOR PARALLELING 2x240 mm² LV CABLES	SC0017404
WEBER	
WEBER HOOK BOLT SET- 750 & 100kVA PMT	SC0020120
WEBER PARALLELING KIT 2 x 400A	SC0020020
WEBER 400A SWITCH	SC0020022
WEBER 630A SWITCH	SC0020023
WEBER 2 x 630A SWITCHES INCL. PARALLELING KIT	SC0020024
1000A DIN3 BASE	SC0020023
EXTENSION KIT (ABB to WEBER, JEAN MULLER)	SC0020021
FOR 2 x 300mm² CONNECTIONS	SC0020240
EXTENSION KIT TO REPLACE STROMBERG	SC0018282



LV FUSESET (FOR LV BOARDS-3 FUSES)	
DESCRIPTION	CU
125A LV FUSE LINK FOR LV BOARD	DSLVF12
160A LV FUSE LINK FOR LV BOARD	DSLVF16
250A LV FUSE LINK FOR LV BOARD	DSLVF25
315A LV FUSE LINK FOR LV BOARD	DSLVF31
400A LV FUSE LINK FOR LV BOARD	DSLVF40
630A LV FUSE LINK FOR LV BOARD	DSLVF63
400A LV ABB FUSE SWITCH DISCONNECTOR	DSLVSF4
630A LV ABB FUSE SWITCH DISCONNECTOR	DSLVSF6

JEAN MULLER LV BOARD SWITCHES	
DESCRIPTION	CU
ISOLATOR SWITCH - 1000 AMP (REAR CONNECTION)	SC0022511
ISOLATOR SWITCH - 2000 AMP (GANGED, REAR CONNECTION)	SC0022542
TERMINAL COVER - SINGLE FUSE SWITCH OR ISOLATOR	SC0022510
SOLID LINKS (1250 AMPS) - ISOLATOR OR FUSE SWITCH	SC0022543
SINGLE FUSE SWITCH - 160 AMP inc. TERMINAL COVER	SC0022509
SINGLE FUSE SWITCH - 630 AMP inc. TERMINAL COVER & (2x CABLES) CONNECTION KIT	SC0022545
DOUBLE FUSE SWITCH - 1260 AMP inc. 2x 630 AMP FUSE SWITCHES JOINED TOGETHER WITH (4x CABLES) CONNECTION KIT & TERMINAL COVER **PARALLEL KIT NOT REQ.**	SC0022546
PARALLEL KIT FOR 3 CABLES PER PHASE inc. 3 CONNECTION TAGS, TERMINAL COVERS, HANDLES & BOLT PACK (CONNECT 2x SINGLE 630AMP OR 1000AMP SWITCHES TOGETHER)	SC0022514
PARALLEL KIT FOR 4 CABLES PER PHASE inc. 3 CONNECTION TAGS, TERMINAL COVERS, HANDLES & BOLT PACK (CONNECT 2x SINGLE 630AMP OR 1000AMP SWITCHES TOGETHER)	SC0022508
EXTENSION PALM KIT FOR SINGLE FUSE SWITCH OR ISOLATOR inc. 3 CONNECTION PALMS, TERMINAL COVER & BOLT PACK (CONNECTING 2x CABLES TO SINGLE FUSE SWITCH)	SC0022544

LABOUR	
CU	DESCRIPTION
UTLAB99	INSTALL CT CABLE TYPE INDICATORS
UTLAB100	INSTALL PMT AND EARTHS
UTLAB25	CONSTRUCT PMT FOUNDATION
UTLAB103	RECOVER PMT
UTLAB121	PICK UP + SORT MATERIALS 2 MEN/HR
UTLAB123	CLEAN UP SITE + RETURN MATERIAL/MHR
UTLAB73	INSTALL PROTECTIVE BOLLARDS

A	ORIGINAL ISSUE	DATE 18/07/2015	APPD B. THOMAS	CKD D. WOOD	DRN T. FARRELL
	ADDED JEAN MULLER CU'S				
	ADDED LV SWITCHBOARDS				
	ADDED LV FUSESETS				

RESOURCE ESTIMATION GUIDE

GROUND-MOUNTED PLANT & SUBS.
PADMOUNT TRANSFORMERS
PADMOUNT LV BOARDS & FUSES

APP'D	B.THOMAS
DATE	18.07.15
RECD	K. MCKEE
CKD	D.WOOD
DWN	T.FARRELL

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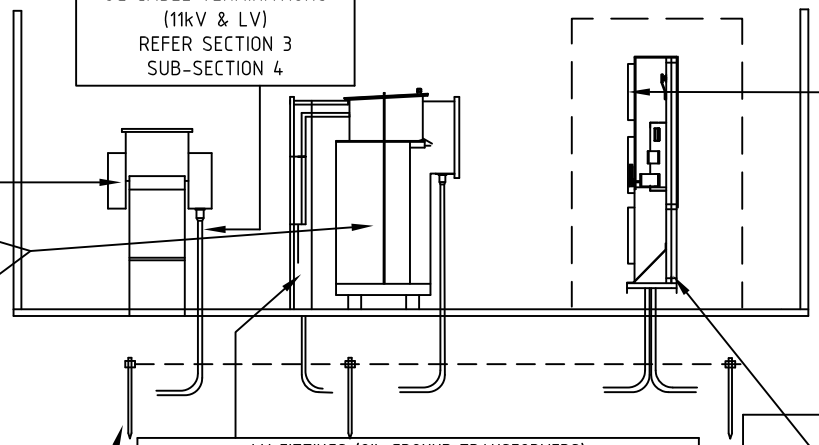
RMU/HV SWITCHGEAR
REFER SECTION 4
SUB-SECTION 3

UG CABLE TERMINATIONS
(11kV & LV)
REFER SECTION 3
SUB-SECTION 4



RATING (kVA)	OIL FILLED GROUND TRANSFORMERS
	CU
750	S21665
1000	S21666
1500	SEE NOTE 5
1500 HIGHZ	SEE NOTE 5

RATING (kVA)	DRY TYPE GROUND TRANSFORMERS (TESAR)	
	TOP AND BOTTOM ENTRY	TRFR. ACCESSORIES CU
	CU	
315	S21668	DSGTTCR3
500	S21670	DSGTTCR5
750	S21672	DSGTTCR7
1000	S21674	DSGTTCR10
1500	S21676	DSGTTCR15

GROUND TRANSFORMER EARTHING	
DESCRIPTION	CU
EARTH GRID, 4 POCKET, SOIL	DSGT4EGS
EARTH GRID, 6 POCKET, SOIL	DSGT6EGS
EARTH GRID, 8 POCKET, SOIL	DSGT8EGS
EARTH GRID, 4 POCKET, ROCK	DSGT4EGR
EARTH GRID, 6 POCKET, ROCK	DSGT6EGR
EARTH GRID, 8 POCKET, ROCK	DSGT8EGR
ADDITIONAL EARTHING, 2 POCKETS & CABLE	DSGT2EGSA
ADDITIONAL EARTH ROD & COUPLING	DSEGSR
DIRECT-BURIED GRID UNDER CONC. SLAB - ORDER WITH EARTH GRID MODELS ABOVE	DSBUREGK
LV MEN CABLE KIT FOR 11kV/415V TRFR.	DSTFRMEN
MEN & SEPARATE EARTH KIT FOR 11kV/415V TRFR.	DSTFRSEN
RMU EARTH TAILS & LUGS	DSRMEGT
BENTONITE 50/50 MIX WITH GYPSUM, 20kg BAG	SC0017322
19/2.14mm BARE Cu EARTH CABLE /m (ORDER FOR CHASE)	SC0007053
70mm^2 INSULATED EARTH CABLE /m (ORDER FOR EARTH CABLE DROPPERS TO REMOTE EARTH GRIDS)	SC0008351
120mm^2 INSULATED EARTH CABLE /m (ORDER FOR EARTH CABLE DROPPERS TO REMOTE EARTH GRIDS)	SC0008939
70-120mm^2 CABLE TO EARTH ROD CRIMP CONNECTOR	SC0012952
70-120mm^2 CABLE TO CABLE EARTH CRIMP CONNECTOR	SC0012953

LV FITTINGS (OIL GROUND TRANSFORMERS)			
DESCRIPTION			CU
315kVA FLEX LEAD KIT			DSGTFB3
500kVA FLEX LEAD KIT			DSGTFB5
750kVA FLEX LEAD KIT			DSGTFB7
1000kVA FLEX LEAD KIT			DSGTFB10
1500kVA FLEX LEAD KIT			DSGTFB15
LV SURGE ARRESTER KIT FOR GT			DSGTLVSD
CABLE SUPPORT STAND	UP TO 750kVA TRFR	BOTTOM ENTRY	DSLVFRK1
		TOP ENTRY	DSLVFRK2
	>750kVA TRFR	BOTTOM ENTRY	DSLVFRK3
		TOP ENTRY	DSLVFRK4

NOTES

1. REFER TO THE C&I SUBSTATIONS MANUAL FOR ADDITIONAL DETAILS OF CONSTRUCTION.
2. APPEND "B" TO CU TO INCLUDE CT BRACKET, E.G. "DSGTCT3B".
3. INDOOR ROOMS & PADMOUNTS WITH 750kVA TRANSFORMERS AND BELOW REQUIRE 70mm^2 INSULATED DROPPERS TO REMOTE EARTH GRID
4. INDOOR ROOMS & PADMOUNTS WITH 1000kVA TRANSFORMERS AND ABOVE REQUIRE 120mm^2 INSULATED DROPPERS TO REMOTE EARTH GRID
5. 1500kVA TRANSFORMERS ARE FOR SPECIAL USE ONLY. PLEASE CONTACT ENGINEERING STANDARDS FOR APPROVAL.

LV FUSE SET (3 PHASE)	
DESCRIPTION	CU
125A LV FUSE LINK FOR ABB LV BOARD	DSLVF12
160A LV FUSE LINK FOR ABB LV BOARD	DSLVF16
250A LV FUSE LINK FOR ABB LV BOARD	DSLVF25
315A LV FUSE LINK FOR ABB LV BOARD	DSLVF31
400A LV FUSE LINK FOR ABB LV BOARD	DSLVF40
630A LV FUSE LINK FOR ABB LV BOARD	DSLVF63
400A LV FUSE SWITCH DISCONNECTOR ABB	DSLVSF4
630A LV FUSE SWITCH DISCONNECTOR ABB	DSLVSF6
400A LV FUSE SWITCH DISCONNECTOR WEBER	DSLVSF4W
630A LV FUSE SWITCH DISCONNECTOR WEBER	DSLVSF6W
800A LV FUSE SWITCH DISCONNECTOR WEBER	DSLVSF8W
1200A LV FUSE SWITCH DISCONNECTOR WEBER	DSLVSF12W

LV SWITCHBOARDS	
DESCRIPTION	CU
INDOOR ABB 630A ISOL. + 3x 400A SWITCH FUSE	SC0016528
OUTDOOR ABB 630A ISOL. + 3x 400A SWITCH FUSE	SC0016791
INDOOR ABB 1250A ISOL. + 3x 400A SWITCH FUSE	SC0016529
WEBER LV SWITCHBOARD 1600A TRFR. ISOL. + 4x 630A SWITCH FUSES, (315-750kVA) EGX TOP/CUST BOTTOM ENTRY, WALL MTG. OR FREESTANDING (SC.22664)	DS200-1
WEBER LV SWITCHBOARD 3150A TRFR. ISOL. + 3150A CONS. ISOL. + 4x 630A SWITCH FUSES, (1000-1500kVA) BOTTOM ENTRY WALL MTG. OR FREESTANDING (SC.22669)	DS200-2
WEBER LV SWITCHBOARD 3150A TRFR. ISOL. + 3150A CONS. ISOL. + 4x 630A SWITCH FUSES, (1000-1500kVA) TOP ENTRY WALL MTG. OR FREESTANDING (SC.22670)	DS200-3
WEBER LV ISOLATOR 3150A, (750-1500kVA) TOP ENTRY WALL MTG. OR FREESTANDING (SC.22665)	DS200-4
WEBER LV ISOLATOR 3150A, (750-1500kVA) BOTTOM ENTRY WALL MTG. OR FREESTANDING (SC.23362)	DS200-5
WEBER LV ISOLATOR 3150A, (750-1500kVA) EGX BOTTOM/CUST TOP ENTRY. WALL MTG. OR FREESTANDING (SC.22666)	DS200-6
WEBER LV ISOLATOR 3150A, (750-1500kVA) EGX TOP/CUST BOTTOM ENTRY. WALL MTG. OR FREESTANDING (SC.22668)	DS200-7
WEBER LV ISOLATOR 3150A, + 4x 630A SWITCH FUSES (1000-1500kVA) EGX TOP ENTRY. SPECIAL ORDER ONLY WALL MTG. OR FREESTANDING (SC.23867)	DS200-11

LV SWITCHBOARD SUNDRIES	
DESCRIPTION	CU
BUSBAR LINK	SC0018930
ABB SPLICE - FOR PARALLELING 2x240 mm^2 LV CABLES	SC0017404
WEBER PARALLELING KIT	SC0020024

A	ORIGINAL ISSUE	22/02/2018	SEAN MCGUINNESS
G	UPDATED CU'S & NOTES	Z. RELF	B. NORDKAMP

RESOURCE ESTIMATION GUIDE

GROUND-MOUNTED PLANT & SUBS.

GROUND TRANSFORMERS & LV BOARDS

DRY & OIL TYPE GROUND TRANSFORMERS
LV SWITCHBOARDS & EARTHING

APP'D	R.ENGLISH	AUTOCAD	
DATE	15.05.09	9562-A4	G
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ENERGEX LABOUR	
CU	DESCRIPTION
UTLAB110	INSTALL GT AND EARTHS
UTLAB103	RECOVER GT
UTLAB130	INSTALL SEPARATE LV BOARD
UTLAB131	INSTALL LV INDOOR SWBD
UTLAB132	INSTALL LV CABLE STAND
UTLAB96	PULL CABLE/PER METRE
UTLAB30	INSTALL 11kV CABLES
UTLAB73	INSTALL PROTECTIVE BOLLARDS
UGMP33	BACKFILL PMT SITE
CONTRACT LABOUR	
UGSC112	CONTRACT QUOTE $ AMOUNT

ADD "-OT" SUFFIX TO CU FOR OVERTIME

SUNDRIES	
DESCRIPTION	CU
SIGNS FOR MANSONRY GT ENCLOSURE	DSGTMSIGN
SIGNS FOR METAL.CLAD GT ENCLOSURE	DSGTSSIGN
CABLE PULLING EYES	SC0014386
FLOOR ANCHORS	SC0010852
DUCT SEALS - 100mm NB	CDS100
DUCT SEALS - 125mm NB	CDS125
FOAM SEALING COMPOUND (PER CAN)	SC0022357
SILICONE RUBBER SEALING COMPOUND	SC0011480
COMPRESSED GAS CYLINDER	SC0017558
INFLATION HAND TOOL - RAYFLATE	SC0017555
100mm EMPTY CONDUIT PLUGS	SC0022870
125mm EMPTY CONDUIT PLUGS	SC0022871
CABLE SUPPORTS - UNIVERSAL CLAMP	SC0015337
- M10*20 SS BOLT	16604
- SS WASHER	1052
- M10 UNISTRUT NUT & SPRING	8532

BATTERY & CHARGER	
BATTERY BANK 48V	ZS70-4
CHARGER 48V	ZS70-13

11kV METERING UNITS	
400A UNIT	ZS50-30B
1600A UNIT DOUBLE CABLE BOX	ZS50-30A
100A UNIT	ZS50-30D

33kV METERING UNITS	
80A UNIT	ZS50-30C

A	ORIGINAL ISSUE				
D	DATE 01/08/2017	APPD B. THOMAS	CKD B. NORDKAMP	DRN Z. RELF	UPDATED CU'S 33kV METER UNIT ADDED

RESOURCE ESTIMATION GUIDE

GROUND-MOUNTED PLANT & SUBS.

GROUND TRANSFORMERS & LV BOARDS

GROUND TRANSFORMER SITE SUNDRIES
11kV METERING UNITS

APP'D	R.ENGLISH
DATE	15.05.09
RECD	J.TUNNEY
CKD	K.GOSDEN
DWN	C.RADU

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9562-A4 D
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SHT 2 OF 2
FILE RES-4-2-2D.DWG

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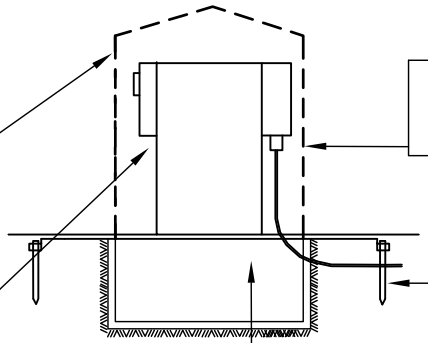
11kV FUSE SET SELECTION (3 FUSES)		
TFMR RATING (kVA)	AIR/EPOXY/SF6 INSULATED SWITCHGEAR eg. RM6, SM6, SAFELINK SAFEPLUS AFLR, SAFERING	OIL INSULATED SWITCHGEAR eg. LUCY, L & C GEC, ABB SDAF
100	DSHVF1SLK	DSHVF1
315	DSHVF3SLK	DSHVF3
500	DSHVF5SLK	DSHVF5
750 (LOW Z)	DSHVF7SLK	DSHVF7
750 (HIGH Z)	DSHVF7AH	DSHVF7H
1000 (LOW Z)	DSHVF10SLK	DSHVF10
1000 (HIGH Z)	DSHVF10AH	DSHVF10H
1500 (LOW Z)	DSHVF15A	DSHVF15
1500 (HIGH Z)	N/A	DSHVF15H

CABLE FAULT INDICATORS	
CU	DESCRIPTION
UGMAT42	CABLE FAULT INDICATOR OPTO-E 3.0 (INDOOR)
SC0021144	CABLE FAULT INDICATOR OPTO-E 3.0 (OUTDOOR HOUSING)

11kV INSULATING BOOT KITS	
CU	DESCRIPTION
SC0021511	INSULATING BOOT KIT FOR ABB SAFELINK RMU, BOTTOM ENTRY
1CCF9524XLG	INSULATING BOOT KIT FOR AFLR SWITCHGEAR, BOTTOM ENTRY

GROUND TRANSFORMER EARTHING	
DESCRIPTION	CU
EARTH GRID, 4 POCKET, SOIL	DSGT4EGS
EARTH GRID, 6 POCKET, SOIL	DSGT6EGS
EARTH GRID, 8 POCKET, SOIL	DSGT8EGS
EARTH GRID, 4 POCKET, ROCK	DSGT4EGR
EARTH GRID, 6 POCKET, ROCK	DSGT6EGR
EARTH GRID, 8 POCKET, ROCK	DSGT8EGR
ADDITIONAL EARTHING, 2 POCKETS & CABLE	DSGT2EGSA
ADDITIONAL EARTH ROD & COUPLING	DSEGSR
DIRECT-BURIED GRID UNDER CONC. SLAB ON CONSUMERS PREMISE. ORDER WITH EARTH GRID MODELS ABOVE	DSBUREGK
RMU EARTH TAILS & LUGS	DSRMEGT
BENTONITE 50/50 MIX WITH GYPSUM, 20kg BAG	SC0017322
19/2.14mm BARE Cu EARTH CABLE /m (ORDER FOR CHASE)	SC0007053
70mm² INSULATED EARTH CABLE /m (ORDER FOR EARTH CABLE DROPPERS TO REMOTE EARTH GRIDS)	SC0008351
120mm² INSULATED EARTH CABLE /m (ORDER FOR EARTH CABLE DROPPERS TO REMOTE EARTH GRIDS)	SC0008939
70-120mm² CABLE TO EARTH ROD CRIMP CONNECTOR	SC0012952
70-120mm² CABLE TO CABLE EARTH CRIMP CONNECTOR	SC0012953



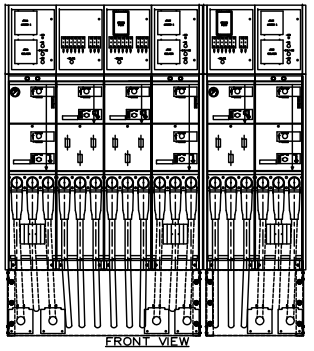
UG CABLE TERMINATIONS REFER SECTION 3 SUB-SECTION 4

OUTDOOR ENCLOSURE (ABB SAFELINK2)	
CU	DESCRIPTION
SC0034153	TO SUIT CFC, CCC (3-WAY)
SC0034200	TO SUIT CFCC CCCC (4-WAY)
SC0034201	TO SUIT CFCF

RMU/ISOLATOR (ABB SAFELINK2)		
STOCK CODE		DESCRIPTION
INDOOR	OUTDOOR	
SC0034123	SC0034138	TYPE CFC, BOTTOM ENTRY
SC0034124	SC0034139	TYPE CFCF, BOTTOM ENTRY
SC0034125	SC0034140	TYPE CFCC, BOTTOM ENTRY
SC0034126	SC0034141	TYPE, CCC BOTTOM ENTRY
SC0034127	SC0034142	TYPE, CCCC BOTTOM ENTRY

C=ISOLATOR, F=FUSE SWITCH

PLYNTHS & FOUNDATIONS (ABB SAFELINK2)	
CU	DESCRIPTION
SC0034153	CONCRETE PLYNTH TO SUIT CFC OR CCC (3-WAY)
SC0034202	CONCRETE PLYNTH TO SUIT CFCC, CCCC (4-WAY)
SC0034203	CONCRETE PLYNTH TO SUIT CFCC
SC0020029	300mm EXTENDED METAL PLYNTH TO SUIT CFC OR CCC (3-WAY)
SC0020030	300mm EXTENDED METAL PLYNTH TO SUIT CFCF
SC0019960	BASE SLAB FOR UNICULVERT
SC0019566	BOX CULVERT FOUNDATION
STEEL CHANNELS FOR SUPPORTING RMU OVER BOX CULVERT	
SC0018434 * 2 OR 3	-CHANNELS (2 OF FOR CFC/CCC, 3 OF FOR CFCF/CCFC/CCCC)
STEEL CHANNELS FOR SUPPORTING RMU OVER CABLE TRENCH	
SC0012431 * 2 OR 3	-CHANNELS (2 OF FOR CFC/CCC, 3 OF FOR CFCF/CCFC/CCCC)



CBD MESH POINT - ABB SAFEPLUS AFLR SWITCHGEAR (BOTTOM ENTRY ONLY)	
STOCK CODE	DESCRIPTION
SC0023850	TYPE VFV - 1 TRFR, 2 CABLE SWITCHGEAR
SC0023851	TYPE VFFV - 2 TRFR, 2 CABLE SWITCHGEAR
SC0023852	TYPE VFF-FV-3 TRFR, 2 CABLE SWITCHGEAR
SC0023853	TYPE VFFV-FV - 3 TRFR, 3 CABLE SWITCHGEAR
SC0023919	ADD-ON VT UNIT TO SUIT ABB SAFEPLUS AFLR SWITCHGEAR use with SC0023850 & SC0023853

V=CIRCUIT BREAKER, F=FUSE SWITCH

AUTOMATION - SHUNT KITS FOR ABB SAFELINK RMUs/ISOLATORS	
CU	DESCRIPTION
SC0034128	SHUNT TRIP CFC 240 Vac use with SC0034123 & SC0034138
SC0034129	SHUNT TRIP CFCF 240 Vac use with SC0034124 & SC0034139
SC0034130	SHUNT TRIP CFCC 240 Vac use with SC0034125 & SC0034140
SC0034131	SHUNT TRIP CFC 48 Vdc use with SC0034123 & SC0034138
SC0034132	SHUNT TRIP CFC 110 Vdc use with SC0034123 & SC0034138

NOTES

1. **REFER TO THE C&I SUBSTATIONS MANUAL FOR FURTHER INFORMATION.**

A	ORIGINAL ISSUE				
C	DATE	18/07/2015	B. THOMAS	D. WOOD	T. FARRELL
	APPD	CKD	DRN		
	UPDATED CU'S UPDATED DESCRIPTIONS ADDED EATHING CU'S				

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RESOURCE ESTIMATION GUIDE

GROUND-MOUNTED PLANT & SUBS.
11kV SWITCHGEAR
ABB SAFELINK2 RMU'S
ABB SAFEPLUS AFLR SWITCHGEAR

APP'D	R.ENGLISH	AUTOCAD	
DATE	15.05.09	9562-A4	C
RECD	J.TUNNEY	SECTION 4	SUB-SECT. 3
CKD	K.GOSDEN	SHT 1	OF 1
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SECTION 5 STREETLIGHTING

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WOOD POLE BRACKETS CONSTRUCTION TYPE

S WPB MA3 L

STREETLIGHT

S- STREETLIGHT

BRACKET

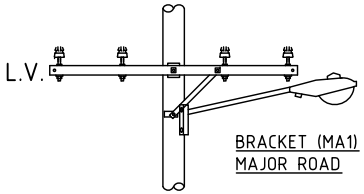
WPB - WOOD POLE BRACKET

CONNECTION

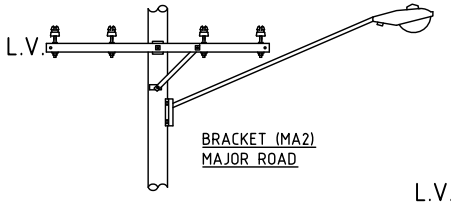
B - SERVICE CONNECTION TO LVABC MAINS
L - SERVICE CONNECTION TO AL MAINS
C - SERVICE CONNECTION TO CU MAINS
SER - SUPPLIED VIA ABC SERVICE

BRACKET TYPE

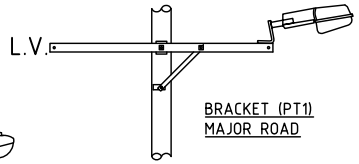
MA1 = 1.5m Outreach, Major Road
MA2 = 3.0m Outreach 1.0m Uplift, Major Road
MA3 = 4.5m Outreach 2.5m Uplift, Major Road
MA4 = 3.0m Outreach 4.0m Uplift, Major Road
MA5 = 1.5m Curved Outreach 2.3m Uplift, Major Road
MA6 = 3.0m Curved Outreach 2.3m Uplift, Major Road
MA7 = 4.5m Curved Outreach 2.3m Uplift, Major Road
PT1 = 0.3M Outreach Type PT, Major Road
PX2 = MA2 + Pedestrian Crossing Floodlight
PX3 = MA3 + Pedestrian Crossing Floodlight
PX4 = MA4 + Pedestrian Crossing Floodlight
MI1 = 1.2m Outreach, Minor Road
MI2 = 3.0m Outreach 1.0m Uplift, Minor Road
MI3 = 0.5m Outreach, Minor Road
PT2 = 0.3M Outreach Type PT, Minor Road



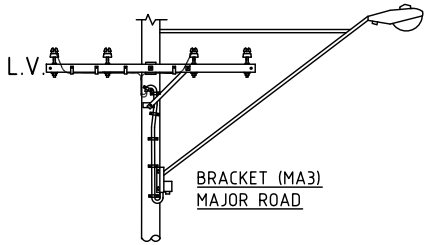
BRACKET (MA1)
MAJOR ROAD



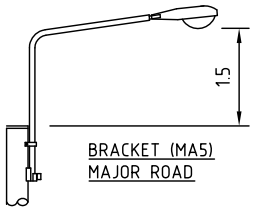
BRACKET (MA2)
MAJOR ROAD



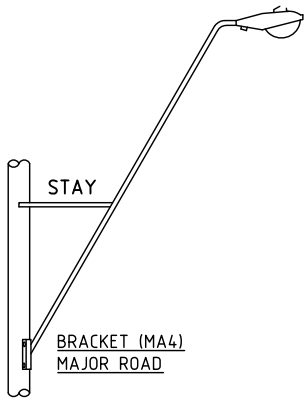
BRACKET (PT1)
MAJOR ROAD



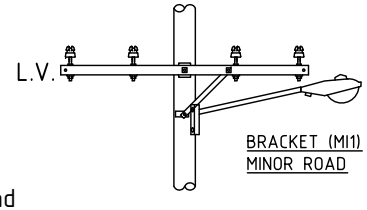
BRACKET (MA3)
MAJOR ROAD



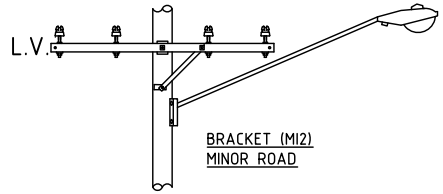
BRACKET (MA5)
MAJOR ROAD



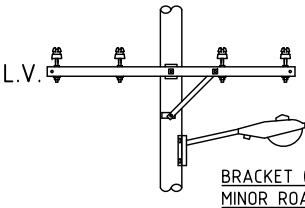
BRACKET (MA4)
MAJOR ROAD



BRACKET (MI1)
MINOR ROAD



BRACKET (MI2)
MINOR ROAD



BRACKET (MI3)
MINOR ROAD

EXAMPLE SWPBMA3B = Streetlight, Wood Pole Bracket, 4.5m Outreach 2.5m Uplift, Major Road, Service Connection to AL mains

B	ORIGINAL ISSUE				
E	DATE	19/05/2015	APPD	B.THOMAS	ADDED BRACKETS
	CKD	D. WOOD			
	DRN	M. MILLER			

RESOURCE ESTIMATION GUIDE

STREET LIGHTING
WOOD POLES-BRACKETS

APP'D	R.ENGLISH		AUTOCAD
DATE	15.05.09	9562-A4	E
RECD	J.TUNNEY	SECTION 5	SUB-SECT. 1
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STREETLIGHT SERVICE FITTINGS - CONSTRUCTION TYPE

SOH SL 225 B W

NOTE:
Service cable NOT included.
Refer CONSTRUCTION PRACTICES
Dwg. 1-3-2-1

SERVICE	TYPE	SERVICE CABLE	MAINS CONDUCTOR	STREETLIGHT POLE TYPE
SOH = Service overhead	SL = Streetlight	225 = 2x25mm² ABC 425 = 4x25mm² ABC	B = LVABC 95mm² L = Aluminium conductors C = Copper conductors	W = Wood (Omit where steel or concrete pole used)

EXAMPLE:- SOHSL225BW = Overhead service fittings, streetlight, suit 2x25mm² service cable to LVABC mains, wood pole.
EXAMPLE:- SOHSL425L = Overhead service fittings, streetlight, suit 4x25mm² service cable to aluminium mains. (steel or conc. pole)

LOOPING STREETLIGHT SERVICE FITTINGS - CONSTRUCTION TYPE

SOH SLL 425W

NOTE:
Service cable NOT included.
Refer CONSTRUCTION PRACTICES
Dwg. 1-3-2-1

SERVICE	TYPE	SERVICE CABLE	STREETLIGHT POLE TYPE
SOH = Service overhead	SLL = Streetlight looping	225 = 2x25mm² ABC 425 = 4x25mm² ABC	W = Wood (Omit where steel or concrete pole used)

EXAMPLE:- SOHSLL225W = Overhead service fittings, streetlight looping, suit 2x25mm² ABC service cable, wood pole.
EXAMPLE:- SOHSLL425 = Overhead service fittings, streetlight looping, suit 4x25mm² ABC service cable. (steel or conc. pole)

STREETLIGHT OVERHEAD SERVICE-SEE NOTES 1 & 2	
DESCRIPTION	CU
25mm² 2C AL XLPE CONDUCTOR	2B25

STREETLIGHT UNDERGROUND CABLE TERMINATIONS ON WOOD POLES	
CU	DESCRIPTION
SLUGT04/2	4mm² CU 2-CORE CABLE
SLUGT16/2	16mm² CU 2-CORE CABLE
SLUGT16/4	16mm² CU 4-CORE CABLE

SUNDRY ITEMS	
CU	DESCRIPTION
SC0005399	50/32A ZELLWEGER RELAY
SC0014776	50/32A CONTACTOR
SC0017755	SMALL CONTACTOR 10A (16830 BKT.)
SC0011609	GTE B2223/ 4 ONLY GLARE SHIELD
SC0016023	FLEXIBLE CONDUIT, 25mm CORRUGATED
SC0004844	RIGID CONDUIT, 25mm
SC0019910	FUSEHOLDER 100A EXCLUDING FUSE
SC0004301	SURGE ARRESTER
SC0005502	PE CELL FOR MAJOR RD LUMINAIRES
SC0005503	PE CELL FOR MINOR RD LUMINAIRES
SC0015325	BLANKING PLUG FOR MAJOR RD LUMINAIRES WHERE NO PE CELL IS REQD.
SLCONBOX3	RELAY, CONTACTOR, MOUNTING & CONNECTION
SET54-3	LV REEL INSULATOR - COACH BOLT TO POLE - STRAIGHT LINE
SET54-4	LV REEL INSULATOR - BOLT THROUGH POLE - STRAIGHT LINE
SET55-3	LV REEL INSULATOR & BRACKET - BOLT THROUGH POLE - ANGLE
SC0000684	COACH SCREW
SC0004929	SADDLES FOR CONDUIT
SC0011430	CLOUTS

NOTES

1. CONDUCTOR FOR THE OVERHEAD SERVICE MODELS IS TO BE ORDERED SEPARATELY PER METRE.
2. FOR ADDITIONAL CONSTRUCTION DETAILS, REFER PUBLIC LIGHTING MANUAL.

A	ORIGINAL ISSUE	DATE 01/08/2017	B. THOMAS	B. NORDKAMP	Z. RELF
E	CU'S UPDATED		APPD	CKD	DRN

RESOURCE ESTIMATION GUIDE

STREET LIGHTING
WOOD POLES-BRACKETS
SUNDRIES

APP'D	R.ENGLISH
DATE	15.05.09
RECD	J.TUNNEY
CKD	K.GOSDEN
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AUTOCAD
9562-A4 E
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FILE RES-5-1-2E.DWG

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STREETLIGHT POLE FOUNDATION CONSTRUCTION TYPE

S B 105 1 15 O CI

STREETLIGHT

S- STREETLIGHT

MOUNTING HEIGHT

90 = 9.0m
105 = 10.5m
120 = 12.0m
150 = 15.0m

OUTREACH DIMENSION

15 = 1.5m
30 = 3.0m
45 = 4.5m

FOUNDATION

CI - Cast in situ O/H serviced
CI1 - Cast in situ U/G serviced 1 conduit
SS - Special shallow O/H serviced
SS1 - Special shallow U/G serviced 1 conduit
PC - Precast
(Omit where foundation is installed by others)

POLE TYPE

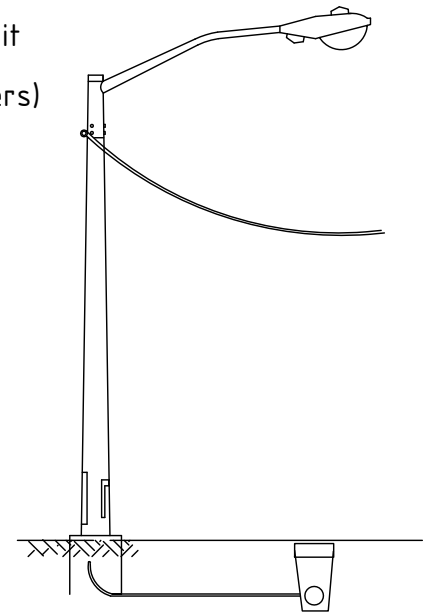
B = Base Plate Mounted
S = Slip Base Mounted

No OF OUTREACH

1 = Single
2 = Double
3 = 3 way
4 = 4 way

SERVICE TYPE

O = Overhead
U = Underground



EXAMPLE SB105115OCI = Streetlight, Base Plate Mounted, 10.5m, Single Outreach, 1.5m Outreach, Overhead Service, Cast in situ

B	ORIGINAL ISSUE				
F	DATE	19/05/2015	APPD	B. THOMAS	ADDED STREETLIGHT IMAGE
			CKD	D. WOOD	
			DRN	M. MILLER	

RESOURCE ESTIMATION GUIDE

STREET LIGHTING
STEEL POLES
MAJOR ROAD

APP'D	R.ENGLISH		AUTOCAD
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STREETLIGHT POLE FOUNDATION CONSTRUCTION TYPE

S B 120 1 HM U CI1

STREETLIGHT

S- STREETLIGHT

MOUNTING HEIGHT

120 = 12.0m
150 = 15.0m

OUTREACH DIMENSION

HM = High Mast

FOUNDATION

CI1 - Cast in situ U/G serviced 1 conduit
SS1 - Special shallow U/G serviced 1 conduit
PC - Precast
(Omit where foundation is installed by others)

POLE TYPE

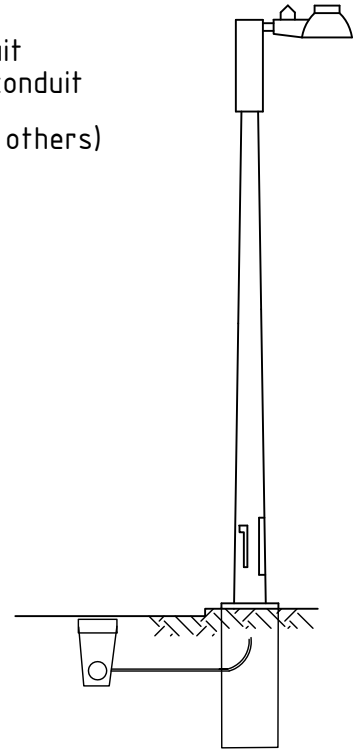
B = Base Plate Mounted
H = Mid Hinged Base Plate Mounted

No OF OUTREACH

1 = Single
2 = Double
3 = 3 way
4 = 4 way

SERVICE TYPE

U = Underground



EXAMPLE SB1201HMUC = Streetlight, Base Plate Mounted, 12m, Single Outreach, High Mast, Underground Service, Cast in situ

B	ORIGINAL ISSUE					
E	DATE 19/05/2015	APPD B.THOMAS	CKD D. WOOD	DRN M. MILLER	ADDED STREETLIGHT DRAWING	

RESOURCE ESTIMATION GUIDE

STREET LIGHTING

STEEL POLES

MAJOR ROAD - HIGH MAST

APP'D	R.ENGLISH		AUTOCAD
DATE	15.05.09	9562-A4	E
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STREETLIGHT POLE / FOUNDATION CONSTRUCTION TYPE

S B 75 1 15 PC

STREETLIGHT	POLE TYPE	MOUNTING HEIGHT	No. OF OUTREACH	OUTREACH DIMENSION	FOUNDATION TYPE
S = Streetlight	BPM = Base Plate Mounted (Steel)	65 = 6.5m 75 = 7.5m	I = Integral 1 = Single 2 = Double	05 = 0.5m 15 = 1.5m	PC = Precast CI = Cast in situ (Omit where foundation is constructed by others)

S B 50 H 1 I 05 PC

STREETLIGHT	POLE TYPE	MOUNTING HEIGHT	HINGED POLE	COLOUR	No. OF OUTREACH	OUTREACH DIMENSION	FOUNDATION TYPE
S = Streetlight	BPM = Base Plate Mounted (Steel)	50 = 5.0m	H = Mid Hinged	0 = Galvanised 1 = Green 2 = Blue/Grey 3 = Black	I = Integral	05 = 0.5m	PC = Precast CI = Cast in situ (Omit where foundation is constructed by others)

EXAMPLE:- SB65I05PC = Streetlight, base plate mounted pole, 6.5m mounting height, integral 0.5m outreach including precast foundation.

EXAMPLE:- SB75215 = Streetlight, base plate mounted pole, 7.5m mounting height, double 1.5m outreach, no foundation.

A	ORIGINAL ISSUE	DATE 27-05-2014	F. ZAINI	P. RELF	P. RELF
B	Added Midhinged poles	DATE	APPD	CKD	DRN

RESOURCE ESTIMATION GUIDE

STREET LIGHTING
STEEL POLES
MINOR ROAD

APP'D	A. S.D.PEREZ		AUTOCAD
DATE	11/03/14	9562-A4	B
RECD	P.RELF	SECTION 5	SUB-SECT. 2
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DWN	P.RELF	FILE RES-5-2-3B.DWG	

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STREETLIGHT SERVICE FITTINGS - CONSTRUCTION TYPE

SOH SL 225 B W

NOTE:
Service cable NOT included.
Refer CONSTRUCTION PRACTICES
Dwg. 1-3-2-1

SERVICE	TYPE	SERVICE CABLE	MAINS CONDUCTOR	STREETLIGHT POLE TYPE
SOH = Service overhead	SL = Streetlight	225 = 2x25mm² ABC 425 = 4x25mm² ABC	B = LVABC 95mm² L = Aluminium conductors C = Copper conductors	W = Wood (Omit where steel or concrete pole used)

EXAMPLE:- SOHSL225BW = Overhead service fittings, streetlight, suit 2x25mm² service cable to LVABC mains, wood pole.

EXAMPLE:- SOHSL425L = Overhead service fittings, streetlight, suit 4x25mm² service cable to aluminium mains. (steel or conc. pole)

LOOPING STREETLIGHT SERVICE FITTINGS - CONSTRUCTION TYPE

SOH SLL 425W

NOTE:
Service cable NOT included.
Refer CONSTRUCTION PRACTICES
Dwg. 1-3-2-1

SERVICE	TYPE	SERVICE CABLE	STREETLIGHT POLE TYPE
SOH = Service overhead	SLL = Streetlight looping	225 = 2x25mm² ABC 425 = 4x25mm² ABC	W = Wood (Omit where steel or concrete pole used)

EXAMPLE:- SOHSLL225W = Overhead service fittings, streetlight looping, suit 2x25mm² ABC service cable, wood pole.

EXAMPLE:- SOHSLL425 = Overhead service fittings, streetlight looping, suit 4x25mm² ABC service cable. (steel or conc. pole)

STREETLIGHT OVERHEAD SERVICE - SEE NOTES 1	
DESCRIPTION	CU
25mm² 2C AL XLPE CONDUCTOR	2B25

STREETLIGHT SUPPLY - UNDERGROUND	
DESCRIPTION	CU
32A FUSE LINK CARTRIDGE	SC0004434

STREETLIGHT UNDERGROUND CABLE TERMINATIONS ON WOOD POLES	
CU	DESCRIPTION
SLUGT04/2	4mm² CU 2-CORE CABLE
SLUGT16/2	16mm² CU 2-CORE CABLE
SLUGT16/4	16mm² CU 4-CORE CABLE

STREETLIGHT PITS & CONNECTIONS	
DESCRIPTION	CU
#2 PIT & LID ONLY	PIT 2
#2 PIT ONLY	SC0015551
#2 PIT LID ONLY	SC0015552
#2 PIT&LID w/ 1ϕ J/BOX (NO FUSE)	SUGSLLPIT2
#4 PIT & LID ONLY	PIT 4
#4 PIT ONLY	SC0015528
#4 PIT LID ONLY	SC0006839
1ϕ #4 PIT & LID + J/BOX (FUSED)	SUGSLSBMPIT
3ϕ #4 PIT & LID + J/BOX (FUSED)	SUGSLSBM3PIT
1ϕ J/BOX FUSED ONLY	SUGSLSBMJB
3ϕ J/BOX FUSED ONLY	SUGSLSBM3JB
1ϕ J/BOX ONLY (NO FUSE)	SUGSLLJB

NOTES

1. CONDUCTOR FOR THE OVERHEAD SERVICE MODELS IS TO BE ORDERED SEPARATELY PER METRE.
2. FOR CONSTRUCTION DETAILS, REFER PUBLIC LIGHTING MANUAL.
3. FOR DETAILS OF CONDUITS & CABLES, REFER SECTIONS 3.1 & 3.2 OF THIS MANUAL.

SUNDRIES	
DESCRIPTION	CU
BLANKING PLUG FOR MAJOR RD LUMINAIRE (IF PE CELL NOT REQUIRED)	SC0015325

A	ORIGINAL ISSUE	01/08/2017	B. THOMAS	APPD
C	UPDATED CU'S		B. NORDKAMP	CKD
			Z. RELF	DRN

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STREET LIGHTING

STEEL POLES

SUNDRIES

APP'D	A. S.D.PEREZ		AUTOCAD
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DWN	P.RELF	FILE RES-5-2-4C.DWG	

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ESTATE STREETLIGHT POLE / FOUNDATION CONSTRUCTION TYPE

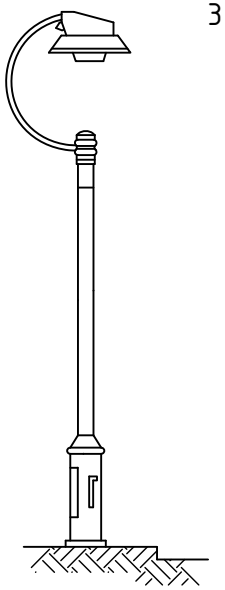
SL NOS 1 PC

STREETLIGHT
SL = Streetlight

POLE
NOS = Nostalgia

POLE COLOUR
1 = Green
2 = Blue/Grey
3 = Black

FOUNDATION TYPE
PC = Precast
CI = Cast in situ
Omit where foundation is constructed by others



EXAMPLE:- SLNOS1PC = Streetlight, nostalgia pole type 1 including precast foundation.

EXAMPLE:- SLNOS2 = Streetlight, nostalgia pole type 2, no foundation.

B	ORIGINAL ISSUE	DATE	19/05/2015	APPD	B.THOMAS
F				CKD	D.WOOD
				DRN	M. MILLER
	ADDED STREETLIGHT IMAGE				

RESOURCE ESTIMATION GUIDE

STREET LIGHTING
DECORATIVE LIGHTING

APP'D	R.ENGLISH		AUTOCAD
DATE	15.05.09	9562-A4	F
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DWN	F.AMANPOOR	FILE RES-5-3-1E.DWG	

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PEDESTRIAN CROSSING CONSTRUCTION TYPE

SPX S250F N

STREETLIGHT

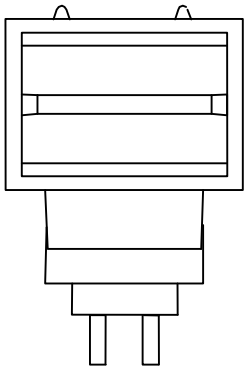
SPX = Streetlight pedestrian crossing

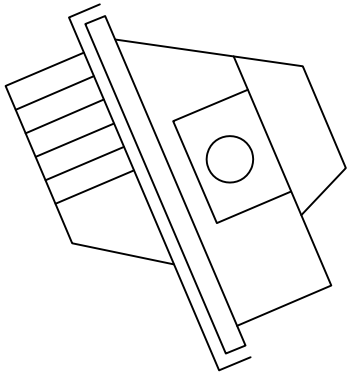
FLOODLIGHT

S250F = HPS 250W floodlight
S400F = HPS 400W floodlight
H250F = H250W floodlight
H400F = H400W floodlight

FLOODLIGHT TYPE

N = Philips narrow
W = Philips wide
Omit if medium beam is specified





EXAMPLE:- SLPXS250FN = Streetlight pedestrian crossing, HPS 250W floodlight, philips narrow

B	ORIGINAL ISSUE				
F	DATE 19/05/2015	APPD B.THOMAS	CKD D. WOOD	DRN M. MILLER	ADDED FLOODLIGHT IMAGE

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STREET LIGHTING
FLOODLIGHTS
PEDESTRIAN CROSSING

APP'D	R.ENGLISH		AUTOCAD
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WATCHMAN FLOODLIGHT CONSTRUCTION TYPE

SWF S150 UG C

STREETLIGHT

SWF = Streetlight watchman floodlight

FLOODLIGHT

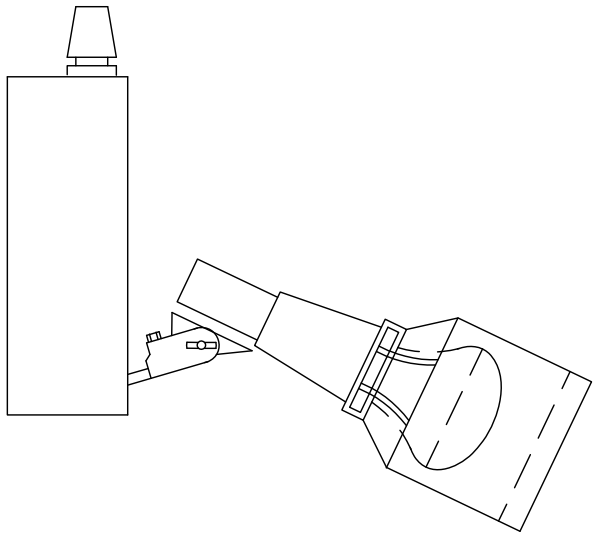
S150 = HPS 150W diffuse
S250 = HPS 250W diffuse
S400 = HPS 400W diffuse
H250 = H 250W diffuse
H400 = H 400W diffuse

CONNECTION

B = Service connection to LVABC Mains
A = Service connection to Aluminium Mains
C = Service connection to Copper Mains
S = Supplied via ABC Service
UG = Underground

POLE TYPE

C = Concrete / steel pole
W = Wood pole
P = Private



EXAMPLE:- SWFS150SERC = Streetlight watchman floodlight, HPS 150W diffuse, supplied via ABC service, concrete pole

A	ORIGINAL ISSUE	DATE	18/12/2015	APPD	B.THOMAS
F	UPDATED TABLE TO REFLECT CU's	CKD	K. MCKEE	DRN	D. WOOD

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STREET LIGHTING
FLOODLIGHTS
WATCHMAN FLOODLIGHTS

APP'D	R.ENGLISH		AUTOCAD
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STREETLIGHT LUMINAIRE CONSTRUCTION TYPE

SL S250C A

STREETLIGHT

SL = Streetlight

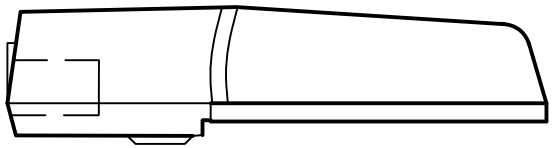
LAMP TYPE AND WATTAGE

S100C = HPS 100W Clear	H100 = H100W clear
S150C = HPS 150W Clear	H150 = H150W clear
S250C = HPS 250W Clear	H250 = H250W clear
S400C = HPS 400W Clear	H400 = H400W clear

LUMINAIRE TYPE

A = Aeroscreen

No designation required for normal luminaire.



EXAMPLE:- SLS150C = Streetlight, high pressure sodium vapour, 150 watt, clear lamp, normal luminaire.

EXAMPLE:- SLS250CA = Streetlight, high pressure sodium vapour, 250 watt, clear lamp, aeroscreen luminaire.

A	ORIGINAL ISSUE	DATE	19/05/2015	APPD	B.THOMAS
B	ADDED LUMINAIRE IMAGE	DRN	M. MILLER	CKD	D. WOOD

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STREET LIGHTING LUMINAIRES

MAJOR ROAD

APP'D	A. S.D.PEREZ		AUTOCAD
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STREETLIGHT LUMINAIRE MINOR ROAD CONSTRUCTION TYPE

SL HPS 0001

STREETLIGHT

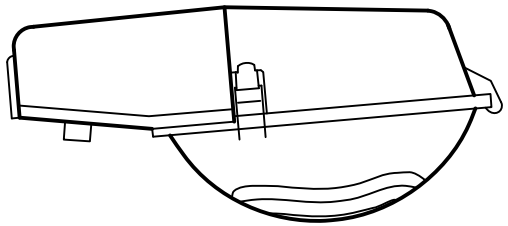
SL = Streetlight

LAMP TYPE AND WATTAGE

HPS = High Pressure Sodium Vapour
LF = Linear Fluorescent
CFL = Compact Fluorescent
MH = Metal Halide

PRODUCT CODE

0001 = Sylvania Suburban 70W HPS
0002 = Sylvania Urban Aeroscreen 70W HPS
0003 = Sylvania Suburban 32W CFL
0004 = Sylvania Urban Aeroscreen 32W CFL
0005 = Sylvania Suburban 35W MH
0006 = Sylvania Urban Aeroscreen 35W MH
0007 = Sylvania Suburban 70W MH
0008 = Sylvania Urban Aeroscreen 70W MH



EXAMPLE:- SLHPS0001 = Streetlight, High pressure sodium vapour, 70W

EXAMPLE:- SLMH0005 = Streetlight, metal halide, 35W

A	ORIGINAL ISSUE	DATE	15/05/2015	APPD	B.THOMAS
B	ADDED LUMINAIRE IMAGE	DRN	M. MILLER	CKD	D.WOOD

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STREET LIGHTING
LUMINAIRES
MINOR ROAD

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ESTATE STREETLIGHT LUMINAIRE CONSTRUCTION TYPE

SL N 1 CF32

STREETLIGHT

SL = Streetlight

LUMINAIRE

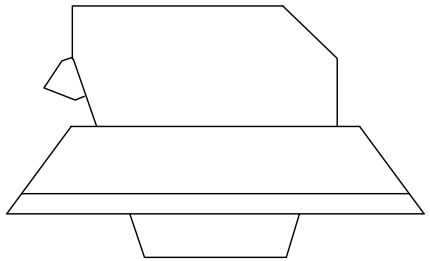
N = Nostalgia

POLE TOP TYPE

1 = Type 1 (Green)
2 = Type 2 (Blue/Grey)
3 = Type 1 (Black)
4 = Type 1 (Blue/Grey)
5 = Type 2 (Green)
6 = Type 2 (Black)

LAMP TYPE AND WATTAGE

S70D = HPS 70W Diffused Lamp
CF32 = Compact Fluorescent 32W Lamp



EXAMPLE:- SLN1CF32 = Streetlight, nostalgia luminaire type 1, compact fluorescent 32 watt lamp.

A	ORIGINAL ISSUE	DATE	19/05/2015	APPD	B.THOMAS
B	ADDED LUMINAIRE IMAGE	CKD	D. WOOD	DRN	M. MILLER

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STREET LIGHTING
LUMINAIRES
ESTATE

APP'D	A. S.D.PEREZ		AUTOCAD
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SECTION 6 LABOUR CU's

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REGULAR OVERHEAD LINE LABOUR	
POLES	
OTLAB2000A	INSTALL NEW POLE UP TO 17M - LINE
OTLAB2000B	STAND NEW POLE UP TO 17M - BORER LIFTER
OTLAB2000C	BORE HOLE - BORER LIFTER
OTLAB2012A	INSTALL NEW POLE 18.5 - 23 M OH Linesp
OTLAB2012B	STAND POLE 18.5M+ BORER LIFTER
OTLAB2006A	RECOVER WOOD POLE (UP TO 17M) - LINE
OTLAB2006B	RECOVER WOOD POLE (UP TO 17M) - BL
OTLAB2009A	RECOVER POLE - 2ND VISIT FOR BBCC - LINE
OTLAB2009B	RECOVER POLE - 2ND VISIT FOR BBCC - BL
OTLAB2100A	RECOVER NAIL POLE EXTRA HOURS - LINE
OTLAB2100B	RECOVER NAIL POLE EXTRA HOURS - BL
OTLAB2003A	REPLACE CONDEMMED LV P & CONSTNS - LINE
OTLAB2003B	REPLACE CONDEMMED LV P & CONSTNS - BL
STAYS	
OTLAB220	INSTALL SCREW ANCHOR STAY - LINE
OTLAB220B	INSTALL SCREW ANCHOR STAY - BL
OTLAB221	RECOVER GROUND/SIDE/POLE STAY
OTLAB222	ERECT AERIAL STAY (BETWEEN POLES) - LINE
OTLAB224	INSTALL POLE TO GROUND STAY ONLY
OTLAB225	INSTALL POLE TO GRND SIDE WALK STAY ONLY
OTLAB230A	INSTALL MASS CONC ANCHOR-IN SOIL - LINE
OTLAB230B	INSTALL MASS CONC ANCHOR-IN SOIL - BL
OTLAB240A	INSTALL MASS CONC ANCHOR-IN ROCK - LINE
OTLAB240B	INSTALL MASS CONC ANCHOR-IN ROCK - BL
CONSTRUCTIONS	
OTLAB280	GROUND FIT OPEN WIRE INTERMED CONSTN
OTLAB282	GROUNDFIT LVABC INTERMED/TENSION CONST
OTLAB283	AIR FIT OPEN WIRE INTERMED CONSTN
OTLAB284	AIRFIT LVABC INTERMED/TENSION CONST
OTLAB285	GROUNDFIT OHEW INTERMED/TENSION CONST
OTLAB290	GROUND FIT OPEN WIRE TENSION CONSTN
OTLAB291	AIRFIT OPEN WIRE TENSION CONSTN
OTLAB1113	CONVERT TERMINATION TO SHACKLE / WIRE
OTLAB214	CONVERT SHACKLE TO PIN / WIRE
OTLAB215	CUT & SHUT PER WIRE
OTLAB1132	AIR FIT RAISER & INTERMED CONSTN (PETD)
OTLAB1133	AIR FIT PIN/TENSION RISER (PE/PET)
OTLAB400	GROUNDFIT CCT INTERMED CONSTN - NO LA'S
OTLAB401	GROUNDFIT CCT INTERMED CONSTN + LA'S
OTLAB402	AIRFIT CCT INTERMED CONSTN - NO LA'S
OTLAB403	AIRFIT CCT INTERMED CONSTN + LA'S
OTLAB405	GROUNDFIT CCT TENSION CONSTN + LA'S
OTLAB406	AIRFIT CCT TENSION CONSTN - NO LA'S
OTLAB407	AIRFIT CCT TENSION CONSTN + LA'S
OTLAB408	AIRFIT LA'S TO EX CCT CONTRNS (3PH)
OTLAB4050	REPLACE HV CROSSARM (L/L)
OTLAB520	GROUNDFIT HVABC INTERMED CONSTN
OTLAB521	GROUNDFIT HVABC TENSION CONSTN
OTLAB522	AIRFIT HVABC INTERMED CONSTN
OTLAB523	AIRFIT HVABC HVABC TENSION CONSTN
OTLAB524	FIT HVABC JOINT WITH ARRESTORS
OTLAB525	FIT HVABC JOINT WITH OUT ARRESTORS
STRINGING	
OTLAB200	SET UP DRUM ABC CONDUCTOR
OTLAB2022	STRING LVABC 4B95 CONDUCTOR / SPAN
OTLAB702	PULL LVABC / < 1KM SECTION
OTLAB201	SET UP DRUMS OPEN WIRE CONDUCTOR
OTLAB2020	STRING 1 WIRE (OPEN) / SPAN
OTLAB2026	STRING 2 WIRE (OPEN) / SPAN
OTLAB2021	STRING 3PH OPEN WIRE / SPAN
OTLAB202	SET UP DRUMS CCT CONDUCTOR
OTLAB2024	STRING 3PH CCT / SPAN
OTLAB763	RETENSION 3PH MAINS/SPAN
OTLAB203	SET UP DRUM for RECOVERY OH CABLES
OTLAB2023	RECOVER 3PH OPEN WIRE / SPAN
OTLAB203A	RECOVER O/H CONDUCTOR BY HAND 50m/CABLE
OTLAB2027	RECOVER LV 4 OPEN WIRE / SPAN
OTLAB630	XFER ONLY UP TO 4 COND TO NEW INTER POLE
OTLAB632	XFER UP TO 4 COND TO NEW ANGLE POLE
OTLAB640	XFER UP TO 4 COND TO NEW TERM POLE
OTLAB642	XFER UP TO 8 COND TO NEW SHACKLE POLE
OTLAB2025	RECONDUCTOR 3PH OPEN WIRE / SPAN
OTLAB0650D	SETUP TESMIC & DRUMS FOR RECONDUCTORING
OTLAB0660D	SETUP TESMIC TO PULL XTRA CABLES
OTLAB526	STRING HVABC CONDUCTOR / SPAN

REGULAR OVERHEAD LINE LABOUR - CONT	
SERVICES	
OTLAB1300	STRING LV SERVICE / SL MAINS PER SPAN
OTLAB1301	RECOVER LV SERVICE / SL MAINS PER SPAN
OTLAB1302	TRANSFER LV SERVICE / SL MAINS PER SPAN
OTLAB1304	DISC SERVICE CONN TO LV MAIN / PER SERV
OTLAB1305	RECONN SERV CONN TO LV MAIN / PER SERV
OTLAB1310	STRING 1 SPAN 4B95 SERVICE
OTLAB1311	STRING 1 SPAN PARALLEL 4B95 SERVICE
OTLAB6660	INSTALL TYPICAL FLYING FOX SERVICE
MISC	
OTLAB631	BRIDGING 3PH
OTLAB212	INSTALL LINE FAULT INDICATOR
OTLAB213	LOP HEAD OF POLE
OTLAB1140	Replace Splice on LV Conductor
MM102	TREE TRIM & CLEAR BY LINE CREW / MHRS
OHLABCA16	CA16 INSTALL MICRO PLANET LVR UNITS
OTLAB223	INSTALL LV SPACERS / SITE
POLE MOUNTED	**PLANT**
OTLAB1118	CHANGE PT TAP POSITION
OTLAB1102	INSTALL 1 PHASE PT, EDO'S, EARTHS
OTLAB1103	INST 25-63kVA 3 PHASE PT, EDO'S, EARTHS
OTLAB1100	INST 100-500kVA 3 PH PT, EDO'S, EARTHS
OTLAB1111	UPGRADE 1PH PT TO 3PH PT
OTLAB1110	UPGRADE 3PH POLE T'FMER STN
OTLAB1114	UPGRADE 1PH PT TO 1PH PT
OTLAB1101	RECOVER PT
OTLAB1116	CONVERT EX PT STN TO BOLT ON TYPE
OTLAB4440	FIT DIST TFMR SMART METERING / POLE
OTLAB1119	REPLACE LV FUSE LINK
OTLAB1129	REPLACE LV FUSELINK & LOAD TAILS
OTLAB1134	CHANGE HV EDO Fuses
OTLAB1135	Fit EX Clamp to Neutral, R/P Claw Clamps
OTLAB1136	REMOVE OLD & FIT NEW LA"S
OTLAB1137	Install Neutral Bus (& TR LV Isolation)
OTLAB1138	Remove MDI's & Install Smart Meters
OTLAB1139	Replace LV Bridging Between TR - Links
OTLAB2016	BORER LIFTER LIFT OR LOWER PLANT

OTLAB1120	INSTALL HV RECLOSER (EXCL T&C)
OTLAB1122	RECOVER 11KV, 33KV RECLOSER
OTLAB1200	AIRFIT HV AIR BREAK SWITCH
OTLAB1210	GROUNDFIT HV AIR BREAK SWITCH
OTLAB1303	RECOVER HV AIR BREAK SWITCH
OTLAB1121	INSTALL 11KV REGULATOR (EXCL T&C)
OTLAB1123	RECOVER 11KV REGULATOR
OTLAB1210-1	ERECT 11KV LBS (MANUAL OPERATED)
OTLAB1124	ERECT 11KV LBS (REMOTE CONTROL)
OTLAB1126	ERECT 11KV METERING UNIT
OTLAB1125	RECOVER 11KV LOAD TRANSFER SWITCH
OTLAB1127	RECOVER 11KV METERING UNIT
OTLAB296	ERECT EDO'S / MASTER DROPOUTS
OTLAB1126A	ERECT 33KV METERING UNIT
OTLAB4091	INSTALL KAON FUSE SAVER
ZS50-24	RECOVER 33KV POLE MOUNT METERING UNIT
ZS50-25	ERECT 33KV POLE MOUNT METERING UNIT
STREETLIGHTS	
OTLAB1500	INSTALL BPM/SBM RAGBOLT FOUNDATION
OTLAB1501	ERECT BPM/SBM POLE + OUTREACH + LUMINAIR
OTLAB1502	ERECT HIGH MAST POLE (NO BRKT OR LIGHTS)
OTLAB1507	ERECT BPM/SBM PEDN XING POLE, O/R, LIGHT
OTLAB2008	RECOVER S/L POLE (BIG,WOOD, GI)
OTLAB2013	RECOVER RAGBOLT FOUNDATION
OTLAB2007A	RECOVER BPM S/L POLE & FOUNDN - LINE
OTLAB2007B	RECOVER BPM S/L POLE & FOUNDN - PWKR
OTLAB1508	ATTACH PEDN XING BRKT & LUMINAIR WPOLE
OTLAB1509	ATTACH MAJ BRKT (>3M) & LUMINAIRE WPOLE
OTLAB1510	ATTACH MAJ BRKT (<3M) & LUMINAIRE WPOLE
OTLAB1511	ATTACH HIGH MAST BRACKET & LUMINAIRES
OTLAB1520	ATTACH MINOR BRKT & LUMINAIRE TO WPOLE
OTLAB1515	RECOVER MAJOR/MINOR BRACKET & LUMINAIRE
OTLAB1531	TRANSFER SL BRACKET & LUMINAIRE
OTLAB1532	TRANSFER SL LUMINAIRE ONLY
OTLAB1512	UPGRADE/REPLACE LUMINAIRE HEAD
OTLAB1513	SL CONNECT CABLE (SLM7221....)
OTLAB1522	ERECT FLOODLIGHT & CONTROLLER
OTLAB1523	FIT LUMINAIRE TO NOSTALGIA POLE
OTLAB1533	INSTALL & WIRE UP PE SWITCH

OTLAB1534	INSTALL SL CONTROL BOX & WIRING
REGULAR OVERHEAD LINE LABOUR - CONT	
TEST & COMM	
ZSLAB901	TEST & COMM - 11KV, 33KV POLE REGULATOR
OTLAB4092	COMMISSION KAON FUSE SAVER
ZSLAB1036	GPS PHASE IDENTIFICATION
JOB FACTORS	
OTLAB10	TRAVEL TIME / MHRS OH DIST
OTLAB40	PICK UP & SORT MATERIALS / MHR OH DIST
OTLAB41	PAID BREAKS / MHR OH DIST
OTLAB50	CLEANUP SITE & RETURN MATLS / MHR
OTLAB771	OH - SITE INDUCTIONS / MHR
OTSC11	ENERGEX ACCOMMODATION / PERSON / NIGHT
OTLAB20	FIELD CONSTRUCTION OFFICER / MHR
OTLAB23	CONTRACT OFFICERS / MHR

OVERHEAD – CONTRACT LABOUR	
CLEARING1	CONTRACT CLEARING - LIGHT /10m2
CLEARING2	CONTRACT CLEARING - MEDIUM /10m2
CLEARING3	CONTRACT CLEARING - HEAVY /10m2
CLEARINGS	CONTRACT CLEARING - SLASHING / m2
OHSC1	CONTRACT TRAFFIC CONTROL - 1 MAN/HR
OHSC2	CONTRACT TRAFFIC CONTROL - 2 MEN/HR
SEC002	SECURITY OFFICER M-F 6AM-6PM /HR
POLICE001	POLICE OFFICER PUBLIC HOL /HR
POLICE002	POLICE OFFICER /HR
POLICE003	POLICE VEHICLE STATIONARY / HR
POLICE004	POLICE VEHICLE / km
EARTHING	
OTLAB216	INSTALL LV MEN NEW POLE
OTLAB217	INSTALL LV MEN EXISTING POLE
OTSC1	CONTRACT POLE EARTHING / POLE
EARTHING	**WESTERN**
OTCON4000	CONTRACT - LV POLE EARTH (NO MAT)
OTCON4001	CONTRACT - HV POLE EARTH (NO MAT)
	SOUTH COAST
OHCON7000	CONTRACT - HVE IN SOIL (NO MAT)
OHCON7001	CONTRACT - HVE IN ROCK (NO MAT)
OHCON7002	CONTRACT - PT SEP IN SOIL (NO MAT)
OHCON7003	CONTRACT - PT SEP IN ROCK (NO MAT)
OHCON7004	CONTRACT - PT COM IN SOIL (NO MAT)
OHCON7005	CONTRACT - PT COM IN ROCK (NO MAT)
HAND SINK	
OTSC2	CONTRACT POLE SINKING / POLE
VACUUM EXCA	
UDCON0001	VACUUM EXCAVATION CONTRACTOR / HR
CONUG030	CONTRACT VACUUM EXCAVATION HALF DAY
QUOTES	
UGSC142	CONTRACT-$$ QUOTE DIS OH WORKS
CONTQUOTE	CONTRACTOR QUOTE $ - ENTER DESCRIPTION
FEES	
UGSC114D	LOCAL GOVERNMENT CHARGES & FEES $$$$
OTSC4	QUEENSLAND RAIL - SAFETY OBSERVER/HR
FEEQRNEW	QR APPLICATION FEE-NEW OH/UG CROSSING
FEEQRMOD	QR APPLICATION FEE-UPGRADE/MAINTENANCE
POLE INSP	
OTSC14	CONTRACT POLE INSPECTION / POLE
MOBILE PLANT	
CRANES	
MPATC/080S	ALL TERRAIN 80 TONNE CRANE SETUP / JOB
MPATC/200S	ALL TERRAIN 200 TONNE CRANE SETUP / JOB
MPFRA/025S	FRANNA 25 TONNE CRANE SETUP / JOB
MPCLA/001	CRANE CONTRACT SUPERVISOR OR ENGINEER/HR
MPCRT/015	TRUCK & HIAB 15 TONNE HIRE / HR
EWP	
OTMP37	HIRE EWP 28M & DVR/HR
UGMP13	HIRE EWP SPIDER 38M & DVR/HR
UGMP14A	HIRE EWP 40M & DVR/HR
UGMP15	HIRE EPV 55M (W/DRIVER) / HR
ZSMP45D	HIRE EWP 13M A/T SNORKEL LIFT/DAY
ZSMP45M	HIRE EWP 13M A/T SNORKEL LIFT/MONTH
OTHER	
OTMP4	HIRE BORER-LIFTER WITH OPERATOR / HR
OTMP6	HIRE SEMI TRAILER WITH OPERATOR / HR
OTMP56	SEMI WITH OPERATOR LOAD/UNLOAD
UGMP1	HIRE BACKHOE/BOBCAT & TRUCK & OP / HR
UGMP2	HIRE 12 TONNE EXCAVATOR & OP / HR

UGMP3	HIRE 20 TONNE EXCAVATOR & OPERATOR / HR

OVERHEAD – CONTRACT LABOUR - CONT	
ROAD BARRIERS	
UGSC143T	ROAD SAFETY BARRIERS CONCRETE/100M/WEEK
UGSC144T	ROAD SAFETY BARRIERS TYPE TL0 /100M/WEEK
UGSC145T	ROAD SAFETY BARRIERS TYPE TL2 /100M/WEEK
UGSC146T	ROAD SAFETY BARRIERS TYPE TL3 /100M/WEEK
CHANGE P.O.A	
OTSC13	CONTRACT-$$ QUOTE POINT OF ENTRY CHANGE
D&C CONTRACT	
MM2018-DC	CONTRACT-$$ QUOTE D&C REFURB DESIGN
MM2019-DC	CONTRACT-$$ QUOTE D&C REFURB CONSTRUCT
ENVIRO OFFSET	
ZS200-24	ENVIRONMENT OFFSET $$ / Project
ZS200-25	ENVIRONMENT OFFSET (Up to 100 TREES)
ZS200-26	ENVIRONMENT OFFSET (Up to 500 TREES)
ZS200-27	ENVIRONMENT OFFSET (Up to 1,000 TREES)
ZS200-28	ENVIRONMENT OFFSET (Up to 5,000 TREES)
ZS200-29	ENVIRONMENT OFFSET (PER TREE REMOVED)
FERRY / BARGE	
STRADBROKE ISL	
FERRY001	FERRY 2 NTH STRAD STDCAR/4WD RETURN
FERRY002	FERRY 2 NTH STRAD PROLINE/LGEEWP 10M RET
FERRY003	FERRY 2 NTH STRAD LINE TRUCK 6M RETURN
FERRY004	FERRY 2 NTH STRAD TIPTRUCK/SMLEWP 8M RET
FERRY005	FERRY 2 NTH STRAD TRAILER 5M RETURN
FERRY006	FERRY 2 NTH STRAD PERSON ON FERRY RETURN
FERRY007	FERRY 2 NTH STRAD /ADULT ON FLYER RETURN
RUSSEL ISLAND	
FERRY501	FERRY 2 RUSSELL IS STDCAR/4WD RETURN
FERRY502	FERRY 2 RUSSEL IS PROLNE/LGEEWP 10M RETU
FERRY503	FERRY 2 RUSSEL IS LINE TRUCK 6M RETURN
FERRY504	FERRY 2 RUSSEL IS TIPTRUCK/SMLEWP 8M RET
FERRY505	FERRY 2 RUSSEL IS TRAILER 5M RETURN
FERRY506	FERRY 2 RUSSEL IS / PERSON ON BARGE RETUR
FERRY507	FERRY 2 RUSSEL IS /ADULT ON FERRY RETURN

LIVE LINE OVERHEAD LABOUR	
POLES	
OTLAB4000A	INSTALL NEW POLE UP TO 17M (L/L)
OTLAB4000B	INSTALL NEW POLE UP TO 17M (L/L) BL
OTLAB4014A	INSTALL NEW POLE 18.5-23M (L/L) - LLIN
OTLAB4014B	STAND NEW POLE 18.5-23M (L/L) - BL
OTLAB4010A	RECOVER POLE UP TO 17M (L/L) - LLIN
OTLAB4010B	RECOVER POLE UP TO 17M (L/L) - BL
CONSTRUCTIONS	
OTLAB4011	AIR FIT INTERMED CONSTN & ATTACH MAINS (L/L)
OTLAB4013	AIR FIT TENSION CONSTN & ATTACH MAINS (L/L)
OTLAB4027	CONVERT EX TERM TO SHACKLE / WIRE (L/L)
OTLAB4037	CONVERT INTERMED TO SHACKLE (L/L)
OTLAB4038	CONVERT SHACKLE TO INTERMEDIATE (L/L)
OTLAB4023	FIT RAISER & INTERMED CONSTN (L/L)
OTLAB4024	FIT RAISER & TENSION CONSTN (L/L) (PET)
OTLAB4021	RECOVER HV OR LV XARM (L/L)
OTLAB4025	RAISE / LOWER HV OR LV XARM (L/L)
OTLAB4029	FIT CCT INTERMED CONSTN + LA'S (L/L)
OTLAB4031	FIT CCT TENSION CONSTN + LA'S (L/L)
OTLAB4050	REPLACE HV CROSSARM (L/L)
OTLAB5022	AIRFIT HVABC INTERMED CONSTN (L/L)
OTLAB5023	AIRFIT HVABC HVABC TENSION CONSTN (L/L)
STRINGING	
OTLAB4022	STRING LVABC 4B95 COND / SPAN (L/L)
OTLAB4001	STRING 3PH OPEN WIRE COND / SPAN (L/L)
OTLAB4007	TRANSF COND'S TO NEW INTERMED POLE (L/L)
OTLAB4008	TRANS COND'S TO NEW TENSION POLE (L/L)
OTLAB4040	RETENSION MAINS/SPAN (L/L)
EARTHING	
OTLAB4032	INSTALL LV MEN - New Pole (LL)
OTLAB4033	INSTALL LV MEN - Existing Pole (LL)
MISC	
OTLAB4034	BREAK BRIDGES (LL)
OTLAB4049	RE-MAKE HV BRIDGES (L/L)
OTLAB4035	PREPARE RECLOSE BLOCK - LIVE LINE
OTLAB4036	BRIDGING PER WIRE
OTLAB4039	LOP HEAD OF POLE (LL)

LIVE LINE OVERHEAD LABOUR - CONT	
POLE MOUNTED	**PLANT**
OTLAB4004	INST 25-63 3 PH PT + EDO's, Ear (L/L)
OTLAB4005	INST 100-500kV 3 PH PT, EDO's, EAR (L/L)
OTLAB4012	INSTALL 3PH LIVE LINE CLAMPS (L/L)
OTLAB4006	UPGRADE PT STATION (L/L)
OTLAB4002	RECOVER POLE TRANSFORMER (L/L)
OTLAB4003	INSTALL HV ABS (L/L)
OTLAB4046	INSTALL TEMP ABS SWITCH (L/L)
OTLAB1313	RECOVER HV AIR BREAK SWITCH (LL)
OTLAB4015	INSTALL POLE 11/33KV RECLOSER (L/L)
OTLAB4016	RECOVER 11/33KV RECLOSER (L/L)
OTLAB4017	INSTALL 11KV LOAD TRANSFER SWITCH (L/L)
OTLAB4018	RECOVER 11KV LOAD TRANSFER SWITCH (L/L)
OTLAB4019	ERECT 11KV METERING UNIT (L/L)
OTLAB4020	RECOVER 11KV METERING UNIT (L/L)
OTLAB4044	INSTALL EDO'S/ MASTER DROPOUTS (L/L)
OTLAB4090	INSTALL KAON FUSE SAVER (L/L)
JOB FACTORS	
OTLAB4041	TRAVEL TIME / MHRS OH LIVE LINE
OTLAB4042	PICK UP & SORT MATLS BY L/L / MHR
OTLAB4043	PAID WORK BREAKS / MHR OH LIVE LINE
OTLAB772	OH LIVE LINE - SITE INDUCTIONS / MHR
OTLAB20	FIELD CONSTRUCTION OFFICER / MHR

UNDERGROUND – ENERGEX LABOUR	
ZSLAB902	MEGGER & INJECTION TEST - PAPERLEAD CABLES
UTLAB124	MEGGER TEST XLPE CABLES - PER RUN
UTLAB125	CABLE IDENTIFICATION & SPIKING
UTLAB86	JOINT LV CABLE (TEE & PARALLEL)
UTLAB85	STRAIGHT JOINT LV CABLE
UTLAB69	JOINT PARALLEL 11KV 3C CABLES/3PH JOINT
UTLAB68	JOINT STRAIGHT 11KV 3C CABLES/3PH JOINT
UTLAB70	LIVE END JOINT - LV CABLE
UTLAB71	LIVE END JOINT - HV CABLE
UTLAB76	BREAKDOWN BITUMEN CABLE JOINT
MM200	SLEEVE THROUGH BITUMEN FILLED JOINT
UTLAB80	TERMINATE LV CABLE (POLE, SGR, PMT)
UTLAB83	TERMINATE LV CABLE AT EXISTING PILLAR
UTLAB80	POLE 4/16MM2 2CORE TERM
UTLAB63	TERM 11KV 3C CABLES / TERM (RMU,POLE,PMT)
UTLAB64	TERM 11KV 3X1C CABLES / TERM (TRF,SGR)
UTLAB78	BREAKDOWN BITUMEN TERMINATION - SG
UTLAB78	BREAKDOWN BITUMEN TERMINATION - TX
UTLAB88	INSTALL LV PILLAR WITH LV TERMINATIONS
UTLAB72	INSTALL MEN
UTLAB104	REC SG/TR TERMINATION
UTLAB105	REC POLE TERMINATION
UTLAB106	REC UG JOINT
UTLAB108	REC LV PILLAR
UTLAB100	INSTALL PADMOUNT TRANSF & EARTHS
UTLABXXX	UPGRADE PMT
UTLABXXX	UPGRADE PMT @ OT
UTLAB103	RECOVER PADMOUNT OR GT
UTLAB110	INSTALL GROUND TRANSFORMER & EARTHS
UTLAB120	INSTALL OD RING MAIN UNIT & EARTHS
UTLAB131	INSTALL LV INDOOR TYPE S/B - (No Enclosure)
UTLAB132	INSTALL LV CABLE SUPPORT STAND & CABLE
MM200	EXTRA UG CONSTR HRS "SPECIFY DETAILS"

MM124	CIVIL WORKS SUPERVISIONINSPECTION / HR
UTLAB121	PICK UP & SORT MATERIALS (2 MEN) / HR
UTLAB123	CLEAN UP SITE & RETURN MATERIAL / MHR
MM231	SWITCHING PER MHR @ ORD TIME RATE
UTLAB15	LAY CONDUITS FOR LENGTHS < 10 METRES
UTLAB15	LAY CONDUITS 1 ROW X 1 (PER TRENCH METRE)
UTLAB16	LAY CONDUITS 1 ROW X 2 (PER TRENCH METRE)
UTLAB17	LAY CONDUITS 2 ROWS X 2 (PER TRENCH METRE)
UTLAB19	LAY CONDUITS 3 ROWS X 3 (PER TRENCH METRE)
UTLAB20	INSTALL CONDUIT BEND (PER BEND)
UTLAB200	CONCRETE REINSTATEMENT (ENERGEX LAB) /M2
UTLAB201	GRASS REINSTATEMENT (ENERGEX LAB) /M2
UTLAB202	PAVERS REINSTATEMENT (ENERGEX LAB) /M2
UTLAB203	BITUMEN REINSTATEMENT (ENERGEX LAB) /M2
UTLAB204	GRAVEL REINSTATEMENT (ENERGEX LAB) /M2
UTLAB205	KERB & CHANNEL REINSTATE(ENERGEX LAB) /M
UTLAB23	HAND TRENCHING SOFT SOIL < 600 X 800 / M
UTLAB24	HAND TRENCHING HARD SOIL < 600 X 800 / M
UTLAB2	TRENCH 450 W X 750 D E&F SOIL / M ETRE
UTLAB3	TRENCH 600W X 900D E&F SOIL / M
UTLAB4	TRENCH 900 W X 900D E&F SOIL / M
UTLAB22	EXC & BFILL EARTH JOINT PIT
UTLAB21	EXC & BFILL EARTH INSPECTION HOLE
UTLAB73	INSTALL PROTECTIVE BOLLARDS

UNDERGROUND – CONTRACT LABOUR	
UGMP23	HIRE GENERATOR (EX BANYO)
UGSC128	SECURITY GUARD / HR
UGMP20	HIRE GENERATOR / DAY (CONTRACTOR)
UGSC122	CONTRACT UG CABLE LOCATORS - TELSTRA ETC
UGSC1	CONTRACT TRAFFIC CONTROL - 1 MAN/HR
UGSC2	CONTRACT TRAFFIC CONTROL - 2 MEN/HR
UGMP5	HIRE 15 TONNE CRANE TRUCK & OP / HR
UGMP1	HIRE BACKHOE/BOBCAT & TRUCK & OP / HR
UGSC114	LOCAL GOV FEES & CHARGES $$$
UGSC115	ENVIRONMENTAL FEES & CHARGES $$$
UGSC111	CONTRACT TRENCHING & CONDUIT INSTALLATION
UGSC112	CONTRACT $$$$ QUOTE - ENTER DESCRIPTION
UGSC113	CONTRACT SURVEYOR
UGSC9	CONTRACT UNDERBORE DRILLING
UGMP21	CONTRACT PIT WATER REMOVAL / PIT
CIVEX1	CONTRACT EXCAVATION IN SOIL / M3
CIVEX13	CONTRACT SPOIL REMOVAL/M3
CIVEX3	CONTRACT EXCAVATION IN ROCK / M3
UGSC20	CONTRACT DISPOSAL OF SPOIL / CU M
UGMP2	HIRE 12 TONNE EXCAVATOR & OP / HR
UGMP3	HIRE 20 TONNE EXCAVATOR & OPERATOR / HR
CIVEX30	CONTRACT EXCAV 11KV JOINT PIT IN SOIL
CIVEX31	CONTRACT BFILL 11KV JOINT PIT IN SOIL
UGSC123	CONTRACT EXCAV CONC PIT OVER EX CABLES
UGSC3	CONTRACT BITUMEN CUTTING - 50MM CUT/M
UGSC5	CONTRACT CONCRETE SAWING - 50MM CUT/M
CIVSP6	CONTRACT CONCRETE SAWING - 100MM CUT/M
UGSC4	CONTRACT BITUMEN CUTTING - 75MM CUT/M
CIVSR10	CONTRACT KERB OR CHANNEL REINSTATE / M
CIVSR11	CONTRACT KERB & CHANNEL REINSTATE / M
CIVSR12	CONTRACT REINSTATE GRASSED AREA / M2
CIVSR13	CONTRACT FOOTPATH REINSTATE / M2 DECO
CIVSR20	CONT FTPATH REINSTATE/SQM COLD MIX BITUM
CIVSR4	CONTRACT BITUMEN REINSTATE / M2
CIVSR5	CONTRACT ROADWAY REINSTATE / M2 (ASPHALT
CIVSR6	CONT FOOTPATH REINSTATE /M2 (ASPHALT)
CIVSR6B	CONT FOOTPATH REINSTATEMT / M2 (PAVERS)
CIVSR7	CONTRACT CONCRETE REINSTATEMENT / M
CIVSR8	CONTRACT GRAVEL SURFACE,REINSTATE / M2
CVRCHANEL	CONTRACT KERB OR CHANEL REINSTATE /M
UGSC7	CONTRACT REINSTATE CONC FOOTPATH / SQ M
CVRFPGRASS	CONTRACT FTPTH GRASS REINSTATE / M2
CVRFPGRAVEL	CONTRACT GRAVEL SURFACE REINSTATE / M2
CVRFPPAVERS	CONTRACT FOOTPATH REINSTATE /M2 PAVERS
CIVSR3	CONTRACT FPATH REINSTAT/M2 SPRAY BIT
CVRFPDECO	CONTRACT FTPTH REINSTATE DECO /M2
CVRFPSPRDBTN	CONTRACT FPATH REINSTATE / M2 SPRAY BIT
CVRKERB	CONTRACT KERB, CHANNEL REINSTATE /M
CVRKERBCHNEL	CONTRACT KERB+CHANNEL CONC REINSTATE / M
CVRR/DWCNCRT	CONTRACT R/DWAY CONCRETE REINSTATE /M
CVRRWASHCEMT	CONTRACT RWAY ASPHALT REINSTATE /M2
UGSC10	CONTRACT BUILD CONC JNT PIT W GATIC LIDS
UGSC100	CONTRACT TRENCH 600X1200 EX & BF-SOIL/ M
UGSC101	CONTRACT TRENCH 400X750 EX & BF-SOIL / M
UGSC102	CONTRACT TRENCH 600X900 EX & BF-SOIL / M
UGSC103	CONTRACT TRENCH 900X900 EX & BF-SOIL / M
UGSC104	CONTRACT TRENCH 900X1200 EX & BF-SOIL/ M
UGSC105	CONTRACT TRENCH 1200X1200 EX&BF-SOIL/ M
UGSC106	CONTRACT TRENCH 400X750 EX & BF-ROCK/ M
UGSC107	CONTRACT TRENCH 600X900 EX & BF- ROCK/ M
UGSC108	CONTRACT TRENCH 900X900 EX & BF-ROCK/ M
UGSC109	CONTRACT TRENCH 900X1200 EX & BF-ROCK/ M
UGSC110	CONTRACT TRENCH 1200X1200 EX&BF-ROCK/ M
UGSC117	CONTRACT TRENCH 1500X1200 EX&BF-ROCK/ M
UGSC118	CONTRACT TRENCH 1500X1200 EX&BF-SOIL/ M
UGSC119	CONTRACT TRENCH 600X1200 EX & BF-ROCK/ M
UGSC70	CONTRACT TRENCH 300 X 600 EX & BF/M (SL)
UGSC71	CONTRACT TRENCH 450 X 800 EX & BF/M
UGSC72	CONTRACT TRENCH 600 X 800 EX & BF / M
UGSC73	CONTRACT TRENCH 600X1000 EX & BF/ M
UGSC13	CONTRACT U-BORE RD-XING 250MM DIA SOIL/M

Return to Index

UNDERGROUND – CONTRACT LABOUR Continued	
UGSC31	CONTRACT U-BORE/ M FOR 4X110 PIPES OTR
UGSC32	CONTRACT U-BORE / M FOR 4X125 PIPES OTR
UGSC33	CONTRACT U-BORE / M FOR 4X140 PIPES OTR
UGSC34	CONTRACT U-BORE / M FOR 4X160 PIPES OTR
UGSC35	CONTRACT U-BORE / M FOR 4X180 PIPES OTR
UGSC36	CONTRACT U-BORE / M FOR 4X200 PIPES OTR
UGSC41	CONTRACT U-BORE/ M FOR 4X110 PIPES ROCK
UGSC42	CONTRACT U-BORE / M FOR 4X125 PIPES ROCK
UGSC43	CONTRACT U-BORE / M FOR 4X140 PIPES ROCK
UGSC44	CONTRACT U-BORE / M FOR 4X160 PIPES ROCK
UGSC45	CONTRACT U-BORE / M FOR 4X180 PIPES ROCK
UGSC46	CONTRACT U-BORE / M FOR 4X200 PIPES ROCK
UGSC8	CONTRACT U-BORE RDXING 400MM DIA SOIL/M
CIVSP10	CONTRACT STEP CUTTING / STEP
CIVSR1A	CONTRACT SITE CLEANUP / SITE
CVRFPASHCEMT	CONTRACT FTPTH ASHPHALT CEMENT / M2
CVRFPCLDBTN	CONTRACT FTPTH COLD BIT REINSTATE /M2
UGMAT50	COLD MIX BITUMEN / M3
UGMAT53	FLOWABLE FILL / M3
UGMP10	HIRE EPV 19M (WITH DRIVER) / HR
UGMP11	HIRE EPV 23M (NO DRIVER) / HR
UGMP12	HIRE EPV 23M (WITH DRIVER) / HR
UGMP13	HIRE EPV 38M (WITH DRIVER) / HR
UGMP14	HIRE EPV 45M (WITH DRIVER) / HR
UGMP15	HIRE EPV 55M (WITH DRIVER) / HR
UGMP4	HIRE 10 CU M TRUCK & OPERATOR / HR
UGMP9	HIRE EPV 19M (NO DRIVER) / HR
UGSC11	CONTRACT BUILD 33KV JOINT BAY 8M LONG
UGSC12	CONTRACT BUILD 110KV JOINT BAY 12M LONG
UGSC120	CONTRACT LABOURER @ NORMAL TIME /HR
UGSC120-OT	CONTRACT LABOURER @ OT /HR
UGSC121	CONTRACT GANGER @ NORMAL TIME /HR
UGSC121-OT	CONTRACT GANGER @ OT /HR

MISCELLANEOUS LABOUR	
MM231	Switching/HR
ZSLAB901	11/33kV Regulator Testing and Commissioning
ZSLAB9000	11/33kV Re-Closer Testing and Commissioning
ZSLAB9010	Remote LBS Testing and Commissioning

Amendment Record

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2 March 2018
Version 16
Manual 00367
Updated Following Pages

1-4-2 – Updated CU's for OPGW
3-6-4 – Updated ADSS Cable Pit
4-1-1 – Updated CU's for Square Padmounts
4-2-1 – Updated CU's and Notes

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17 August 2017
Version 15
Manual 00367
No Change

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1 August 2017
Version 14
Manual 00367
Updated Following Pages

3-1-2 – Added Shallow Depth UG Cable Markers
3-3-2 – Updated CU's for Fuse Links for CFS Units
3-4-6 – Updated 11kV Joint CU's
3-4-7 – Updated 11kV Termination Tables
4-2-2 – Added 33kV Meter Unit
5-1-2 – Updated CU's for Streetlights
5-2-4 – Updated CU's for Streetlights

Added New Drawing

1-10-1 – Added Concrete Pole Attachment

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21 December 2015
Version 13
Manual 00367
Updated Following Pages

1-3-1D – Update Material Cu's added 33kV Composite Cross-Arm CU's
1-3-3G – Update Material Cu's added 11kV Composite Cross-Arm CU's
5-4-2F – Updated Watchman table to reflect CU description

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11 November 2015
Version 12
Manual 00367
Updated Following Pages

1-1-1F – Update Material Cu's added Limit State to Pole Tables

1-2-1G – Update Material Cu's added Limit State to Stay table
1-5-2F – Added Shear Off Splice
1-7-1H – Added Service Connectors to Connector table
3-3-1F – Added 3-Way Link Pillars & Updated labour CU's

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25 May 2015
Version 11
Manual 00367
Updated Following Pages

3-1-1F – Civil Works Excavation & Reinstatement Labour
3-1-2F – Civil Works Conduits & Accessories
3-2-1H – Cables
3-3-1E – Pillars Residential Service & Link
3-3-2C– Pillars Commercial / Industrial Service & Disc Box
3-4-1D – Cable Joints LV Joints & Terminations
3-4-2D – Cable Joints LV Joints & Terminations
3-4-3E – Cable Joints LV Joints & Terminations
3-4-4G – Cable Joints 11kV Joints & Terminations
3-4-7D – Cable Joints 11kV Joints & Terminations
3-4-8C – Cable Joints 33kV Joints & Terminations
3-6-3F – Cable terminations on Poles LV Cables
3-6-4C– Cable terminations on Poles Communication Cables

5-1-1E– Street Lighting Wood Pole Brackets
5-2-1F– Street Lighting Steel Poles Main Road
5-2-2E– Street Lighting Steel Poles Major Road – High Mast
5-2-4B– Street Lighting Steel Poles Sundries
5-3-1F– Street Lighting Decorative
5-4-1F– Street Lighting Flood Lights Pedestrian Crossing
5-4-2E– Street Lighting Flood Lights Watchman
5-5-1B– Street Lighting Luminaires Major Road
5-5-2B– Street Lighting Luminaires Minor Road
5-5-3B– Street Lighting Luminaires Estate

Added New Drawings

3-7-1A– lv Distribution Supply Cabinets

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23 January 2015
Version 10
Manual 00367
Updated Following Pages

1-1-1E Update Labour Cu's and added pole number tables
1-2-1F Update Labour Cu's added stay wire dead ends to table
1-3-1C Update Labour Cu's added additional conductor terminations
1-3-2D Update Labour CU's
1-3-3G Update Labour CU's
1-3-4H Update Labour CU's added table for HVABC labour CU's
1-3-5C Update Labour CU's added table for LVABC fuse switches
1-4-1I Update Labour CU's added table for LV service labour CU's
1-5-1D Update staywire deadend CU's
1-5-2E Update staywire deadend and added cable CU's
1-5-3E Added HVABC deadend CU's

1-5-4F Added LV wire spreader CU
1-7-1G Added Tee Conector
1-8-2C Added additional labour CU's updated SCAP1 & 3 CU's
1-9-1C Added wildlife guard CU
2-1-1E Update Labour CU's
2-2-1F Update Labour CU's
2-2-2G Update Labour CU's
2-2-3F Update Labour CU's
2-2-4C Update Labour CU's
2-2-5B Update Labour CU's
2-3-1E Update Labour CU's

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19 Jan 2015
Version 9
Manual 00367

Change ownership of Manual to Distribution Estimation Team
Updates to Section 1, 2 and 6.1

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06 Jun 2014
Version 8
Manual 00367
Updated following pages

1-1-1D – Overhead Construction Poles
1-2-1E – Overhead Construction Stays
1-3-3F – Overhead Construction Poletop Constructions 11kV Open Wire
1-4-1H – Overhead Construction Overhead Conductors & Cables

2-2-1E – Pole-Mounted Plant Switches Air Break Switch

3-2-1G – Underground Construction Cables

4-1-1F – Ground-Mounted Plant & Subs Padmount Transformers
4-2-1E – Ground-Mounted Plant & Subs Ground Transformers & LV Boards

5-2-3B – Street Lighting Steel Poles Minor Road

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01 May 2014
Version 7
Manual 00367
Updated following pages

5-1-1D – Street Lighting Wood Pole Brackets
5-1-2D – Street Lighting Wood Pole Brackets Sundries
5-2-1E – Street Lighting Steel Poles Main Road
5-2-2D – Street Lighting Steel Poles Major Road – High Mast
5-3-1E – Street Lighting Decorative
5-4-1E – Street Lighting Flood Lights Pedestrian Crossing
5-4-2D – Street Lighting Flood Lights Watchman

Added New Drawings

5-2-3A – Street Lighting Steel Poles Main Road
5-2-4A – Street Lighting Steel Poles Sundries
5-5-1A – Street Lighting Luminaires Major Road
5-5-2A – Street Lighting Luminaires Minor Road
5-5-3A – Street Lighting Luminaires Estate

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17 January 2014
Version 6

Updated CUs on the follow
1.3.4g
2.1.1d
2.2.2f
2.2.3e
3.1.2e
3.5.1e
6.1 overhead
6.2 underground

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24 September 2013
Version 5.7

Section 3

3-3-1D Added new 2-way link pillar LVSP14-6N

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15 March 2013
Version 5.6

Section 2

2.2.2e Update 11kV mains connection per wire

Section 3

3.1.2d Add Comms CU's
3.2.1f Update 33kV CU's as per StdsA247

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13 November 2012
Version 5.5

Drawing 1.7.1f Removed Coloured LVABC Connectors

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14 September 2012
Version 5.4
Updated Drawings - Multiple CU's removed and updated. New search capability added to all pages.

Section 1

1.1.1c

1.2.1d
1.3.1b
1.3.2c
1.3.3e
1.3.4f
1.3.5b
1.4.1g
1.5.2d
1.5.4e
1.7.1e
1.9.1b

Section 2

2.1.1c
2.2.1d
2.2.2d
2.2.3d
2.3.1d

Section 3

3.1.1e
3.1.2c
3.2.1e
3.3.1c
3.4.4f
3.4.6d
3.4.8b
3.5.1d
3.6.1d
3.6.2e
3.6.3e

Section 4

4.1.1e
4.2.1d

Section 5

5.1.2c
5.2.1d
5.2.2c
5.3.1d
5.4.1d
5.4.2c

Section 6

Renamed to Sect 6 Labour CU’s
Estimation Information has been removed from Section 6, this information can now be sourced via Valuation Standards & Program Assurance.

24 May 2012
Version 5.3
Updated Drawings

Section 1

1.3.2b
1.3.3d
1.3.4d

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18 May 2012
Version 5.2
Updated Drawings

Section 1

1-4-1f
1-4-2f
1-5-3d
1-5-4d
1-7-1d

Section 2

2-2-2c
2-3-1c

Section 3

3-1-1d
3-4-3d
3-4-4e
3-4-7c

Section 4

4-1-1d
4-2-1c

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23 March 2012
Version 5.1
Modification to Section 1 as per StdsA206 HV Wildlife Proofing
1-9-1a Added.

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20 July 2011
Version 5.0
All Stockcodes replaced with Compatible Units (CU's)
All transformer CU's updated to new contract
All Underground joints and terminations updated to new contract
Joints and termination section replaced with a new easier to read table (4 extra pages added)
Minor corrections in CU's as advised by stakeholders

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18 May 2010

Modification to Section 1 as per standards alert StdsA153 HV ABC
1-3-4-c
1-4-1-c
1-5-2-b

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27 July 2009

Modified to allow for triplex 11kV cables, additional cable joints and terminations, NOJA recloser, lightweight 11kV strain crossarms and minor corrections and updates. Removal of ADSS.

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1 July 2008
New Plan Library Drawing Number.
Total reformat and revision of RES guide undertaken, changing section names, moving existing drawings and adding many new drawings.

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1 October 2003
Version 1.0 NEW BMS FORMAT BMS02174
Total revision of RES guide undertaken, changed to a BMS document. Last review was 10 August 1998 Update No. 7
