
SECTION 4 – 33kV CONSTRUCTIONS

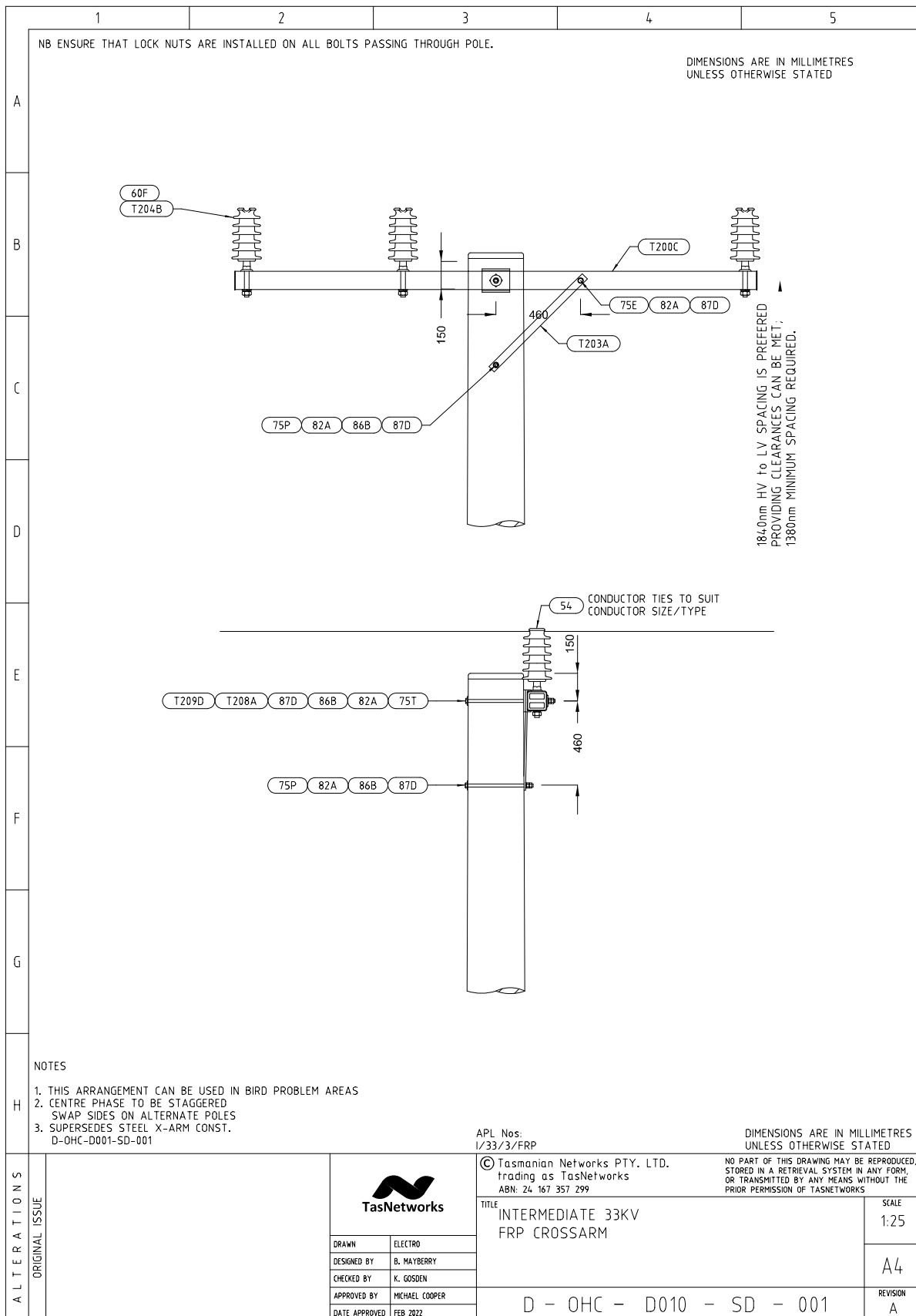
VERSION 2.0

SECTION 4 – 33kV CONSTRUCTIONS


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33KV FRP CONSTRUCTIONS

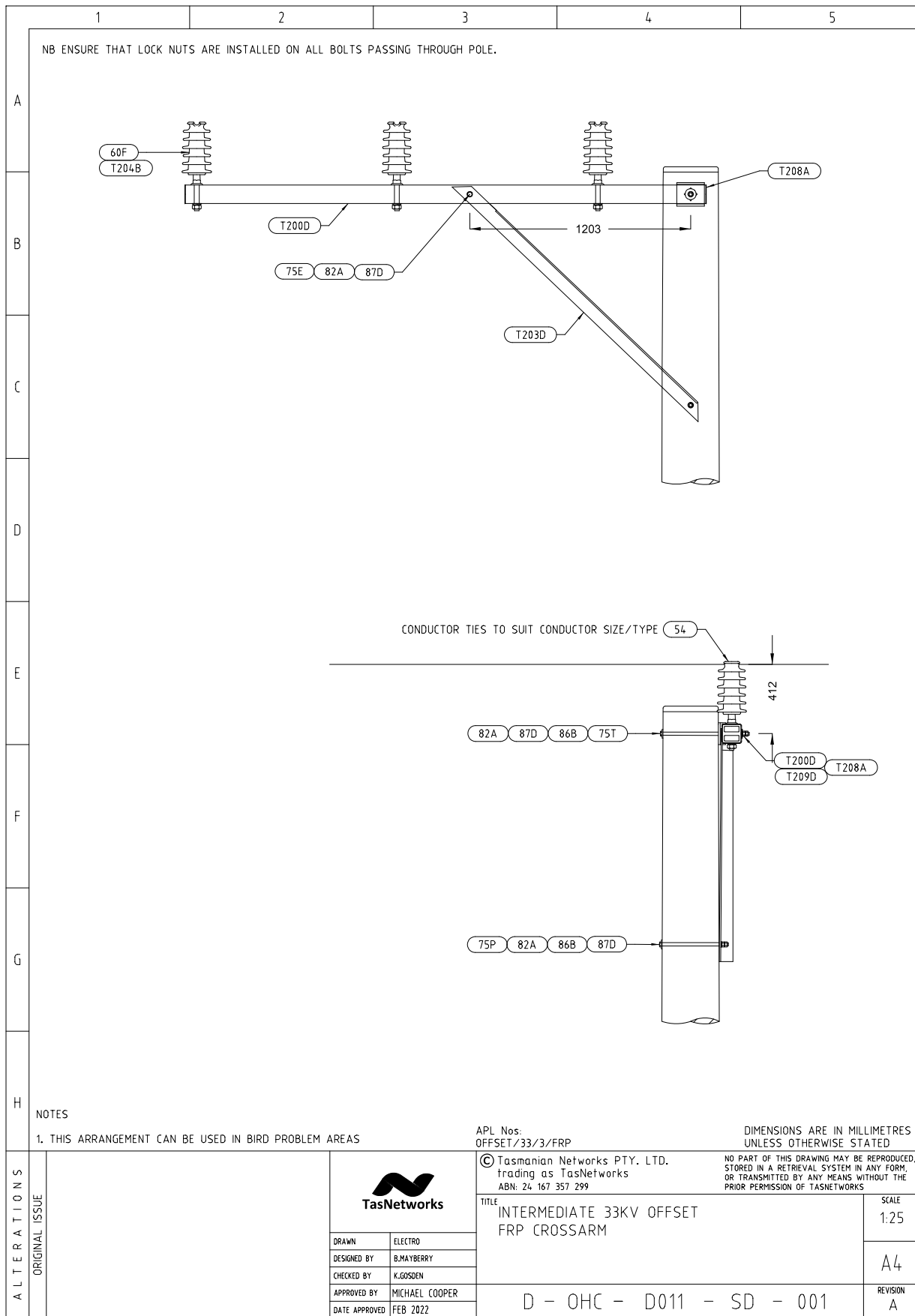
4.1 Intermediate 33kV – FRP Crossarm




Intermediate 33kV – FRP Crossarm - Material List

	1	2	3	4	5																																																								
A	NB ENSURE THAT LOCK NUTS ARE INSTALLED ON ALL BOLTS PASSING THROUGH POLE.																																																												
B																																																													
C	<table border="1"> <thead> <tr> <th>Unit Assembly</th> <th>Store Type</th> <th>Item Ref</th> <th>Stock Item</th> <th>Stock Item Description</th> <th>Quantity</th> </tr> </thead> <tbody> <tr> <td rowspan="11">I/33/3/FRP</td> <td rowspan="11">S</td> <td>60F</td> <td>320541</td> <td>Insulator, Pin Type</td> <td>3</td> </tr> <tr> <td>75E</td> <td>32279</td> <td>Bolt Hex M16 X 180 - Thread Length 57mm</td> <td>1</td> </tr> <tr> <td>75P</td> <td>32288</td> <td>Bolt Hex M16 X 375 - Thread Length 75mm</td> <td>1</td> </tr> <tr> <td>75T</td> <td>32293</td> <td>Bolt Hex M16 X 475 - Thread Length 75mm</td> <td>1</td> </tr> <tr> <td>82A</td> <td>40441</td> <td>Nut Hex M16</td> <td>5</td> </tr> <tr> <td>87D</td> <td>65616</td> <td>Washer NS M16</td> <td>4</td> </tr> <tr> <td>86B</td> <td>65158</td> <td>Washer ELS M16</td> <td>2</td> </tr> <tr> <td>T200C</td> <td>323219</td> <td>CF XARM - 2840x100x100 - CA-100 SHS 2.834m ARM</td> <td>1</td> </tr> <tr> <td>T203A</td> <td>323316</td> <td>XARM BRACE - 716x40x8</td> <td>1</td> </tr> <tr> <td>T204B</td> <td>New</td> <td>PIN, INSULATOR - (MORLYNN - C3007) 298mm stem - 58mm to base of insulator from xarm</td> <td>3</td> </tr> <tr> <td>T208A</td> <td>323306</td> <td>GAIN BLOCK 100mm</td> <td>1</td> </tr> <tr> <td>T209D</td> <td>66807</td> <td>M16 ELS-V Square Washer 50 x 50 x 4.0mm, Diagonal 70.7mm.</td> <td>1</td> </tr> </tbody> </table>					Unit Assembly	Store Type	Item Ref	Stock Item	Stock Item Description	Quantity	I/33/3/FRP	S	60F	320541	Insulator, Pin Type	3	75E	32279	Bolt Hex M16 X 180 - Thread Length 57mm	1	75P	32288	Bolt Hex M16 X 375 - Thread Length 75mm	1	75T	32293	Bolt Hex M16 X 475 - Thread Length 75mm	1	82A	40441	Nut Hex M16	5	87D	65616	Washer NS M16	4	86B	65158	Washer ELS M16	2	T200C	323219	CF XARM - 2840x100x100 - CA-100 SHS 2.834m ARM	1	T203A	323316	XARM BRACE - 716x40x8	1	T204B	New	PIN, INSULATOR - (MORLYNN - C3007) 298mm stem - 58mm to base of insulator from xarm	3	T208A	323306	GAIN BLOCK 100mm	1	T209D	66807	M16 ELS-V Square Washer 50 x 50 x 4.0mm, Diagonal 70.7mm.	1
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		82A	40441	Nut Hex M16	5																																																								
		87D	65616	Washer NS M16	4																																																								
		86B	65158	Washer ELS M16	2																																																								
		T200C	323219	CF XARM - 2840x100x100 - CA-100 SHS 2.834m ARM	1																																																								
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		D - OHC - D010 - SD - 002		REVISION A																																																									

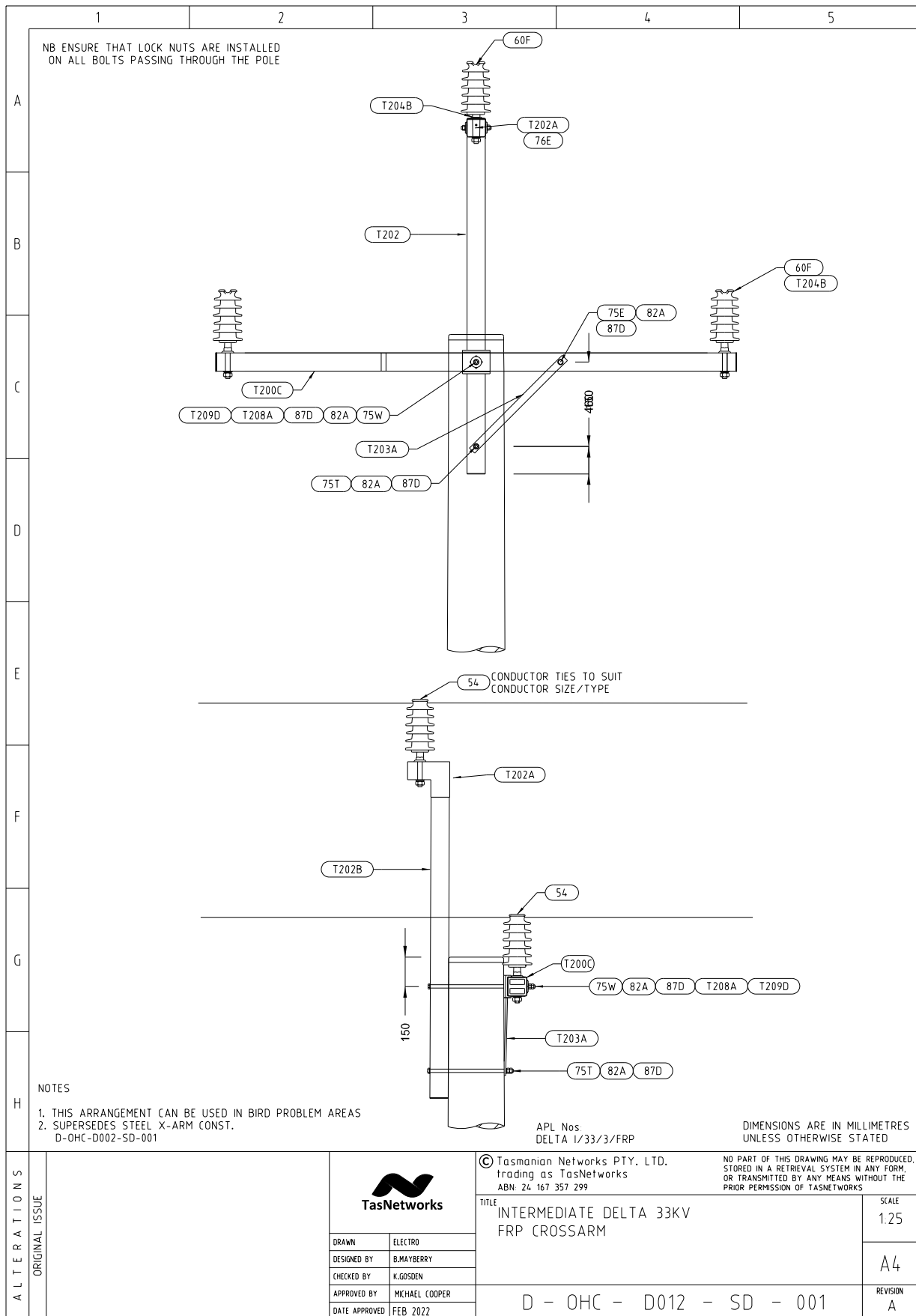
4.2 Intermediate 33kV Offset – FRP Crossarm




Intermediate 33kV Offset – FRP Crossarm - Material List

		1	2	3	4	5	
A							
B							
C	Store Type	Item Ref	Stock Item	Stock Item Description		Quantity	
	OFFSET/33/3/FRP	S	60F 320541	Insulator, Pin Type		3	
			75E 32279	Bolt Hex M16 X 180 - Thread Length 57mm		1	
			75P 32288	Bolt Hex M16 X 375 - Thread Length 75mm		1	
			75T 32293	Bolt Hex M16 X 475 - Thread Length 75mm		1	
			82A 40441	Nut Hex M16		5	
			86B 65158	Washer ELS M16		2	
			87D 65616	Washer NS M16		4	
			T200D 323221	CF XARM - 2840x100x100 - CA-100 SHS 2.834m OFFSET		1	
			T203D 323319	XARM BRACE - 1854x75x75x8		1	
			T204B New	PIN, INSULATOR - (MORLYNN - C3007) 298mm stem - 58mm to base of insulator from xarm		3	
			T208A 323306	GAIN BLOCK 100mm		1	
		T209D 66807	M16 ELS-V Square Washer 50 x 50 x 4.0mm, Diagonal 70.7mm.		1		
D							
E							
F							
G							
H							
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				TITLE INTERMEDIATE 33KV OFFSET FRP CROSSARM MATERIAL LIST			SCALE NTS
				D - OHC - D011 - SD - 002			REVISION A
				DRAWN	ELECTRO		
DESIGNED BY	B.MAYBERRY						
CHECKED BY	K.GOSDEN						
APPROVED BY	MICHAEL COOPER						
DATE APPROVED	FEB 2022						


4.3 Intermediate Delta 33kV – FRP Crossarm



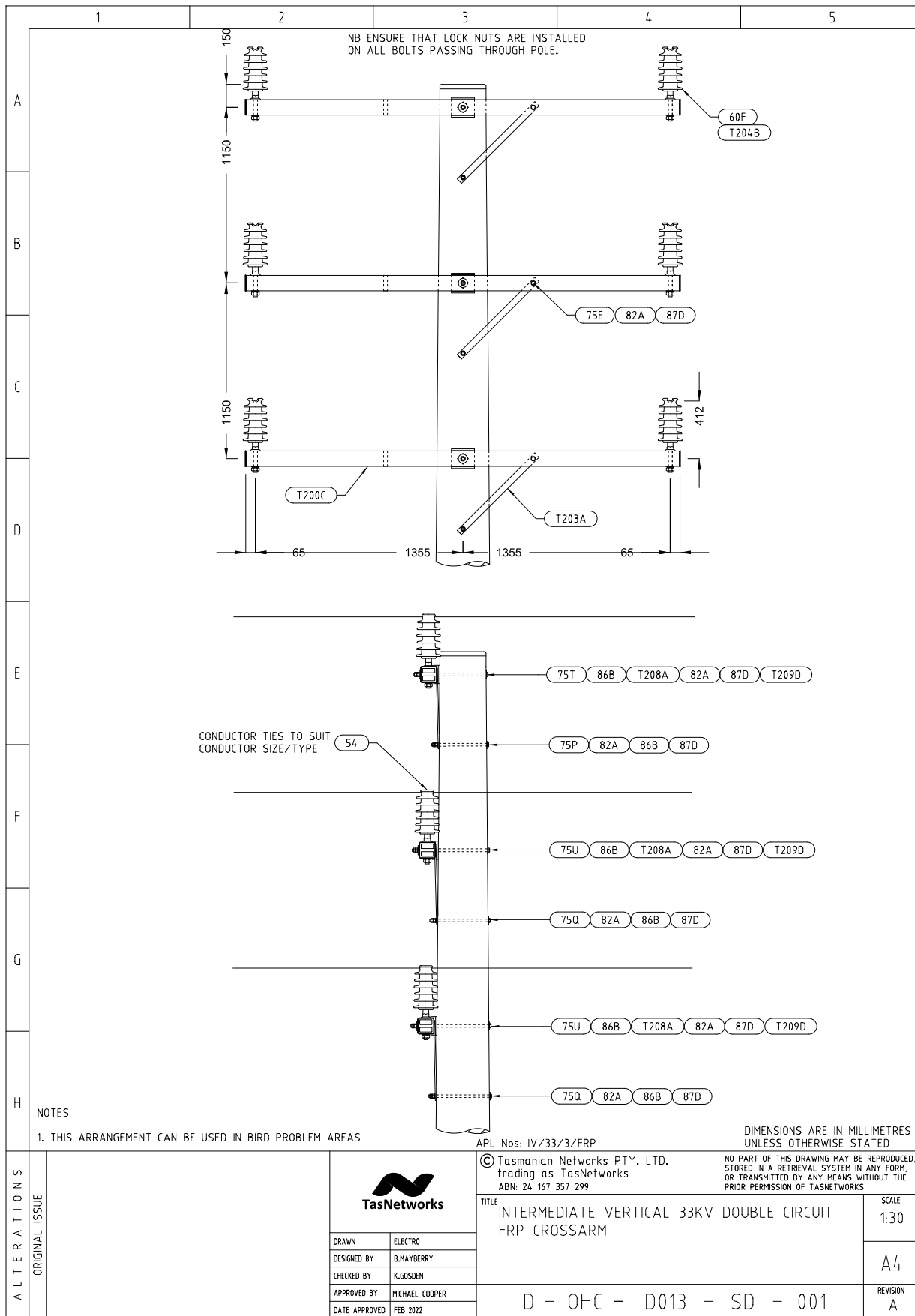
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			TITLE	SCALE
			INTERMEDIATE DELTA 33KV FRP CROSSARM	1.25
				A4
				REVISION A

D - OHC - D012 - SD - 001


Intermediate Delta 33kV – FRP Crossarm - Material List

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A																																																																																	
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C	<table border="1"> <thead> <tr> <th>Store Type</th> <th>Item Ref</th> <th>Stock Item</th> <th>Stock Item Description</th> <th>Quantity</th> </tr> </thead> <tbody> <tr> <td>DELTA I/33/3/FRP</td> <td>S</td> <td>60F 320541</td> <td>Insulator, Pin Type</td> <td>3</td> </tr> <tr> <td></td> <td></td> <td>75E 32279</td> <td>Bolt Hex M16 X 180 - Thread Length 57mm</td> <td>1</td> </tr> <tr> <td></td> <td></td> <td>75T 32293</td> <td>Bolt Hex M16 X 475 - Thread Length 75mm</td> <td>1</td> </tr> <tr> <td></td> <td></td> <td>75W 32296</td> <td>Bolt Hex M16 X 550 - Thread Length 75mm</td> <td>1</td> </tr> <tr> <td></td> <td></td> <td>76E 32332</td> <td>BOLT,Hex Head M20 x 150mm Gal. c/w Nut</td> <td>1</td> </tr> <tr> <td></td> <td></td> <td>82A 40441</td> <td>Nut Hex M16</td> <td>5</td> </tr> <tr> <td></td> <td></td> <td>87D 65616</td> <td>Washer NS M16</td> <td>6</td> </tr> <tr> <td></td> <td></td> <td>T200C 323219</td> <td>CF XARM - 2840x100x100 - CA-100 SHS 2.834m ARM</td> <td>1</td> </tr> <tr> <td></td> <td></td> <td>T202 323225</td> <td>CF DELTA RISER - AOA01555 - 1833x100x100 - CA-100 SHS 1.824 RISER</td> <td>1</td> </tr> <tr> <td></td> <td></td> <td>T202A 323226</td> <td>BRACKET, CF DELTA RISER</td> <td>1</td> </tr> <tr> <td></td> <td></td> <td>T203A 323316</td> <td>XARM BRACE - 716x40x8</td> <td>1</td> </tr> <tr> <td></td> <td></td> <td>T204B New</td> <td>PIN, INSULATOR - (MORLYNN - C3007) 298mm stem - 58mm to base of insulator from xarm</td> <td>3</td> </tr> <tr> <td></td> <td></td> <td>T208A 323306</td> <td>GAIN BLOCK 100mm</td> <td>1</td> </tr> <tr> <td></td> <td></td> <td>T209D 66807</td> <td>M16 ELS-V Square Washer 50 x 50 x 4.0mm, Diagonal 70.7mm.</td> <td>1</td> </tr> </tbody> </table>						Store Type	Item Ref	Stock Item	Stock Item Description	Quantity	DELTA I/33/3/FRP	S	60F 320541	Insulator, Pin Type	3			75E 32279	Bolt Hex M16 X 180 - Thread Length 57mm	1			75T 32293	Bolt Hex M16 X 475 - Thread Length 75mm	1			75W 32296	Bolt Hex M16 X 550 - Thread Length 75mm	1			76E 32332	BOLT,Hex Head M20 x 150mm Gal. c/w Nut	1			82A 40441	Nut Hex M16	5			87D 65616	Washer NS M16	6			T200C 323219	CF XARM - 2840x100x100 - CA-100 SHS 2.834m ARM	1			T202 323225	CF DELTA RISER - AOA01555 - 1833x100x100 - CA-100 SHS 1.824 RISER	1			T202A 323226	BRACKET, CF DELTA RISER	1			T203A 323316	XARM BRACE - 716x40x8	1			T204B New	PIN, INSULATOR - (MORLYNN - C3007) 298mm stem - 58mm to base of insulator from xarm	3			T208A 323306	GAIN BLOCK 100mm	1			T209D 66807	M16 ELS-V Square Washer 50 x 50 x 4.0mm, Diagonal 70.7mm.	1
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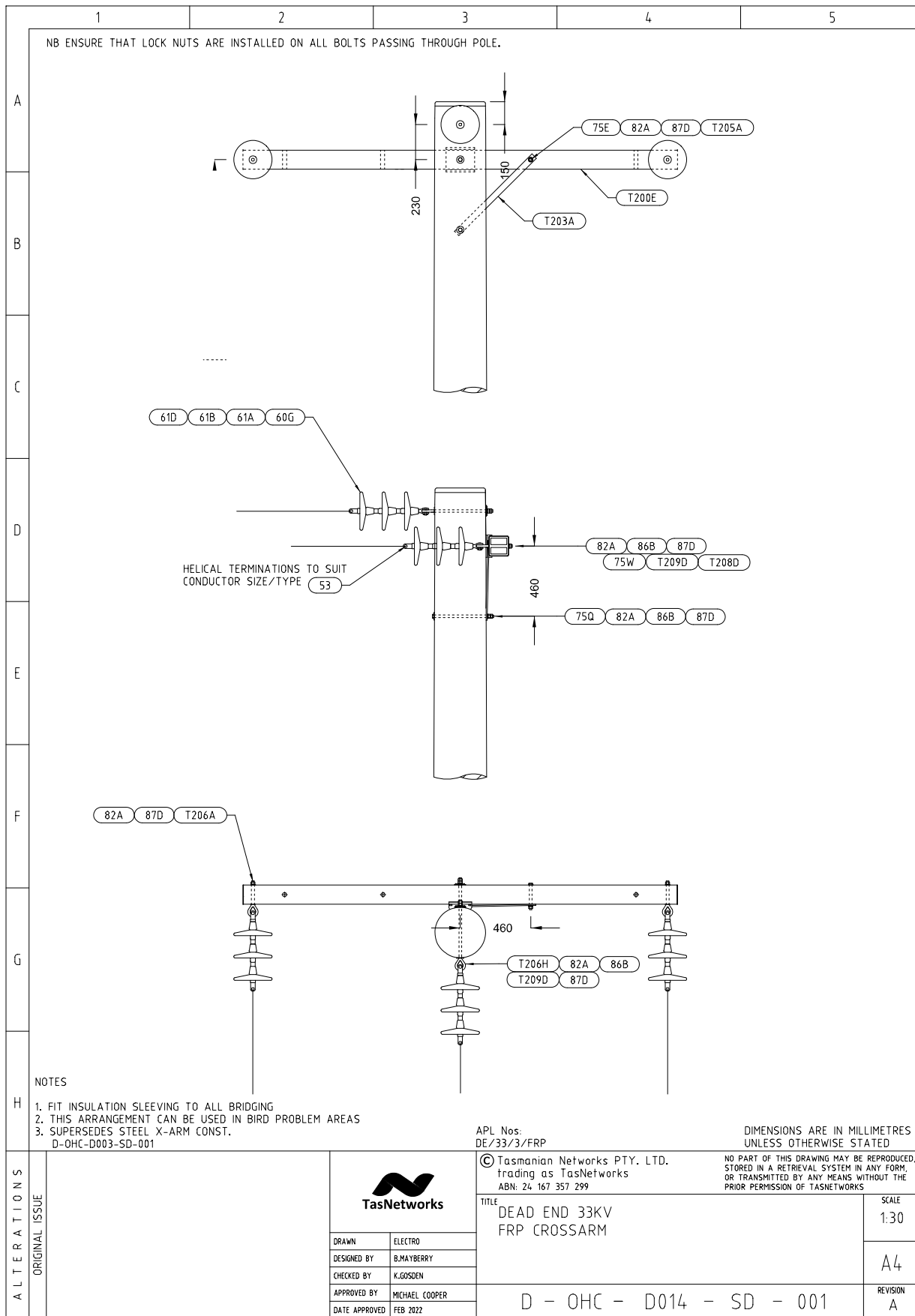
4.4 Intermediate Vertical 33kV Double Circuit – FRP Crossarm




Intermediate Vertical 33kV Double Circuit – FRP Crossarm - Material List

		1	2	3	4	5	
A							
B	IV/33/3/FRP S	60F	320541	Insulator, Pin Type		6	
		75E	32279	Bolt Hex M16 X 180 - Thread Length 57mm		3	
		75P	32288	Bolt Hex M16 X 375 - Thread Length 75mm		1	
		75Q	32290	Bolt Hex M16 X 400 - Thread Length 75mm		2	
		75T	32293	Bolt Hex M16 X 475 - Thread Length 75mm		1	
		75U	32294	Bolt Hex M16 X 500 - Thread Length 75mm		2	
		82A	40441	Nut Hex M16		15	
		86B	65158	Washer ELS M16		6	
		87D	65616	Washer NS M16		12	
C			T200C	323219	CF XARM - 2840x100x100 - CA-100 SHS 2.834m ARM		3
			T203A	323316	XARM BRACE - 716x40x8		3
			T204B	New	PIN, INSULATOR - (MORLYNN - C3007) 298mm stem - 58mm to base of insulator from xarm		6
			T208A	323306	GAIN BLOCK 100mm		3
			T209D	66807	M16 ELS-V Square Washer 50 x 50 x 4.0mm, Diagonal 70.7mm.		3
D							
E							
F							
G							
H							
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				D - OHC - D013 - SD - 002			REVISION A
				DRAWN	ELECTRO		
DESIGNED BY	B.MAYBERRY						
CHECKED BY	K.GOSDEN						
APPROVED BY	MICHAEL COOPER						
DATE APPROVED	FEB 2022						

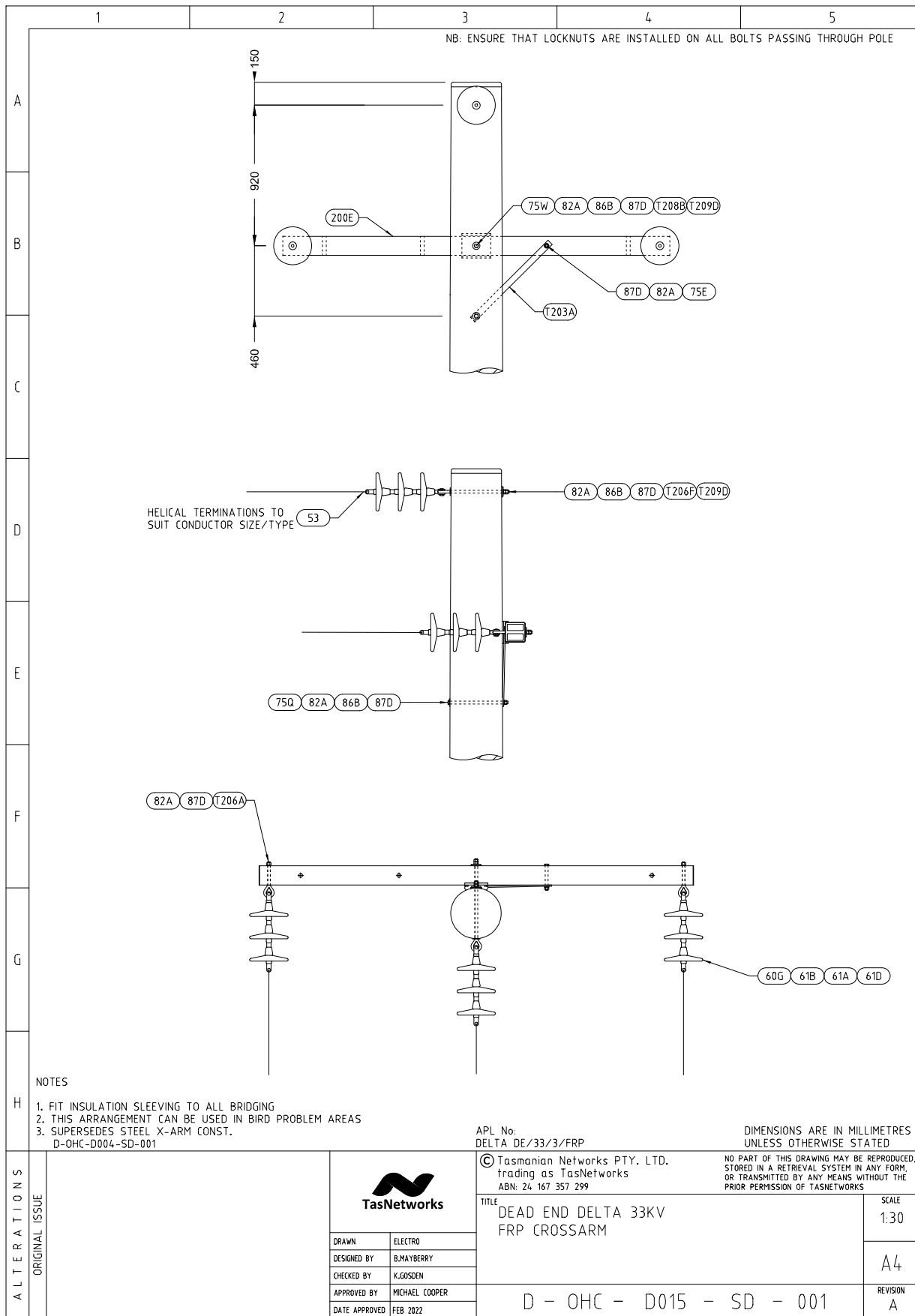
4.5 Dead End 33kV – FRP Crossarm




Dead End 33kV – FRP Crossarm - Material List

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Store Type	Item Ref	Stock Item	Stock Item Description	Quantity																																																																																																												
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		61A	322056	Ball Clevis & Pin 16mm	3																																																																																																											
		61B	322386	Socket Termination 16mm	3																																																																																																											
		61D	322090	'W' Clip / Kink Pin	12																																																																																																											
		75E	32279	Bolt Hex M16 X 180 - Thread Length 57mm	1																																																																																																											
		75Q	32290	Bolt Hex M16 X 400 - Thread Length 75mm	1																																																																																																											
		75W	32296	Bolt Hex M16 X 550 - Thread Length 75mm	1																																																																																																											
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		T200E	323223	CF XARM - 2840x125x125 - CA-125 SHS 2.834m ARM	1																																																																																																											
		T203A	323316	XARM BRACE - 716x40x8	1																																																																																																											
		T206A	325628	M16 EYE BOLT 150 - Thread Length 60mm	2																																																																																																											
		T206H	325636	M16 EYE BOLT 400 - Thread Length 75mm	1																																																																																																											
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				DESIGNED BY		B.MAYBERRY																																																																																																										
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APPROVED BY		MICHAEL COOPER						REVISION																																																																																																								
DATE APPROVED		FEB 2022		D - OHC - D014 - SD - 002				A																																																																																																								

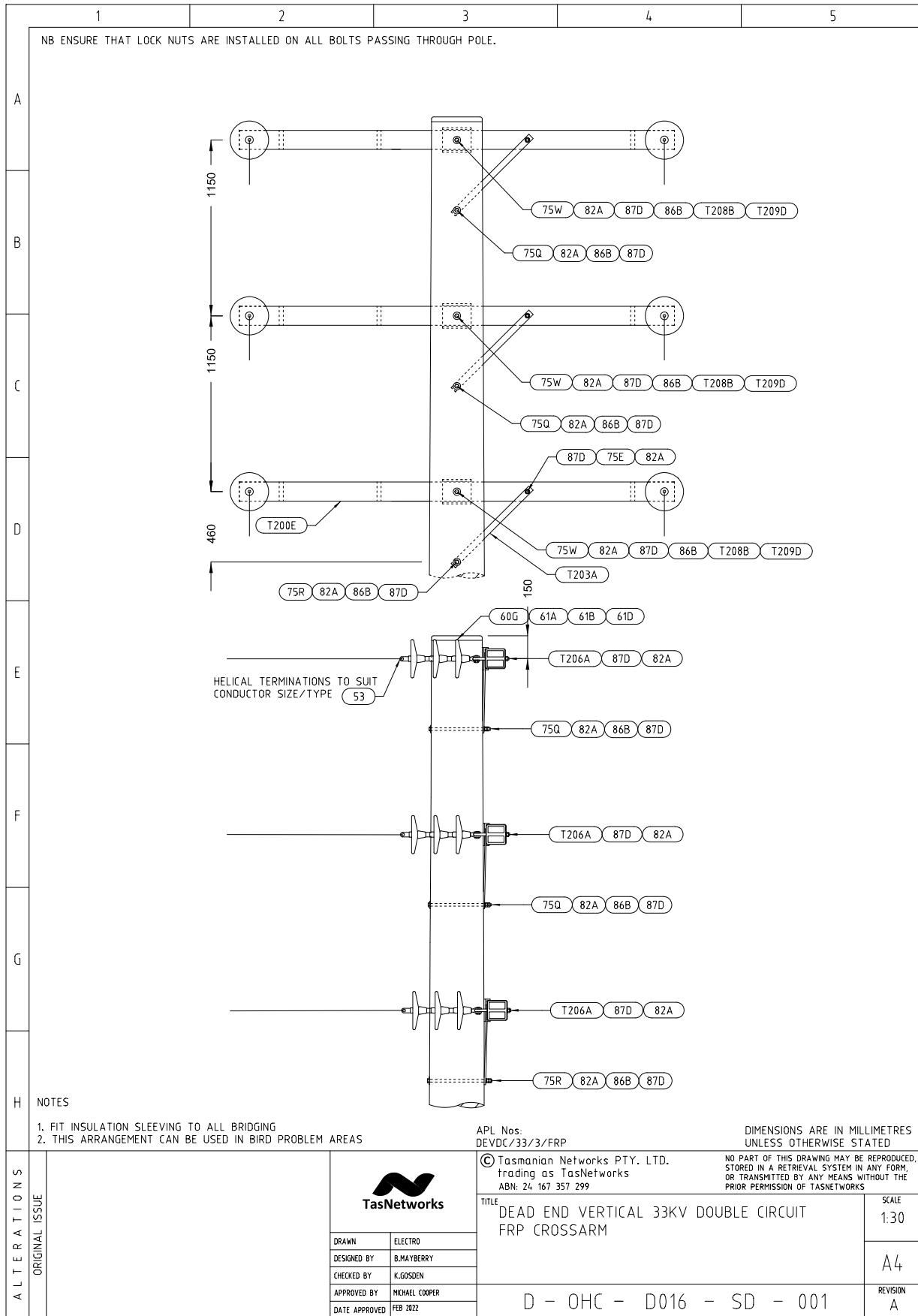
4.6 Dead End Delta 33kV – FRP Crossarm




Dead End Delta 33kV – FRP Crossarm - Material List

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		DESIGNED BY B.MAYBERRY				A4																																																																						
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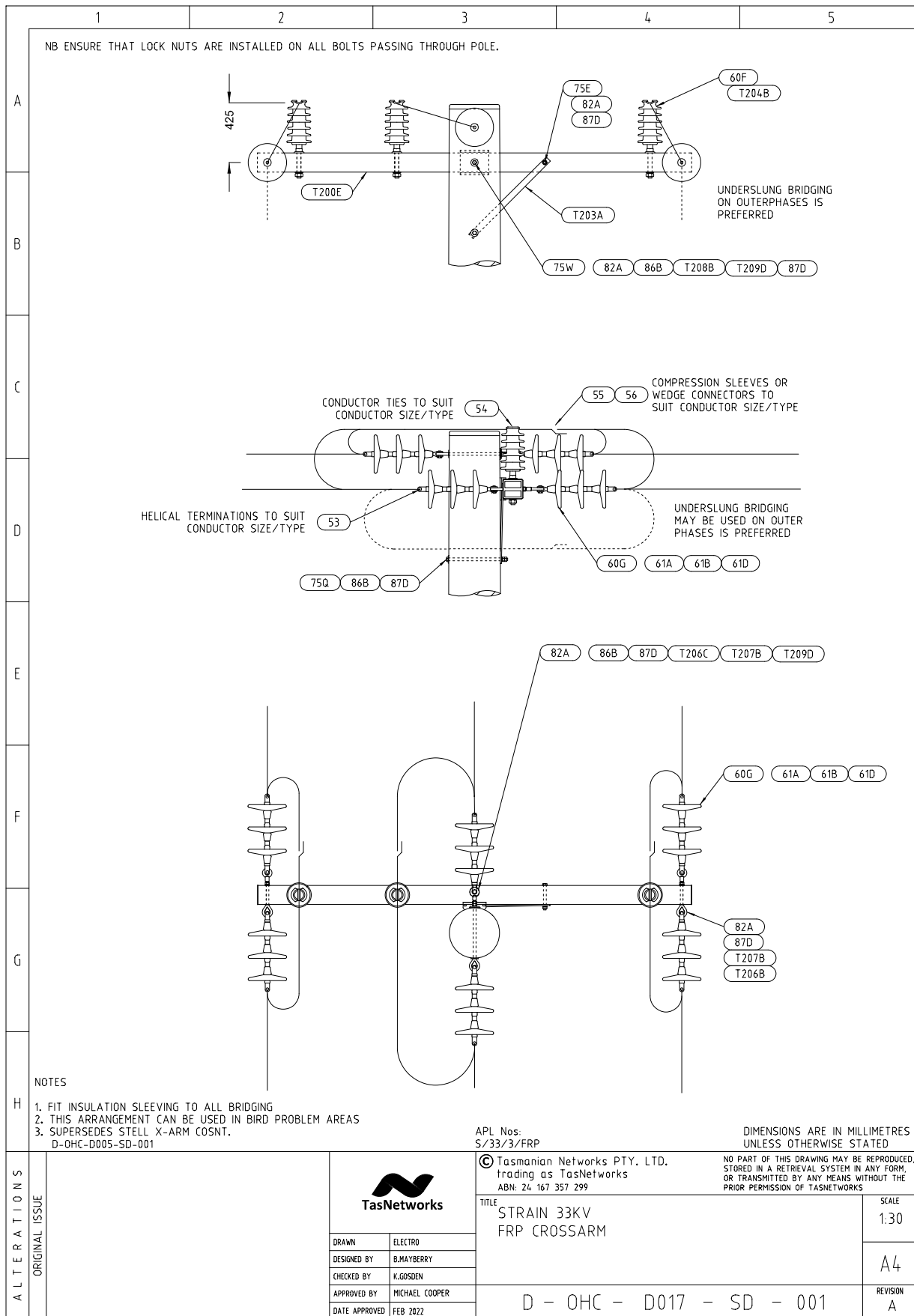
4.7 Dead End Vertical 33kV Double Circuit – FRP Crossarm




Dead End Vertical 33kV Double Circuit – FRP Crossarm - Material List

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		DRAWN ELECTRO DESIGNED BY B.MAYBERRY CHECKED BY K.GOSDEN APPROVED BY MICHAEL COOPER DATE APPROVED FEB 2022	TITLE DEAD END VERTICAL 33KV DOUBLE CIRCUIT FRP CROSSARM MATERIAL LIST		SCALE NTS																																																																									
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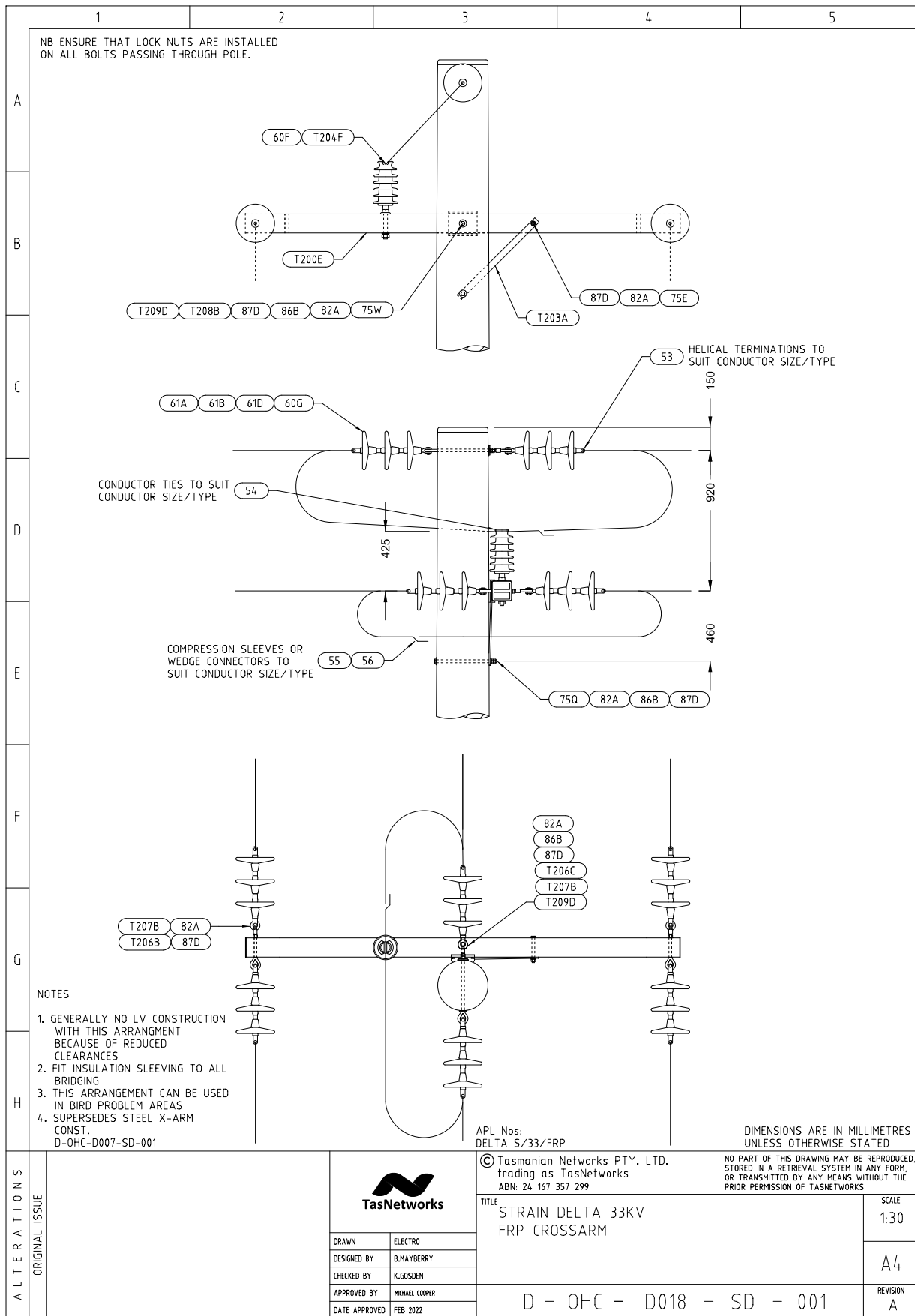
4.8 Strain 33kV – FRP Crossarm




Strain 33kV – FRP Crossarm - Material List

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A								
B								
C	Unit Assembly	Store Type	Item Ref	Stock Item	Stock Item Description	Quantity		
	S/33/3/FRP	S	60F	320541	Insulator, Pin Type	3		
			60G	321260	Insulator Disc Porcelain 16mm 70Kn 146mm	18		
			61A	322056	Ball Clevis & Pin 16mm	6		
			61B	322386	Socket Termination 16mm	6		
			61D	322090	'W' Clip / Kink Pin	24		
			75E	32279	Bolt Hex M16 X 180 - Thread Length 57mm	1		
			75Q	32290	Bolt Hex M16 X 400 - Thread Length 75mm	1		
			75W	32296	Bolt Hex M16 X 550 - Thread Length 75mm	1		
D			82A	40441	Nut Hex M16	9		
			86B	65158	Washer ELS M16	3		
			87D	65616	Washer NS M16	9		
			T200E	323223	CF XARM - 2840x125x125 - CA-125 SHS 2.834m ARM	1		
			T203A	323316	XARM BRACE - 716x40x8	1		
			T204B	New	PIN, INSULATOR - (MORLYNN - C3007) 298mm stem - 58mm to base of insulator from xarm	3		
			T206B	325629	M16 EYE BOLT 180 - Thread Length 60mm	2		
			T206C	325639	M16 EYE BOLT 500 - Thread Length 75mm	2		
			T207B	325740	M16 EYE NUT	3		
E			T208B	323307	GAIN BLOCK 125mm	1		
			T209D	66807	M16 ELS-V Square Washer 50 x 50 x 4.0mm, Diagonal 70.7mm.	2		
F								
G								
H								
A L T E R A T I O N S	O R I G I N A L I S S U E				© Tasmanian Networks PTY. LTD. trading as TasNetworks ABN: 24 167 357 299		NO PART OF THIS DRAWING MAY BE REPRODUCED, STORED IN A RETRIEVAL SYSTEM IN ANY FORM, OR TRANSMITTED BY ANY MEANS WITHOUT THE PRIOR PERMISSION OF TASNETWORKS	
					TITLE STRAIN 3KV FRP CROSSARM MATERIAL LIST			SCALE NTS
					DRAWN	ELECTRO		A4
					DESIGNED BY	B. MAYBERRY		
					CHECKED BY	K. GOSDEN		
APPROVED BY	ANGUS KETLEY							
DATE APPROVED	01/08/2021	D - OHC - D017 - SD - 002		REVISION A				

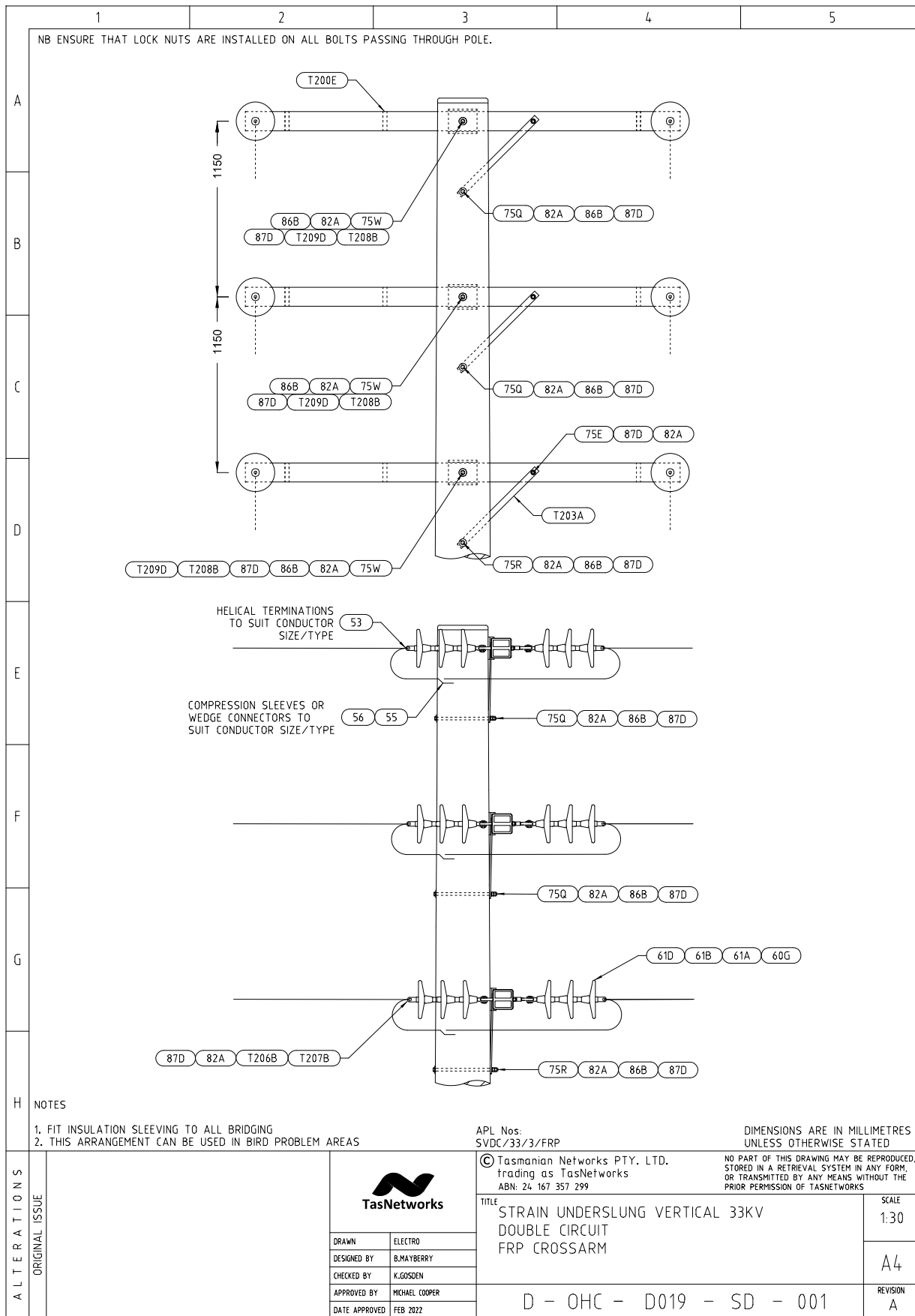
4.9 Strain Delta 33kV – FRP Crossarm




Strain Delta 33kV – FRP Crossarm - Material List

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												61D 322090	'W' Clip / Kink Pin	24																																																																																																				
												75E 32279	Bolt Hex M16 X 180 - Thread Length 57mm	1																																																																																																				
												75Q 32290	Bolt Hex M16 X 400 - Thread Length 75mm	1																																																																																																				
												75W 32296	Bolt Hex M16 X 550 - Thread Length 75mm	1																																																																																																				
												82A 40441	Nut Hex M16	9																																																																																																				
												86B 65158	Washer ELS M16	3																																																																																																				
												87D 65616	Washer NS M16	9																																																																																																				
												T200E 323223	CF XARM - 2840x125x125 - CA-125 SHS 2.834m ARM	1																																																																																																				
												T203A 323316	XARM BRACE - 716x40x8	1																																																																																																				
												T204B New	PIN, INSULATOR - (MORLYNN - C3007) 298mm stem - 58mm to base of insulator from xarm	1																																																																																																				
												T206B 325629	M16 EYE BOLT 180 - Thread Length 60mm	2																																																																																																				
												T206C 325639	M16 EYE BOLT 500 - Thread Length 75mm	1																																																																																																				
		T207B 325740	M16 EYE NUT	3																																																																																																														
		T208B 323307	GAIN BLOCK 125mm	1																																																																																																														
		T209D 66807	M16 ELS-V Square Washer 50 x 50 x 4.0mm, Diagonal 70.7mm.	1																																																																																																														
				© Tasmanian Networks PTY. LTD. trading as TasNetworks ABN: 24 167 357 299		NO PART OF THIS DRAWING MAY BE REPRODUCED, STORED IN A RETRIEVAL SYSTEM IN ANY FORM, OR TRANSMITTED BY ANY MEANS WITHOUT THE PRIOR PERMISSION OF TASNETWORKS																																																																																																												
		<table border="1"> <tr> <td>DRAWN</td> <td>ELECTRO</td> </tr> <tr> <td>DESIGNED BY</td> <td>B.MAYBERRY</td> </tr> <tr> <td>CHECKED BY</td> <td>K.GOSDEN</td> </tr> <tr> <td>APPROVED BY</td> <td>ANGUS KETLEY</td> </tr> <tr> <td>DATE APPROVED</td> <td>01/18/2021</td> </tr> </table>		DRAWN	ELECTRO	DESIGNED BY	B.MAYBERRY	CHECKED BY	K.GOSDEN	APPROVED BY	ANGUS KETLEY	DATE APPROVED	01/18/2021	TITLE STRAIN DELTA 33KV FRP CROSSARM MATERIAL LIST		SCALE NTS A4																																																																																																		
DRAWN	ELECTRO																																																																																																																	
DESIGNED BY	B.MAYBERRY																																																																																																																	
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DATE APPROVED	01/18/2021																																																																																																																	
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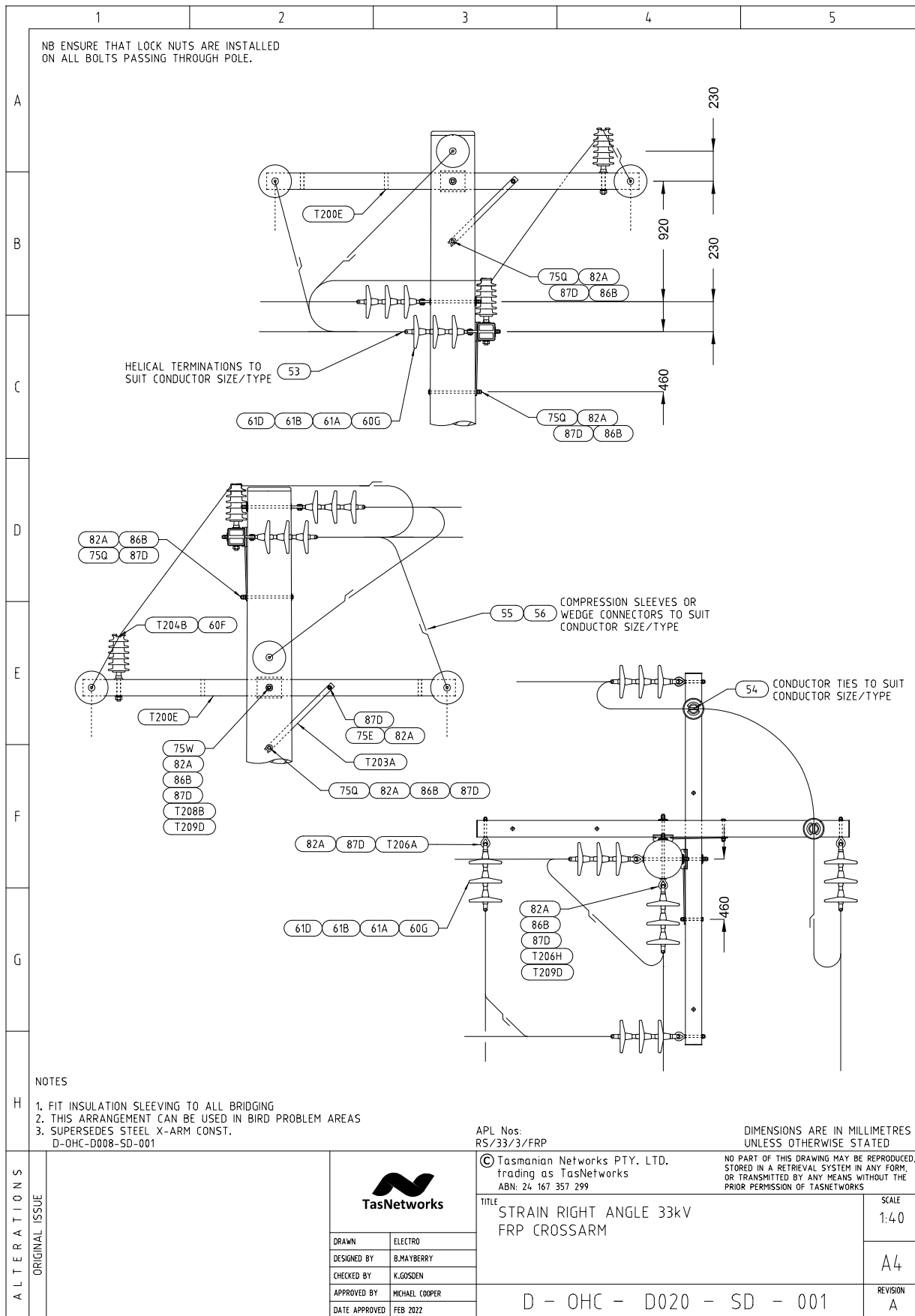
4.10 Strain Underslung Vertical 33kV Double Circuit – FRP Crossarm




Strain Underslung Vertical 33kV Double Circuit – FRP Crossarm - Material List

		1	2	3	4	5	
A							
B							
C		Store Type	Item Ref	Stock Item	Stock Item Description	Quantity	
		SVDC/33/3/FRP	S	60G	321260	Insulator Disc Porcelain 16mm 70Kn 146mm	36
				61A	322056	Ball Clevis & Pin 16mm	12
				61B	322386	Socket Termination 16mm	12
				61D	322090	'W' Clip / Kink Pin	48
				75E	32279	Bolt Hex M16 X 180 - Thread Length 57mm	3
				75Q	32290	Bolt Hex M16 X 400 - Thread Length 75mm	2
				75R	32291	Bolt Hex M16 X 425 - Thread Length 75mm	1
				75W	32296	Bolt Hex M16 X 550 - Thread Length 75mm	3
				82A	40441	Nut Hex M16	21
				86B	65158	Washer ELS M16	6
				87D	65616	Washer NS M16	24
	D			T200E	323223	CF XARM - 2840x125x125 - CA-125 SHS 2.834m ARM	3
				T203A	323316	XARM BRACE - 716x40x8	3
				T206B	325629	M16 EYE BOLT 180 - Thread Length 60mm	6
				T207B	325740	M16 EYE NUT	6
				T208B	323307	GAIN BLOCK 125mm	3
			T209D	66807	M16 ELS-V Square Washer 50 x 50 x 4.0mm, Diagonal 70.7mm.	3	
E							
F							
G							
H							
A L T E R A T I O N S	O R I G I N A L I S S U E			© Tasmanian Networks PTY. LTD. trading as TasNetworks ABN: 24 167 357 299		NO PART OF THIS DRAWING MAY BE REPRODUCED, STORED IN A RETRIEVAL SYSTEM IN ANY FORM, OR TRANSMITTED BY ANY MEANS WITHOUT THE PRIOR PERMISSION OF TASNETWORKS	
				TITLE STRAIN UNDERSLUNG VERTICAL 33KV DOUBLE CIRCUIT FRP CROSSARM MATERIAL LIST			SCALE NTS
				D - OHC - D019 - SD - 002			REVISION A
				DRAWN ELECTRO	DESIGNED BY B.MAYBERRY		CHECKED BY K.GOSDEN

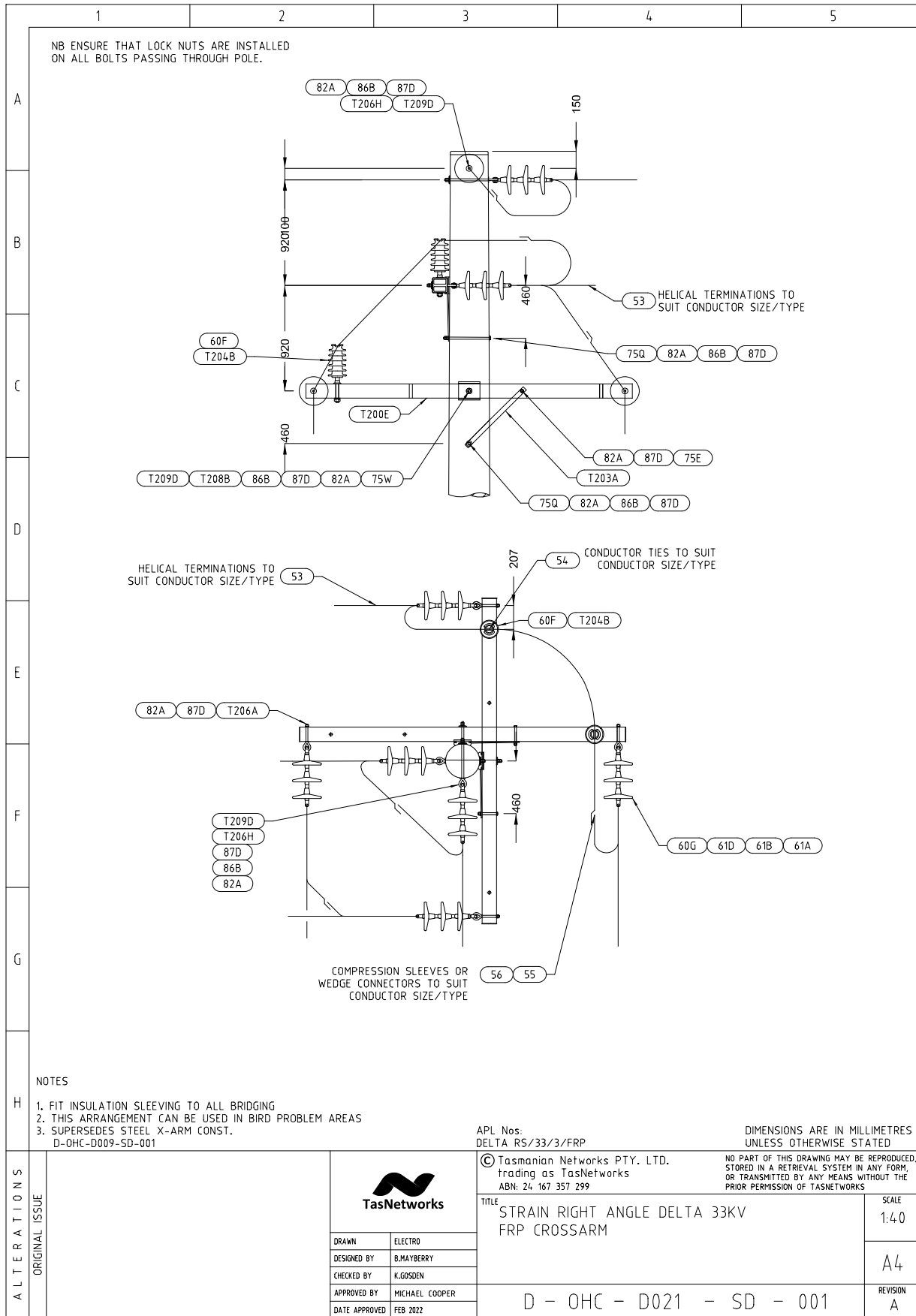
4.11 Strain Right Angle 33kV – FRP Crossarm




Strain Right Angle 33kV – FRP Crossarm - Material List

	1	2	3	4	5																																																																																															
A																																																																																																				
B																																																																																																				
C	<table border="1"> <thead> <tr> <th>Store Type</th> <th>Item Ref</th> <th>Stock Item</th> <th>Stock Item Description</th> <th>Quantity</th> </tr> </thead> <tbody> <tr> <td>RS/33/3/FRP</td> <td>S</td> <td>60F</td> <td>320541 Insulator, Pin Type</td> <td>2</td> </tr> <tr> <td></td> <td></td> <td>60G</td> <td>321260 Insulator Disc Porcelain 16mm 70Kn 146mm</td> <td>18</td> </tr> <tr> <td></td> <td></td> <td>61A</td> <td>322056 Ball Clevis & Pin 16mm</td> <td>6</td> </tr> <tr> <td></td> <td></td> <td>61B</td> <td>322386 Socket Termination 16mm</td> <td>6</td> </tr> <tr> <td></td> <td></td> <td>61D</td> <td>322090 'W' Clip / Kink Pin</td> <td>24</td> </tr> <tr> <td></td> <td></td> <td>75E</td> <td>32279 Bolt Hex M16 X 180 - Thread Length 57mm</td> <td>2</td> </tr> <tr> <td></td> <td></td> <td>75Q</td> <td>32290 Bolt Hex M16 X 400 - Thread Length 75mm</td> <td>2</td> </tr> <tr> <td></td> <td></td> <td>75W</td> <td>32296 Bolt Hex M16 X 550 - Thread Length 75mm</td> <td>2</td> </tr> <tr> <td>D</td> <td></td> <td>82A</td> <td>40441 Nut Hex M16</td> <td>18</td> </tr> <tr> <td></td> <td></td> <td>86B</td> <td>65158 Washer ELS M16</td> <td>6</td> </tr> <tr> <td></td> <td></td> <td>87D</td> <td>65616 Washer NS M16</td> <td>18</td> </tr> <tr> <td></td> <td></td> <td>T200E</td> <td>323223 CF XARM - 2840x125x125 - CA-125 SHS 2.834m ARM</td> <td>2</td> </tr> <tr> <td></td> <td></td> <td>T203A</td> <td>323316 XARM BRACE - 716x40x8</td> <td>2</td> </tr> <tr> <td></td> <td></td> <td>T204B</td> <td>New PIN, INSULATOR - (MORLYNN - C3007) 298mm stem - 58mm to base of insulator from xarm</td> <td>2</td> </tr> <tr> <td></td> <td></td> <td>T206A</td> <td>325628 M16 EYE BOLT 150 - Thread Length 60mm</td> <td>4</td> </tr> <tr> <td></td> <td></td> <td>T206H</td> <td>325636 M16 EYE BOLT 400 - Thread Length 75mm</td> <td>2</td> </tr> <tr> <td>E</td> <td></td> <td>T208B</td> <td>323307 GAIN BLOCK 125mm</td> <td>2</td> </tr> <tr> <td></td> <td></td> <td>T209D</td> <td>66807 M16 ELS-V Square Washer 50 x 50 x 4.0mm, Diagonal 70.7mm.</td> <td>4</td> </tr> </tbody> </table>					Store Type	Item Ref	Stock Item	Stock Item Description	Quantity	RS/33/3/FRP	S	60F	320541 Insulator, Pin Type	2			60G	321260 Insulator Disc Porcelain 16mm 70Kn 146mm	18			61A	322056 Ball Clevis & Pin 16mm	6			61B	322386 Socket Termination 16mm	6			61D	322090 'W' Clip / Kink Pin	24			75E	32279 Bolt Hex M16 X 180 - Thread Length 57mm	2			75Q	32290 Bolt Hex M16 X 400 - Thread Length 75mm	2			75W	32296 Bolt Hex M16 X 550 - Thread Length 75mm	2	D		82A	40441 Nut Hex M16	18			86B	65158 Washer ELS M16	6			87D	65616 Washer NS M16	18			T200E	323223 CF XARM - 2840x125x125 - CA-125 SHS 2.834m ARM	2			T203A	323316 XARM BRACE - 716x40x8	2			T204B	New PIN, INSULATOR - (MORLYNN - C3007) 298mm stem - 58mm to base of insulator from xarm	2			T206A	325628 M16 EYE BOLT 150 - Thread Length 60mm	4			T206H	325636 M16 EYE BOLT 400 - Thread Length 75mm	2	E		T208B	323307 GAIN BLOCK 125mm	2			T209D	66807 M16 ELS-V Square Washer 50 x 50 x 4.0mm, Diagonal 70.7mm.	4
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		75W	32296 Bolt Hex M16 X 550 - Thread Length 75mm	2																																																																																																
D		82A	40441 Nut Hex M16	18																																																																																																
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		87D	65616 Washer NS M16	18																																																																																																
		T200E	323223 CF XARM - 2840x125x125 - CA-125 SHS 2.834m ARM	2																																																																																																
		T203A	323316 XARM BRACE - 716x40x8	2																																																																																																
		T204B	New PIN, INSULATOR - (MORLYNN - C3007) 298mm stem - 58mm to base of insulator from xarm	2																																																																																																
		T206A	325628 M16 EYE BOLT 150 - Thread Length 60mm	4																																																																																																
		T206H	325636 M16 EYE BOLT 400 - Thread Length 75mm	2																																																																																																
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ALTERATIONS	ORIGINAL ISSUE			© Tasmanian Networks PTY. LTD. trading as TasNetworks ABN: 24 167 357 299																																																																																																
			DRAWN ELECTRO DESIGNED BY B.MAYBERRY CHECKED BY K.GOSDEN APPROVED BY ANGUS KETLEY DATE APPROVED 01/08/2021	NO PART OF THIS DRAWING MAY BE REPRODUCED, STORED IN A RETRIEVAL SYSTEM IN ANY FORM, OR TRANSMITTED BY ANY MEANS WITHOUT THE PRIOR PERMISSION OF TASNETWORKS																																																																																																
			TITLE STRAIN RIGHT ANGLE 33kV FRP CROSSARM MATERIAL LIST		SCALE NTS																																																																																															
			D - OHC - D020 - SD - 002		REVISION A																																																																																															

4.12 Strain Right Angle Delta 33kV – FRP Crossarm

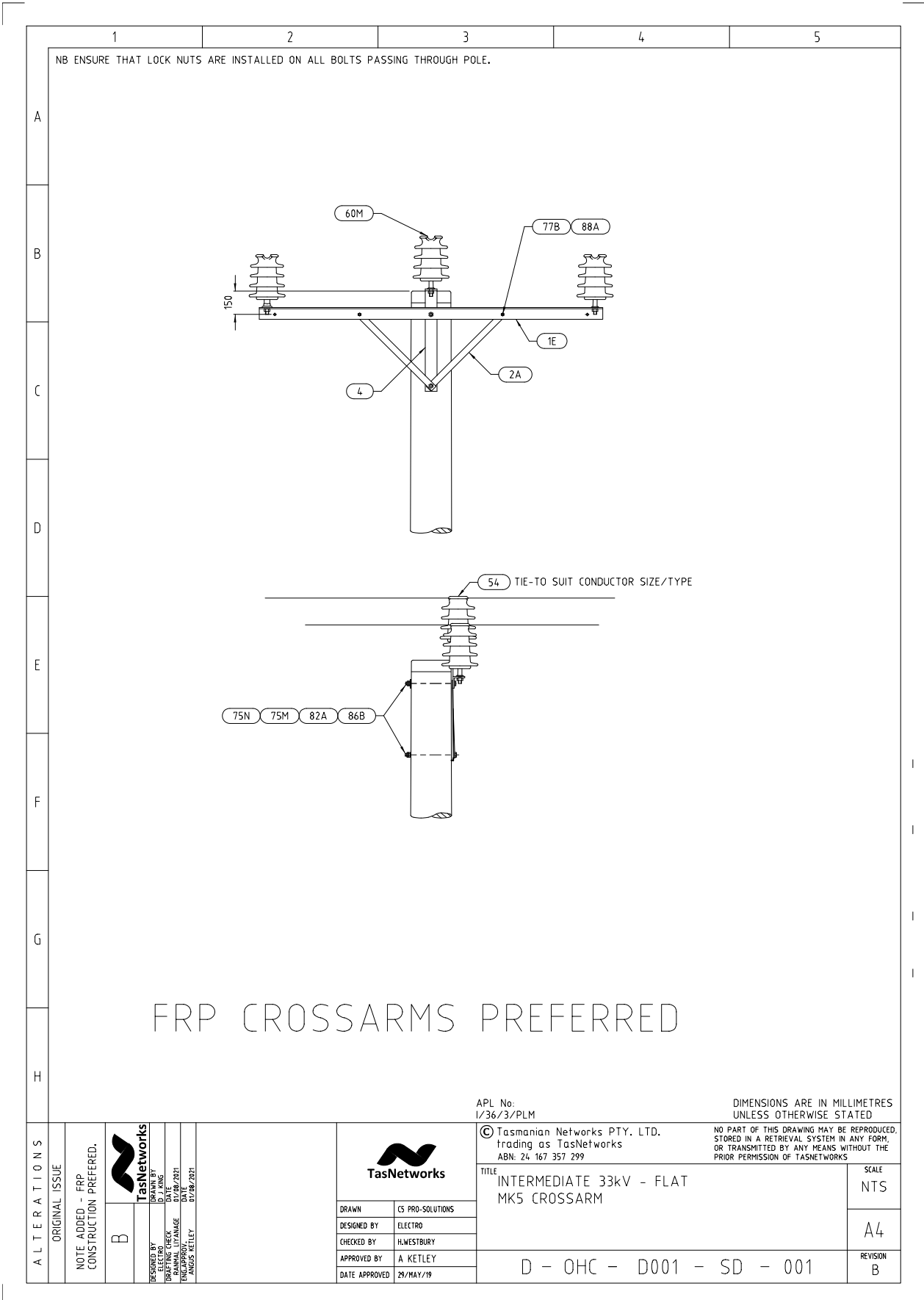


Strain Right Angle Delta 33kV – FRP Crossarm - Material List


		1	2	3	4	5		
A								
B								
C	Store Type	Item Ref	Stock Item	Stock Item Description		Quantity		
	DELTA RS/33/3/FRP	S	60F	320541	Insulator, Pin Type		2	
			60G	321260	Insulator Disc Porcelain 16mm 70Kn 146mm		18	
			61A	322056	Ball Clevis & Pin 16mm		6	
			61B	322386	Socket Termination 16mm		6	
			61D	322090	"W" Clip / Kink Pin		24	
			75E	32279	Bolt Hex M16 X 180 - Thread Length 57mm		2	
			75Q	32290	Bolt Hex M16 X 400 - Thread Length 75mm		2	
			75W	32296	Bolt Hex M16 X 550 - Thread Length 75mm		2	
			82A	40441	Nut Hex M16		18	
			86B	65158	Washer ELS M16		6	
			87D	65616	Washer NS M16		18	
			D	T200E	323223	CF XARM - 2840x125x125 - CA-125 SHS 2.834m ARM		2
				T203A	323316	XARM BRACE - 716x40x8		2
				T204B	New	PIN, INSULATOR - (MORLYNN - C3007) 298mm stem - 58mm to base of insulator from xarm		2
				T206A	325628	M16 EYE BOLT 150 - Thread Length 60mm		4
				T206H	325636	M16 EYE BOLT 400 - Thread Length 75mm		2
T208B				323307	GAIN BLOCK 125mm		2	
	T209D	66807	M16 ELS-V Square Washer 50 x 50 x 4.0mm, Diagonal 70.7mm.		3			
E								
F								
G								
H								
ALTERNATIONS	ORIGINAL ISSUE			© Tasmanian Networks PTY. LTD. trading as TasNetworks ABN: 24 167 357 299		NO PART OF THIS DRAWING MAY BE REPRODUCED, STORED IN A RETRIEVAL SYSTEM IN ANY FORM, OR TRANSMITTED BY ANY MEANS WITHOUT THE PRIOR PERMISSION OF TASNETWORKS		
				TITLE STRAIN RIGHT ANGLE DELTA 33KV FRP CROSSARM MATERIAL LIST		SCALE NTS		
				D - OHC - D021 - SD - 002		REVISION A		
				DRAWN	ELECTRO			
DESIGNED BY	B.MAYBERRY							
CHECKED BY	K.GOSDEN							
APPROVED BY	ANGUS KETLEY							
DATE APPROVED	01 AUGUST 2021							

33kV STEEL CROSSARM CONSTRUCTIONS

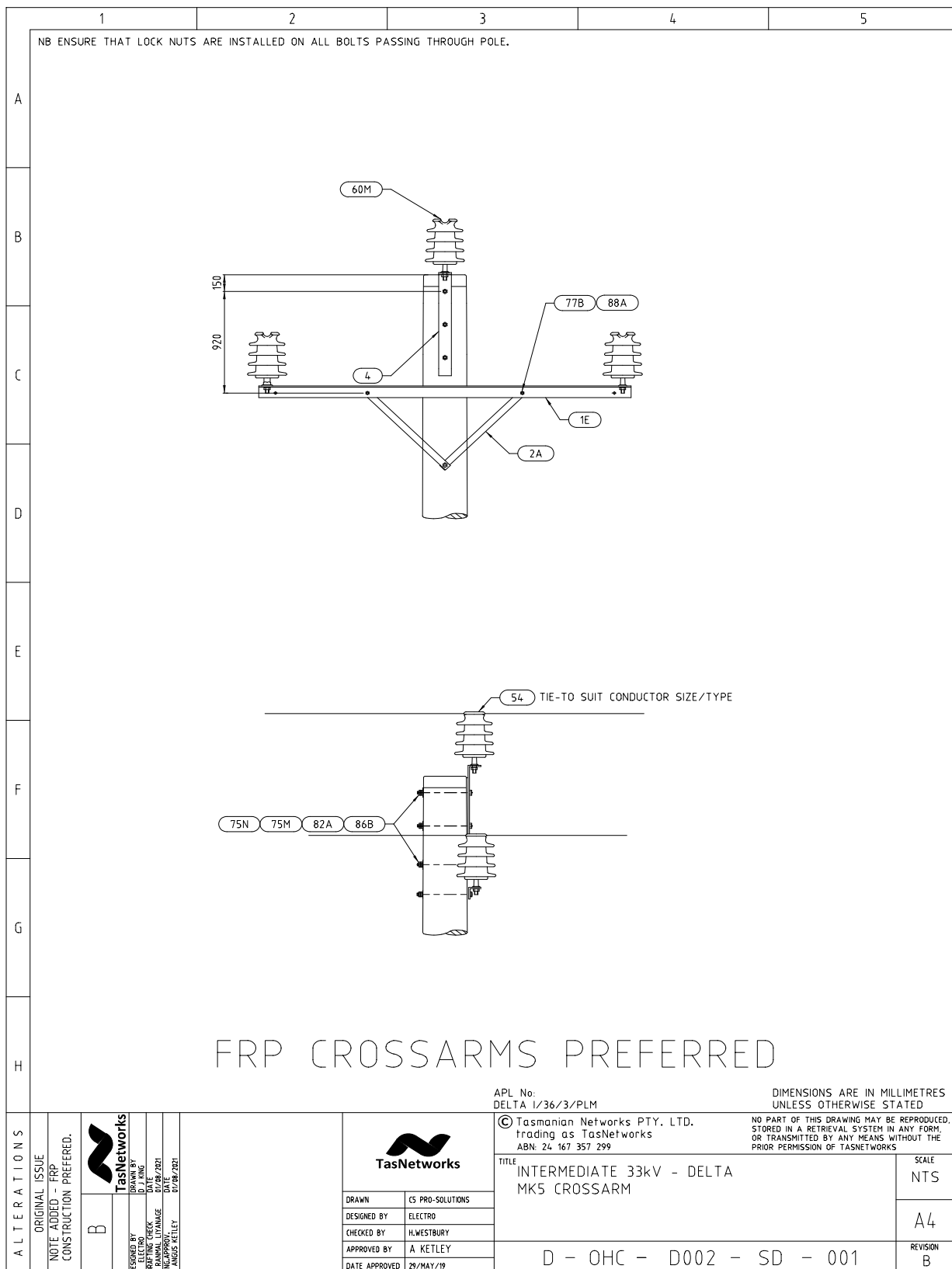
4.13 Intermediate 33kV - Flat MK5 Crossarm




Intermediate 33kV - Flat MK5 Crossarm - Material List

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A	INTERMEDIATE FLAT - MATERIALS LIST																																																																						
B	<table border="1"> <thead> <tr> <th>Unit Assembly</th> <th>Store Type</th> <th>Item Ref</th> <th>Stock Item</th> <th>Stock Item Description</th> <th>Quantity</th> </tr> </thead> <tbody> <tr> <td>I/36/3/PLM</td> <td>S</td> <td>4</td> <td>323311</td> <td>BRACKET,RIGHT ANGLE 75 X 12MM GAL</td> <td>1</td> </tr> <tr> <td></td> <td></td> <td>1E</td> <td>323305</td> <td>CROSSARM,STEEL 100 X 100 X 2210MM GAL</td> <td>1</td> </tr> <tr> <td></td> <td></td> <td>75M</td> <td>32287</td> <td>BOLT,HEX HEAD M16 X 325MM GAL. C/W NUT</td> <td>1</td> </tr> <tr> <td></td> <td></td> <td>75N</td> <td>32288</td> <td>BOLT,HEX HEAD M16 X 350MM GAL. C/W NUT</td> <td>1</td> </tr> <tr> <td></td> <td></td> <td>77B</td> <td>33771</td> <td>BOLT,HEX HEAD M12 X 35MM GAL. C/W NUT</td> <td>2</td> </tr> <tr> <td></td> <td></td> <td>82A</td> <td>40441</td> <td>NUT,HEX M16 THREAD GALANISED STEEL</td> <td>2</td> </tr> <tr> <td></td> <td></td> <td>86B</td> <td>65158</td> <td>WASHER,FLAT ROUND M16 X 50MM GAL</td> <td>2</td> </tr> <tr> <td></td> <td></td> <td>88A</td> <td>66412</td> <td>WASHER,FLAT ROUND M12 X 24MM GAL</td> <td>2</td> </tr> <tr> <td></td> <td></td> <td>60M</td> <td>320551</td> <td>INSULATOR,LINE POST S/C 36KV PORCELAIN</td> <td>3</td> </tr> <tr> <td></td> <td></td> <td>2A</td> <td>323314</td> <td>BRACE,CROSSARM 40 X 700 X 5MM THICK GAL</td> <td>2</td> </tr> </tbody> </table>					Unit Assembly	Store Type	Item Ref	Stock Item	Stock Item Description	Quantity	I/36/3/PLM	S	4	323311	BRACKET,RIGHT ANGLE 75 X 12MM GAL	1			1E	323305	CROSSARM,STEEL 100 X 100 X 2210MM GAL	1			75M	32287	BOLT,HEX HEAD M16 X 325MM GAL. C/W NUT	1			75N	32288	BOLT,HEX HEAD M16 X 350MM GAL. C/W NUT	1			77B	33771	BOLT,HEX HEAD M12 X 35MM GAL. C/W NUT	2			82A	40441	NUT,HEX M16 THREAD GALANISED STEEL	2			86B	65158	WASHER,FLAT ROUND M16 X 50MM GAL	2			88A	66412	WASHER,FLAT ROUND M12 X 24MM GAL	2			60M	320551	INSULATOR,LINE POST S/C 36KV PORCELAIN	3			2A	323314	BRACE,CROSSARM 40 X 700 X 5MM THICK GAL	2
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		1E	323305	CROSSARM,STEEL 100 X 100 X 2210MM GAL	1																																																																		
		75M	32287	BOLT,HEX HEAD M16 X 325MM GAL. C/W NUT	1																																																																		
		75N	32288	BOLT,HEX HEAD M16 X 350MM GAL. C/W NUT	1																																																																		
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			TITLE INTERMEDIATE 33kV - FLAT MK5 CROSSARM MATERIALS LIST		SCALE NTS																																																																		
	DRAWN CS PRO-SOLUTIONS	DESIGNED BY ELECTRO			REVISION A4																																																																		
	CHECKED BY H.WESTBURY	APPROVED BY A KETLEY																																																																					
	DATE APPROVED 29/MAY/19			D - OHC - D001 - SD - 002																																																																			

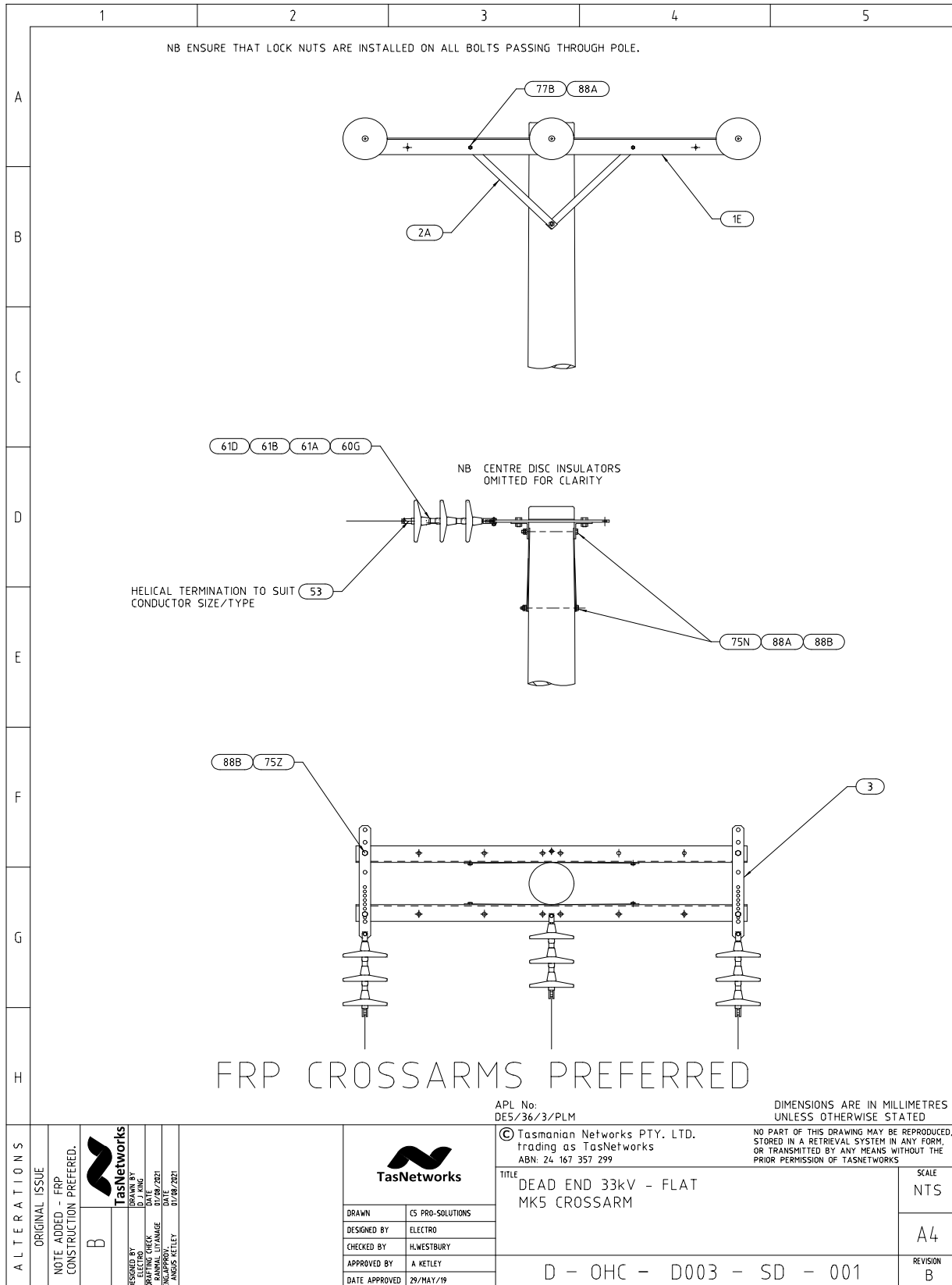
4.14 Intermediate 33kV - Delta MK5 Crossarm




Intermediate 33kV - Delta MK5 Crossarm – Material List

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A	INTERMEDIATE DELTA - MATERIALS LIST																																																																						
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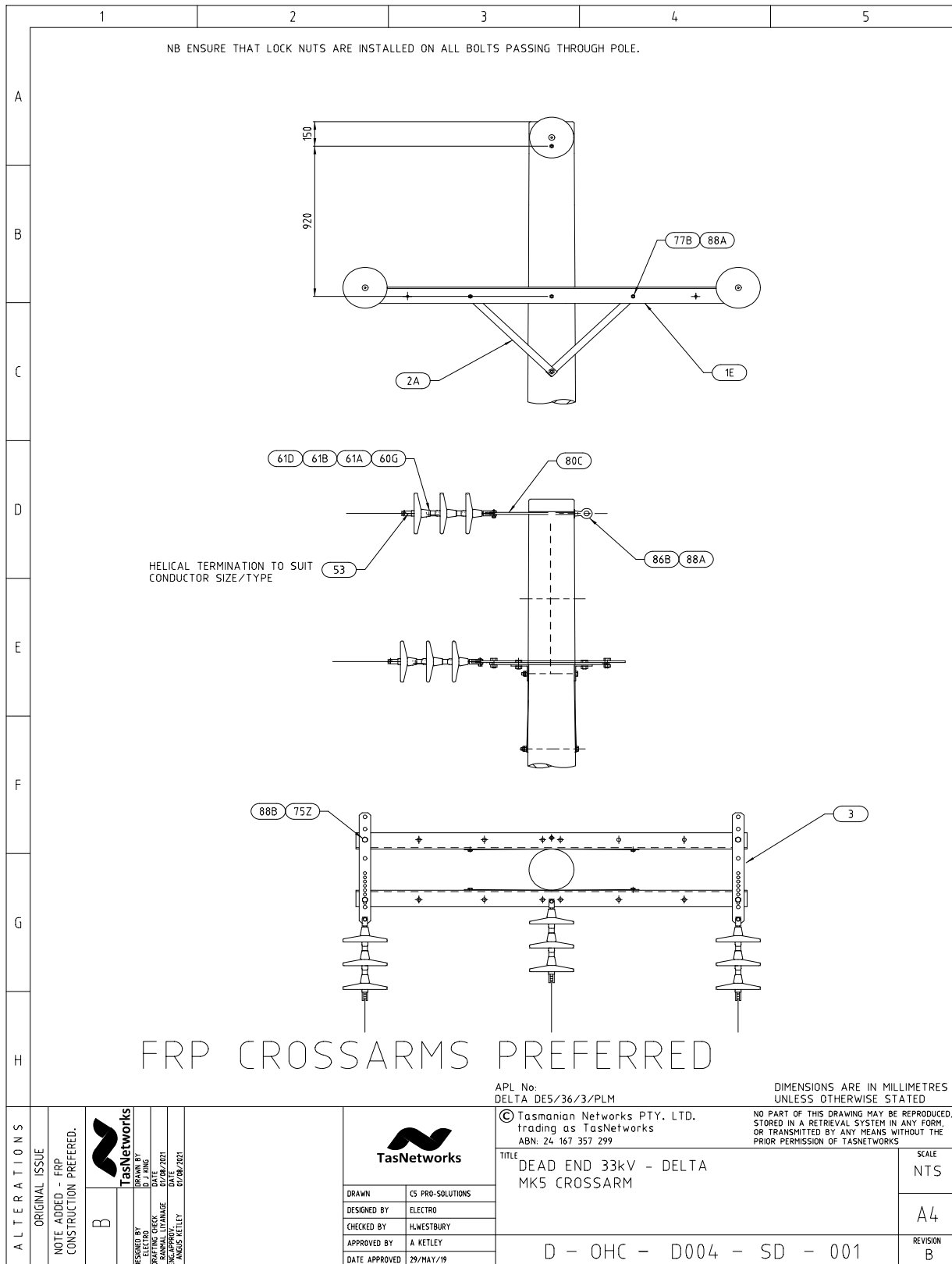
4.15 Dead End 33kV Flat – MK5 Crossarm




Dead End 33kV Flat MK5 Crossarm – Material List

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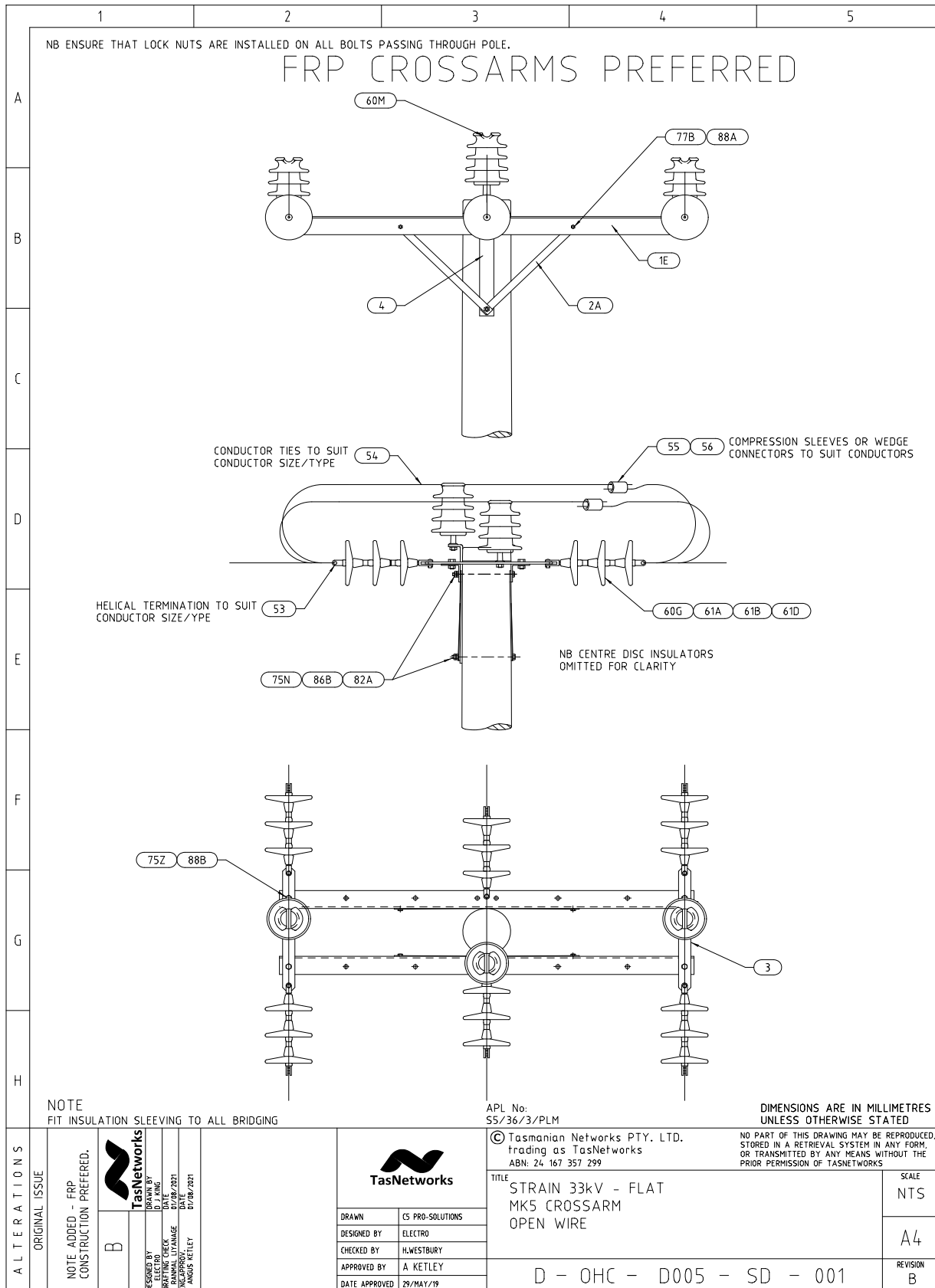
4.16 Dead End 33kV Delta – MK5 Crossarm




Dead End 33kV Delta - MK5 Crossarm – Material List

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DEAD END - DELTA - MK5 CROSSARM - MATERIALS LIST						
A B C D E F G H	Unit Assembly	Store Type	Item Ref	Stock Item	Stock Item Description	Quantity
	Delta DE5/36/3/PLM	S	3	323310	PLATE,STRAIN DOUBLE PIN 65 X 12MM STEEL	2
			1E	323305	CROSSARM,STEEL 100 X 100 X 2210MM GAL	2
			60G	321260	INSULATOR,SUSPENSION 146MM DISC D70S	9
			61A	322056	CLEVIS,ROD-END BALL 16MM 70KN MIN-FAIL	3
			61B	322386	CONNECTOR,ROD-END 16MM 80KN MIN-FAIL MCI	3
			61D	322090	CLIP,SECURITY 7.9MM S/STEEL 16B-WCLIP	6
			80C	37260	EYE BOLT,FORGED M20 X 325MM GAL C/W NUT	1
			75Z	32261	BOLT,HEX HEAD M16 X 45MM GAL. C/W NUT	4
			77B	33771	BOLT,HEX HEAD M12 X 35MM GAL. C/W NUT	4
			88B	66413	WASHER,FLAT ROUND M16 X 30 X 5MM GAL	1
			102A	325842	EYE-NUT,M20 THREAD GAL STEEL	1
			86C	65159	WASHER,FLAT ROUND M20 X 60MM GAL	1
			2A	323314	BRACE,CROSSARM 40 X 700 X 5MM THICK GAL	4
ALTERNATIONS	ORIGINAL ISSUE		© Tasmanian Networks PTY. LTD. trading as TasNetworks ABN: 24 167 357 299	NO PART OF THIS DRAWING MAY BE REPRODUCED, STORED IN A RETRIEVAL SYSTEM IN ANY FORM, OR TRANSMITTED BY ANY MEANS WITHOUT THE PRIOR PERMISSION OF TASNETWORKS	TITLE	SCALE
					DEAD END 33kV - DELTA MK5 CROSSARM MATERIALS LIST	NTS
					D - OHC - D004 - SD - 002	A4
						REVISION A
		DRAWN	ES PRD-SOLUTIONS			
		DESIGNED BY	ELECTRO			
		CHECKED BY	H.WESTBURY			
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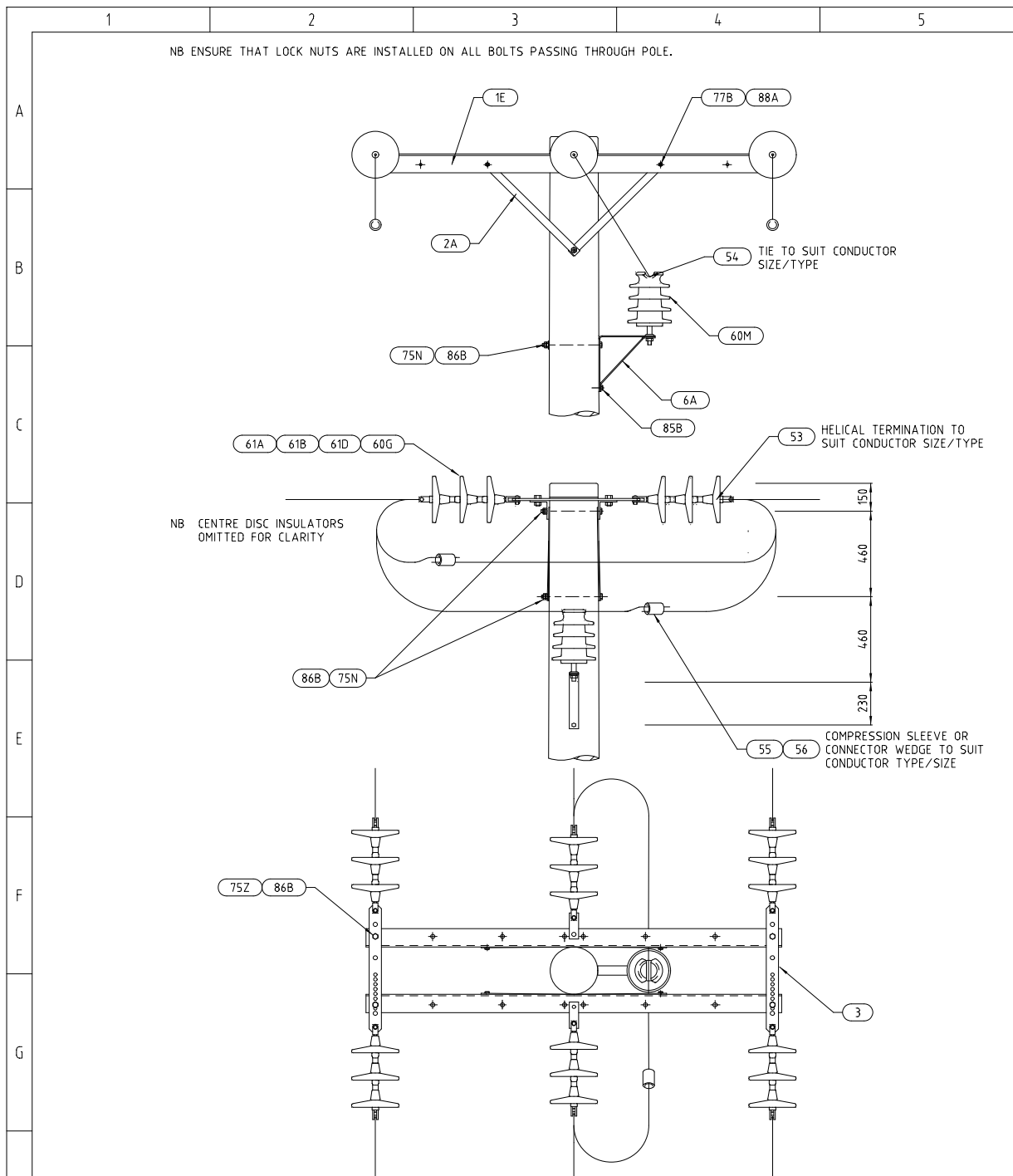
4.17 Strain 33kV - Flat MK5 Crossarm



Strain 33kV - Flat MK5 Crossarm – Material List

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4.18 Strain 33kV – Flat Underslung Bridging MK5 Crossarm




- NOTES**
1. THIS ARRANGEMENT CAN BE USED IN BIRD PROBLEM AREAS.
 2. USE INCREASED CLEARANCES TO SUB CIRCUITS TO ALLOW FOR UNDERSLUNG BRIDGING
 3. FIT INSULATION SLEEVING TO ALL BRIDGING

FRP CROSSARMS PREFERRED

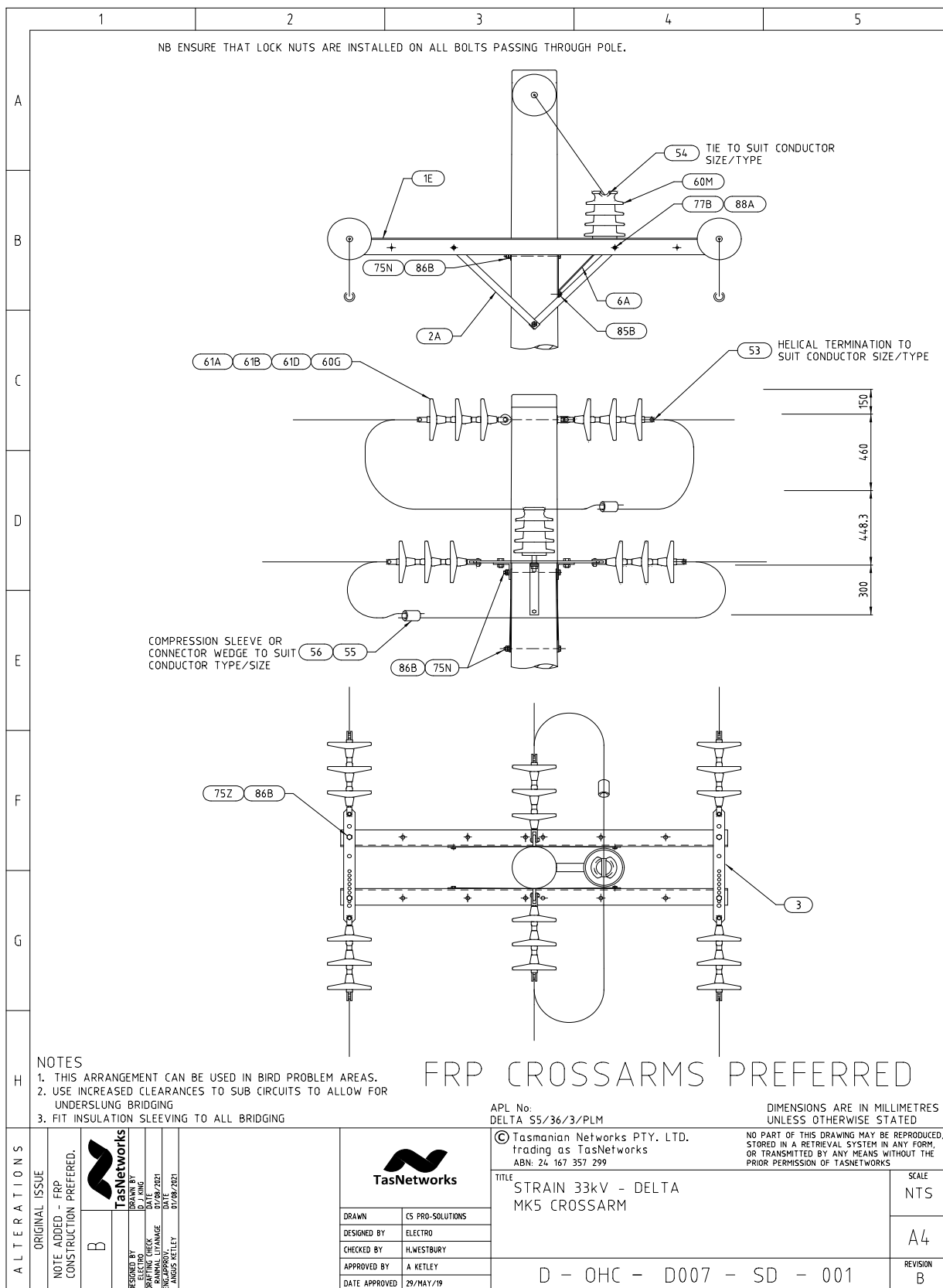
APL No: SU5/36/3/PLM DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED

ALTERATIONS	ORIGINAL ISSUE			© Tasmanian Networks PTY. LTD. trading as TasNetworks ABN: 24 167 357 299	NO PART OF THIS DRAWING MAY BE REPRODUCED, STORED IN A RETRIEVAL SYSTEM IN ANY FORM, OR TRANSMITTED BY ANY MEANS WITHOUT THE PRIOR PERMISSION OF TASNETWORKS	SCALE	
	NOTE ADDED - FRP CONSTRUCTION PREFERRED.					TITLE	NTS
	B					STRAIN 33kV - FLAT UNDERSLUNG BRIDGING MK5 CROSSARM	A4
	DESIGNED BY: CS PRO-SOLUTIONS					D - OHC - D006 - SD - 001	REVISION
DRAWN BY: ELECTRO	DATE APPROVED: 29/MAY/19		B				
CHECKED BY: H.WESTBURY							
APPROVED BY: A KETLEY							
DATE APPROVED: 29/MAY/19							


Strain 33kV - Flat Underslung Bridging MK5 Crossarm – Material List

	1	2	3	4	5		
A	STRAIN FLAT - UNDERSLUNG BRIDGING - MATERIALS LIST						
	Unit Assembly	Store Type	Item Ref	Stock Item	Stock Item Description	Quantity	
B	SU5/36/3/PLM	S	3	323310	PLATE,STRAIN DOUBLE PIN 65 X 12MM STEEL	2	
			1E	323305	CROSSARM,STEEL 100 X 100 X 2210MM GAL	2	
			60G	321260	INSULATOR,SUSPENSION 146MM DISC D70S	18	
			61A	322056	CLEVIS,ROD-END BALL 16MM 70KN MIN-FAIL	6	
			61B	322386	CONNECTOR,ROD-END 16MM 80KN MIN-FAIL MCI	6	
			61D	322090	CLIP,SECURITY 7.9MM S/STEEL 16B-WCLIP	9	
C			75N	32288	BOLT,HEX HEAD M16 X 350MM GAL. C/W NUT	4	
			75Z	32261	BOLT,HEX HEAD M16 X 45MM GAL. C/W NUT	4	
			77B	33771	BOLT,HEX HEAD M12 X 35MM GAL. C/W NUT	4	
			85B	50250	COACH SCREW,HEX HEAD 12MM X 100MM GAL	1	
			88A	66412	WASHER,FLAT ROUND M12 X 24MM GAL	4	
			88B	66413	WASHER,FLAT ROUND M16 X 30 X 5MM GAL	4	
D			6A	323315	Insulator Bracket 33kV (Not Stocked - Place Order)	1	
			60M	320551	INSULATOR,LINE POST S/C 36KV PORCELAIN	1	
			2A	323314	BRACE,CROSSARM 40 X 700 X 5MM THICK GAL	4	
E							
F							
G							
H							
ALTERATIONS	ORIGINAL ISSUE				© Tasmanian Networks PTY. LTD. trading as TasNetworks ABN: 24 167 357 299		NO PART OF THIS DRAWING MAY BE REPRODUCED, STORED IN A RETRIEVAL SYSTEM IN ANY FORM, OR TRANSMITTED BY ANY MEANS WITHOUT THE PRIOR PERMISSION OF TASNWORKS
		TITLE STRAIN 33kV - FLAT UNDERSLUNG BRIDGING MK5 CROSSARM MATERIALS LIST				SCALE NTS	
		DRAWN	CS PRO-SOLUTIONS				
		DESIGNED BY	ELECTRO				
		CHECKED BY	H.WESTBURY				
APPROVED BY	A KETLEY						
DATE APPROVED	29/MAY/19						
					D - OHC - D006 - SD - 002	REVISION A	

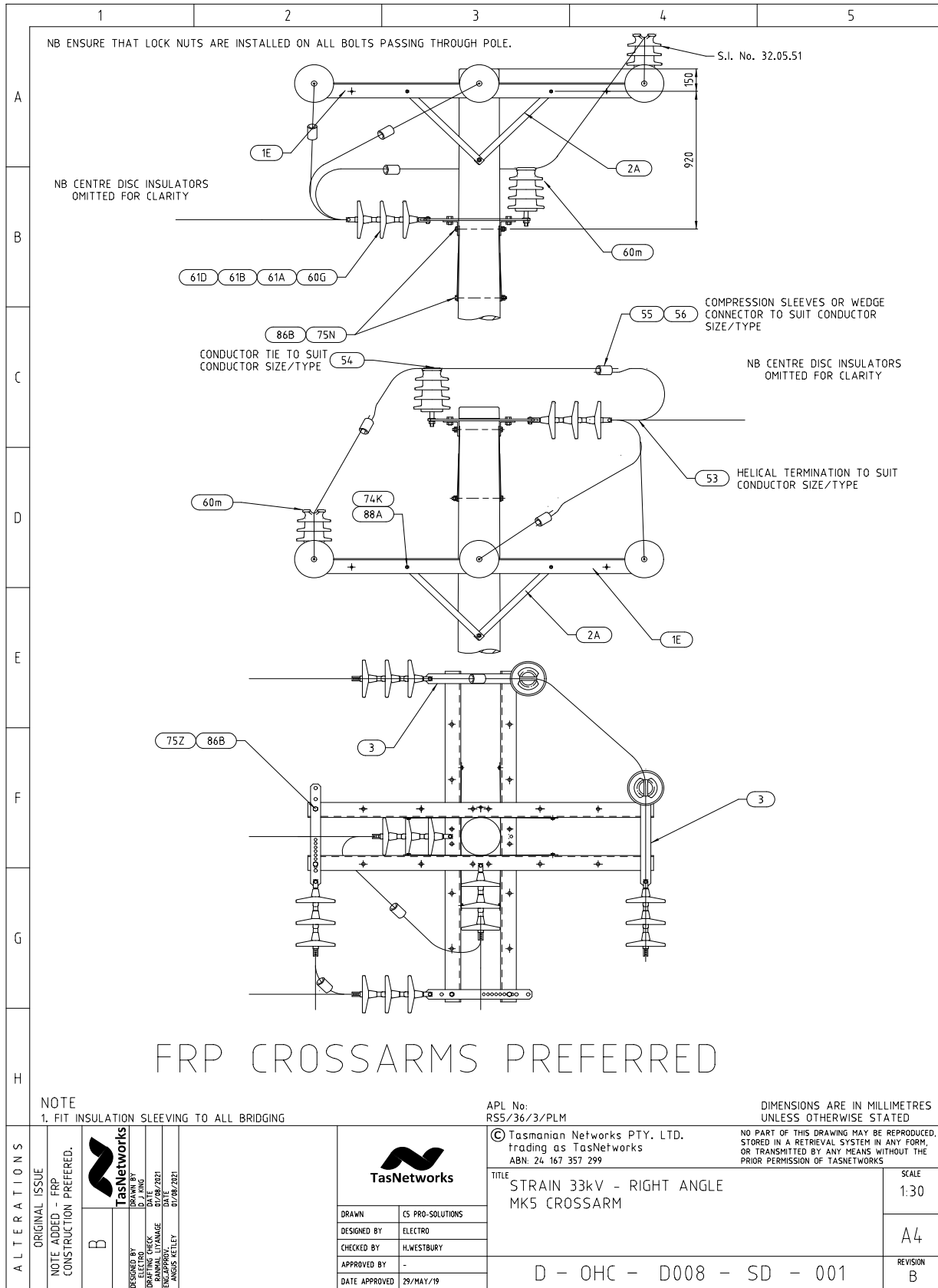
4.19 Delta 33kV - Strain MK5 Crossarm




Delta33kV - Strain MK5 Crossarm – Material List

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A	STRAIN - DELTA - MK5 CROSSARM - MATERIALS LIST																																																																																																																
B	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 20%;">Unit Assembly</th> <th style="width: 10%;">Store Type</th> <th style="width: 10%;">Item Ref</th> <th style="width: 10%;">Stock Item</th> <th style="width: 40%;">Stock Item Description</th> <th style="width: 10%;">Quantity</th> </tr> </thead> <tbody> <tr> <td>DeltaS5/36/3/PLM</td> <td>S</td> <td>3</td> <td>323310</td> <td>PLATE,STRAIN DOUBLE PIN 65 X 12MM STEEL</td> <td>2</td> </tr> <tr> <td></td> <td></td> <td>102A</td> <td>325842</td> <td>EYE-NUT,M20 THREAD GAL STEEL</td> <td>1</td> </tr> <tr> <td></td> <td></td> <td>1E</td> <td>323305</td> <td>CROSSARM,STEEL 100 X 100 X 2210MM GAL</td> <td>2</td> </tr> <tr> <td></td> <td></td> <td>60G</td> <td>321260</td> <td>INSULATOR,SUSPENSION 146MM DISC D70S</td> <td>18</td> </tr> <tr> <td></td> <td></td> <td>61A</td> <td>322056</td> <td>CLEVIS,ROD-END BALL 16MM 70KN MIN-FAIL</td> <td>6</td> </tr> <tr> <td></td> <td></td> <td>61B</td> <td>322386</td> <td>CONNECTOR,ROD-END 16MM 80KN MIN-FAIL MCI</td> <td>6</td> </tr> <tr> <td></td> <td></td> <td>61D</td> <td>322090</td> <td>CLIP,SECURITY 7.9MM S/STEEL 16B-WCLIP</td> <td>9</td> </tr> <tr> <td></td> <td></td> <td>75N</td> <td>32288</td> <td>BOLT,HEX HEAD M16 X 350MM GAL. C/W NUT</td> <td>4</td> </tr> <tr> <td></td> <td></td> <td>75Z</td> <td>32261</td> <td>BOLT,HEX HEAD M16 X 45MM GAL. C/W NUT</td> <td>4</td> </tr> <tr> <td></td> <td></td> <td>77B</td> <td>33771</td> <td>BOLT,HEX HEAD M12 X 35MM GAL. C/W NUT</td> <td>4</td> </tr> <tr> <td></td> <td></td> <td>80D</td> <td>37261</td> <td>EYE BOLT,FORGED M20 X 350MM GAL C/W NUT</td> <td>1</td> </tr> <tr> <td></td> <td></td> <td>85B</td> <td>50250</td> <td>COACH SCREW,HEX HEAD 12MM X 100MM GAL</td> <td>1</td> </tr> <tr> <td></td> <td></td> <td>88A</td> <td>66412</td> <td>WASHER,FLAT ROUND M12 X 24MM GAL</td> <td>4</td> </tr> <tr> <td></td> <td></td> <td>88B</td> <td>66413</td> <td>WASHER,FLAT ROUND M16 X 30 X 5MM GAL</td> <td>4</td> </tr> <tr> <td></td> <td></td> <td>6A</td> <td>323315</td> <td>Insulator Bracket 33kV (Not Stocked - Place Order)</td> <td>1</td> </tr> <tr> <td></td> <td></td> <td>60M</td> <td>320551</td> <td>INSULATOR,LINE POST S/C 36KV PORCELAIN</td> <td>1</td> </tr> <tr> <td></td> <td></td> <td>2A</td> <td>323314</td> <td>BRACE,CROSSARM 40 X 700 X 5MM THICK GAL</td> <td>4</td> </tr> </tbody> </table>					Unit Assembly	Store Type	Item Ref	Stock Item	Stock Item Description	Quantity	DeltaS5/36/3/PLM	S	3	323310	PLATE,STRAIN DOUBLE PIN 65 X 12MM STEEL	2			102A	325842	EYE-NUT,M20 THREAD GAL STEEL	1			1E	323305	CROSSARM,STEEL 100 X 100 X 2210MM GAL	2			60G	321260	INSULATOR,SUSPENSION 146MM DISC D70S	18			61A	322056	CLEVIS,ROD-END BALL 16MM 70KN MIN-FAIL	6			61B	322386	CONNECTOR,ROD-END 16MM 80KN MIN-FAIL MCI	6			61D	322090	CLIP,SECURITY 7.9MM S/STEEL 16B-WCLIP	9			75N	32288	BOLT,HEX HEAD M16 X 350MM GAL. C/W NUT	4			75Z	32261	BOLT,HEX HEAD M16 X 45MM GAL. C/W NUT	4			77B	33771	BOLT,HEX HEAD M12 X 35MM GAL. C/W NUT	4			80D	37261	EYE BOLT,FORGED M20 X 350MM GAL C/W NUT	1			85B	50250	COACH SCREW,HEX HEAD 12MM X 100MM GAL	1			88A	66412	WASHER,FLAT ROUND M12 X 24MM GAL	4			88B	66413	WASHER,FLAT ROUND M16 X 30 X 5MM GAL	4			6A	323315	Insulator Bracket 33kV (Not Stocked - Place Order)	1			60M	320551	INSULATOR,LINE POST S/C 36KV PORCELAIN	1			2A	323314	BRACE,CROSSARM 40 X 700 X 5MM THICK GAL	4
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	D - OHC - D007 - SD - 002																																																																																																																

4.20 Strain 33kV - Right Angled MK5 Crossarm



Strain 33kV - Right Angled Strain MK5 Crossarm - Material List

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A					
B					
C					
D					
E					
F					
G					
H					
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		DRAWN ELECTRO DESIGNED BY B.MAYBERRY CHECKED BY K.GOSDEN APPROVED BY ANGUS KETLEY DATE APPROVED 01 AUGUST 2021	TITLE STRAIN RIGHT ANGLE DELTA 33KV FRP CROSSARM MATERIAL LIST		SCALE NTS A4 REVISION A
		D - OHC - D021 - SD - 002			

Store Type	Item Ref	Stock Item	Stock Item Description	Quantity
S	60F	320541	Insulator, Pin Type	2
	60G	321260	Insulator Disc Porcelain 16mm 70Kn 146mm	18
	61A	322056	Ball Clevis & Pin 16mm	6
	61B	322386	Socket Termination 16mm	6
	61D	322090	*W' Clip / Kink Pin	24
	75E	32279	Bolt Hex M16 X 180 - Thread Length 57mm	2
	75Q	32290	Bolt Hex M16 X 400 - Thread Length 75mm	2
	75W	32296	Bolt Hex M16 X 550 - Thread Length 75mm	2
	82A	40441	Nut Hex M16	18
	86B	65158	Washer ELS M16	6
	87D	65616	Washer NS M16	18
	T200E	NEW	CF XARM - 2840x125x125 - CA-125 SHS 2.834m ARM	2
	T203A	NEW	XARM BRACE - 716x40x8	2
	T204B	NEW	PIN, INSULATOR - (MORLYNN - C3007) 298mm stem - 58mm to base of insulator from xarm	2
	T206A	NEW	M16 EYE BOLT 150 - Thread Length 60mm	4
	T206H	NEW	M16 EYE BOLT 400 - Thread Length 75mm	2
	T208B	NEW	GAIN BLOCK 125mm	2
	T209	NEW	M16 Volute Washer (Top ID 18mm, Base OD 60m, Ht 28mm before compression, 6.0mm Thick)	4
	T209D	NEW	M16 ELS-V Square Washer 50 x 50 x 4.0mm, Diagonal 70.7mm.	4
	T205A	NEW	M16 Spring Washer - Galvanised Spring Steel DIN127B (OD: 27mm, ID: 16.2 - 17.0mm, Thickness: 3.5)	8
	T228	NEW	Nut Hex M24 (36mm across Flats, 21mm Thick)	2
	T229A	NEW	M24 Washer NS (ID-26mm, OD-48mm, Thickness 4.0mm)	2
	T229B	NEW	M24 Spring Washer - Galvanised Spring Steel DIN127B (OD: 40mm, ID: 24.5 - 25.5mm, Thickness: 5.0)	2