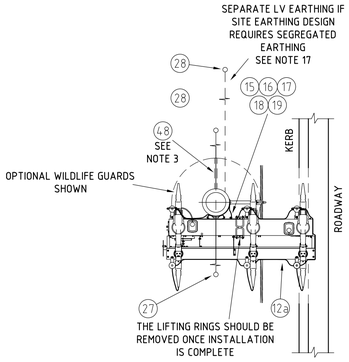
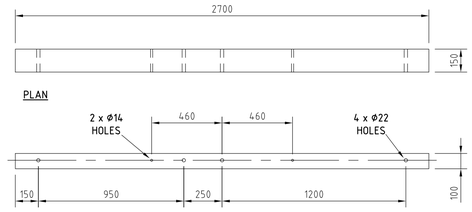
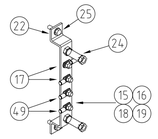
REFERENCE DRAWINGS	
11kV POLE MOUNTED VOLTAGE REGULATOR WITH CONTROLLING INTELLIRUPTER	224227



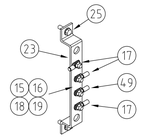
SECTION A-A
SCALE 1:50



ITEM 51
REGULATOR SUPPLY CROSSARM
SCALE 1:20

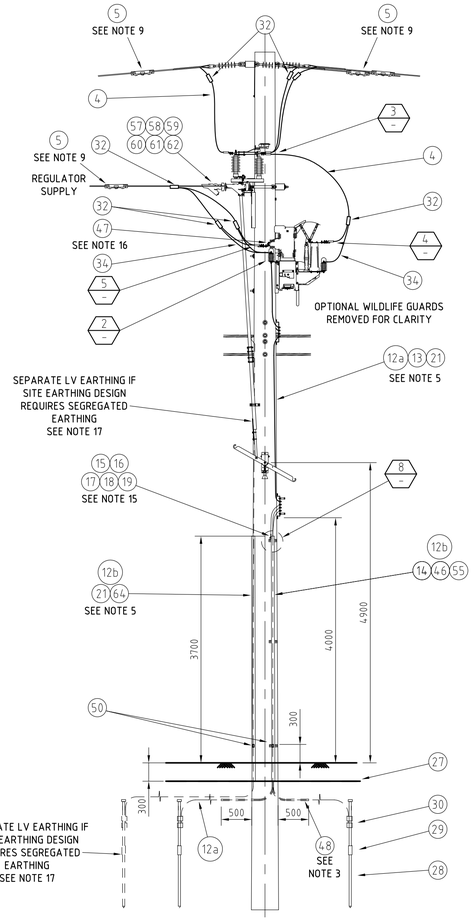


ITEM 22
BOTTOM EARTH BAR



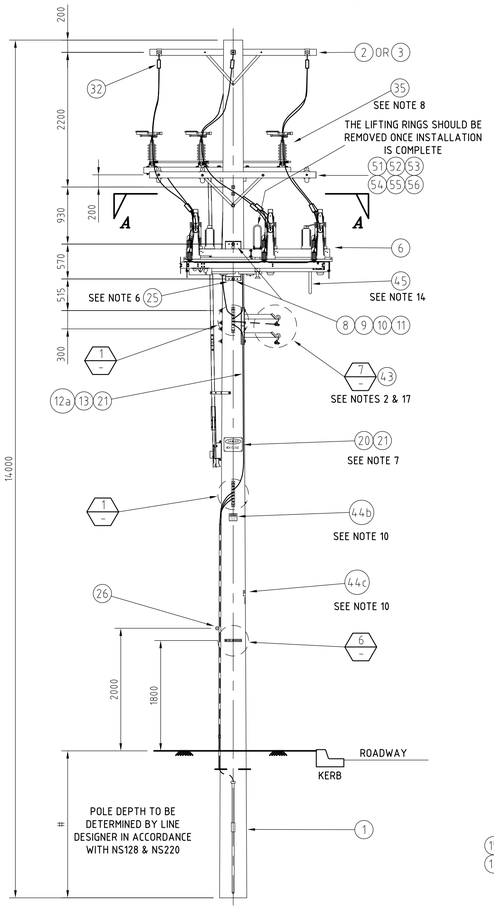
ITEM 23
TOP EARTH BAR

DETAIL 1
SCALE 1:10



SIDE VIEW
SCALE 1:50

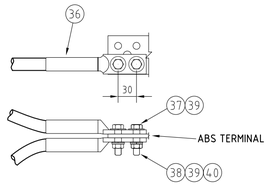
AN EARTHING DESIGN MUST BE UNDERTAKEN FOR EACH SITE. THE EARTHING SHOWN ON THIS DRAWING IS INDICATIVE ONLY.



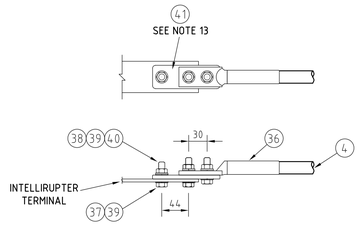
FRONT VIEW
SCALE 1:50

NOTES

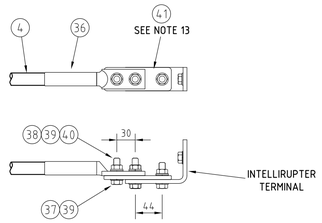
1. MINIMUM CLEARANCE 11kV TO EARTH IS TO BE GREATER THAN 200mm.
   HV PHASE TO PHASE CLEARANCE IS TO BE GREATER THAN 280mm.
2. LV ATTACHMENT POINT IS TO BE DETERMINED BASED ON GROUND CLEARANCE REQUIREMENTS WHILST GIVING CONSIDERATION TO AUSGRID'S ELECTRICAL SAFETY RULES MINIMUM SAFE WORKING DISTANCES. WHERE BARE LV MAINS EXIST THEY SHALL BE CONVERTED TO ABC FOR AT LEAST ONE SPAN EITHER SIDE OF THE PULSECLOSER. ITEM 43 IS REQUIRED FOR ALL INTELLIRUPTER INSTALLATIONS.
3. UNDERGROUND EARTH CABLES ARE TO BE LAID IN SUITABLY SIZED RIGID UPVC ORANGE LD CONDUIT TO A DISTANCE OF 500mm FROM THE POLE. THIS CONDUIT RUN IS TO CONSIST OF A BEND OF A 300mm MINIMUM RADIUS AND A SHORT LENGTH OF STRAIGHT CONDUIT. THE TOP OF THE BEND IS TO BE BUTTED AGAINST THE BOTTOM OF THE STEEL EARTH CABLE COVER.
4. HV SURGE ARRESTORS ARE TO BE EARTHED BY DAISY CHAINING AND ELECTRICALLY BONDED TO MAIN EARTH CONDUCTOR USING 70mm² PVC INSULATED CONDUCTOR (ITEM 12a).
5. 95mm² ALUMINIUM EARTH CONDUCTORS SHALL BE USED FROM THE BOTTOM EARTH BAR TO 300mm ABOVE GROUND WHERE 70mm² COPPER EARTH CONDUCTORS WILL BE EXTENDED VIA BIMETALIC LINKS TO THE EARTH ELECTRODES. THE BIMETALIIC LINKS ARE TO BE STAGGERED UNDER THE STEEL COVER.
6. INSTALL 4 x 12mm (ITEM 25) COACH SCREWS IN ADDITION TO KING BOLTS AS PER MANUFACTURER'S INSTRUCTIONS TO ENSURE STABLILITY OF INTELLIRUPTER UNIT.
7. DANGER SIGNS TO BE INSTALLED ON BOTH FRONT AND REAR OF POLE. SIGNS MUST BE BENT AROUND POLE BEFORE SECURING.
8. REFER TO DRAWING 175902 FOR DETAILED AIR BREAK SWITCH GENERAL ARRANGEMENT.
9. WHERE CCT CABLES ARE USED, STANDARD EARTHING POINTS AND COVERS ARE TO BE INSTALLED AS DETAILED IN NS126.
10. INTELLIRUPTER SIGNS (ITEMS 44a, 44b & 44c) ARE TO BE BENT AROUND POLE BEFORE SECURING.
    THE SERIAL NUMBER SIGN (ITEM 44a & DETAIL 6) IS TO BE MOUNTED ON THE SAME POLE FACE AS THE INTELLRUPTER 1800mm ABOVE GROUND LEVEL AT ALL SITES. THE SIGN IS TO BE MADE FROM 25mm HIGH UV STABLE WEATHERPROOF LETTERING AND CAN UTILISE POLE NUMBERING METHODS OR SIMILAR.
    THE EARTH CABLE SIGN (ITEM 44b) IS TO BE MOUNTED BELOW THE EARTH BAR AT ALL SITES.
    THE UNDERGROUND EARTH CABLE SIGN (ITEM 44c) IS TO BE MOUNTED ADJACENT TO THE POLE NUMBER.
11. THE INTELLIRUPTER IS TO BE LABELLED IN ACCORDANCE WITH NS158 TABLE 4.6 - "RECLOSERS & SECTIONALISERS". THE POLE NUMBER IS TO BE INSTALLED IN ACCORDANCE WITH NS148.
12. INSTALL MEDUIM WALLED MASTIC LINED BLACK HEATSHRINK OVER THE BARE LUG BARREL AND CABLE INSULATION.
13. INTELLIRUPTERS DELIVERED EARLIER IN THIS CONTRACT WILL REQUIRE ITEM 41.
14. ANY ANTENNA USED MUST HAVE AN RF INDUSTRIES N-243 N ADAPTER M/M BARREL FITTED.
    THE ANTENNA LISTED AS ITEM 45 CAN BE ANY THE FOLLOWING:
    FOR GENERAL USE A BENELEC 02461A CELLULAR UNITY GAIN ALL BAND MARINE ANTENNA CAN BE USED.
    FOR AREAS WHERE SIGNAL STRENGTH IS LOW USE A MOBILE ONE CN812K HIGH PERFORMANCE TRIBAND CELLAR ANTENNA.
    FOR AREAS OF HIGH SIGNAL STRENGTH USE AN ELEMENT14 173519201 MULTICOMP - OS-UMTS-0103-CO ANTENNA.
15. THE STEEL EARTH CABLE COVER (ITEM 14) IS TO BE CONNECTED TO THE BOTTOM EARTH (ITEM 22) AS SHOWN IN DETAIL 8.
16. A ROLL PIN (ITEM 47) IS TO BE FITTED INTO EACH OF THE PHASE TERMINALS OF THE NON DISCONNECTOR SIDE, THROUGH THE COPPER PALM. THE PIN IS TO FINISH FLUSH OR JUST BELOW THE CABLE LUG CONTACT SURFACE OF THE PALM.
17. IF THE SITE SPECIFIC EARTHING DESIGN REQUIRES THE LV MAINS NEUTRAL TO BE CONNECTED TO THE INTELLIRUPTER EARTHING SYSTEM, DETAIL 7 SHOULD BE USED FOR THE CONNECTION. IF TWO LV MAINS CABLES ARE ON THE POLE, ONLY ONE SERVICE IS TO BE CONNECTED. FOR A COMBINED EARTHING SYSTEM A CONNECTION IS MADE TO THE TOP EARTH BAR AS SHOWN IN DETAIL 7. FOR A SEGREGATED EARTHING SYSTEM THE CABLE IS TO BE RUN DOWN THE POLE USING ITEM 12b TO A SEPARATE LV EARTH ROD SYSTEM.



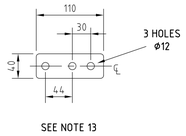
DETAIL 3
SCALE 1:5



DETAIL 4
SCALE 1:5



DETAIL 5
SCALE 1:5

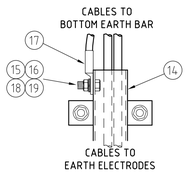


DETAIL ITEM 41
SCALE 1:5

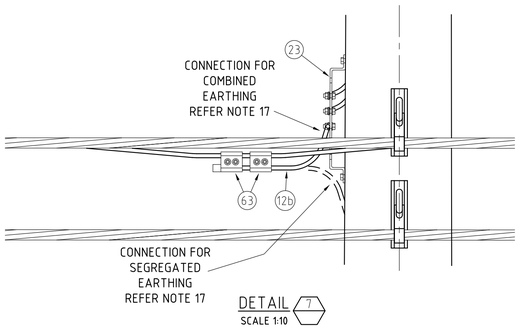
SN XX-XXXXXXX

ITEM 44a
SEE NOTE 10

DETAIL 6
SCALE 1:5



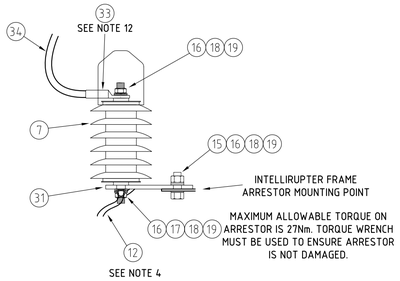
DETAIL 8
SCALE 1:5



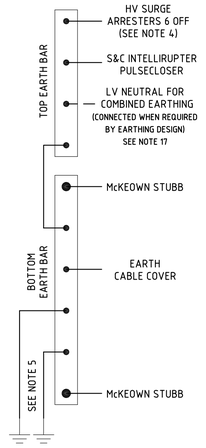
DETAIL 7
SCALE 1:10

LV ABC NEUTRAL CONNECTION
REFER NOTE 17

EQUIPMENT WEIGHTS	
INTELLIRUPTER	460kg
AIR BREAK SWITCH	135kg



DETAIL 2
SCALE 1:5



EARTHING SCHEMATIC

ITEM	DESCRIPTION	DWG No	STOCK CODE	QTY.
64	PROTECTOR - BLACK EARTH CABLE GUARD	205775	157552	AS REQ.
63	IPC LV ABC 95-150 (SEE NOTE 17)	'DETAIL 7'	176591	2
62	COVER - STRAIN CLAMP		144543	3
61	CLAMP - CONDUCTOR STRAIN FOR CCT120		144527	3
60	INSULATOR - STRAIN ROD		144550	3
59	LINK - SAG, 70kN (PLP PART No TSLEW-070-1		PURCHASE	3
58	WASHER - LIP, M24, GALVANISED	518081	176912	3
57	EYEBOLT -M20x200mm, GALVANISED	513653	H37881	3
56	WASHER - CONICAL, M12, GALVANISED	518082	179601	2
55	WASHER - FLAT ROUND, M12, GALVANISED	518081	177982	2
54	BOLT & NUT - M12 x 180mm, HEX, GALVANISED	515466	46888	2
53	CROSSARM BRACE	514385	H17738	2
52	BLOCK - GAIN ALUMINIUM 100mm		146274	1
51	CROSSARM - 2700mmx150mmx100mm TYPE H HARDWOOD (SEE DETAIL)		FABRICATE	1
50	BI-METALLIC CRIMP LINK FOR 95mm² TO 70mm² CABLE		H107797	AS REQ.
49	BI-METALLIC CRIMP LUG FOR 95mm² CABLE		58743	2
48	CONDUIT COVER FOR EARTH CABLES - SEE NOTE 3			AS REQ.
47	TERMINAL ROLL PIN - SEE NOTE 16			3
46	M12 x 50mm GALV. COACHSCREW		50476	6
45	ANTENNA - SEE NOTE 14			1
44c	INTELLIRUPTER SIGN - UNDERGROUND EARTH CABLES (SEE NOTE 10)	222408	182141	1
44b	INTELLIRUPTER SIGN - EARTH CABLES (SEE NOTE 10)	222408	182142	1
44a	INTELLRUPTER SIGN - SERIAL NUMBER (SEE NOTE 10)	'DETAIL 6'		1
43	LV ATTACHMENT - ABC INTERMEDIATE CONSTRUCTION (1-70) WITH STAND OFF	513981 118409	147256 (STAND OFF)	AS REQ.
42	LUG KIT - FOR 35mm² HV DROPPER CABLE		H125260	2
41	CONVERSION FLAG - TINNED COPPER 38mm x 6.35mm (SEE DETAIL)		FABRICATE	6
40	WASHER - M10, BELLEVILLE, STAINLESS STEEL	518082	177296	24
39	WASHER - M10, FLAT, STAINLESS STEEL	518081	49411	48
38	NUT - M10, HEX, STAINLESS STEEL	515467	H39401	24
37	BOLT - M10 x 30mm, HEX, STAINLESS STEEL	515467	45088	24
36	LUG - COMPESSION, BI-METALLIC 2 x M10 HOLES, TO SUIT CONDUCTOR	514053		18
35	AIR BREAK SWITCH - MID POLE OPERATED, GENERAL ARRANGEMENT	175902	H95406/66647	1
34	CONDUCTOR - 35mm², 19/1.53, Cu LDPE (DROPPER CABLE)		H14578	AS REQ.
33	LUG - CRIMP, COPPER, M12, FOR 35mm² COPPER CONDUCTOR		SEE ITEM 42	6
32	CLAMP - PARALLEL GROOVE TO SUIT CONDUCTOR	541099		15
31	TINNED COPPER PLATE	116989 (ITEM 3)	91132	6
30	CONNECTOR - COPPER, COMPRESSION, 70mm² CONDUCTOR TO Ø15 ROD		H31699	AS REQ.
29	COUPLER - EARTH ELECTRODE, TO SUIT Ø15 ROD		H31649	AS REQ.
28	ELECTRODE - DRIVEN EARTH, Ø15 x 1800mm		H31631	AS REQ.
27	COVER STRIP - CABLE, 150mm WIDE		151100	AS REQ.
26	COACH SCREW - EYE, M6, GALVANISED		PURCHASE	1
25	COACH SCREW - M12 x 100mm, GALVANISED		H40484	8
24	EARTH STUB - McKEOWN	520088	H108415	2
23	TOP EARTH BAR - FLAT, TINNED COPPER, 50.8mm x 6.3mm	222406	182110	1
22	BOTTOM EARTH BAR - FLAT, TINNED COPPER, 50.8mm x 6.3mm	222406	182110	1
21	CLOUT - GALVANISED, Ø2.8 x 30mm		50971	AS REQ.
20	SIGN - DANGER HIGH VOLTAGE		H47012	2
19	NUT - M12, STAINLESS STEEL	515467	8987	AS REQ.
18	WASHER - BELLEVILLE, M12, STAINLESS STEEL	518082	175903	AS REQ.
17	LUG - CRIMP, M12, FOR 70mm² COPPER	31077	74831	AS REQ.
16	WASHER - FLAT, M12, STAINLESS STEEL	518081	49429	AS REQ.
15	SET SCREW - M12 x LENGTH TO SUIT, STAINLESS STEEL	515467		AS REQ.
14	EARTH CABLE COVER - STEEL	222407	182121	1
13	SADDLES - TO SUIT CABLE		PURCHASE	AS REQ.
12b	CONDUCTOR - SINGLE CORE OF 95mm² ABC			AS REQ.
12a	CONDUCTOR - 19/2.14 Cu BLACK PVC INSULATED HD (70mm² EARTH)		60111	AS REQ.
11	WASHER - FLAT ROUND, M20, GALVANISED	518081	177986	4
10	WASHER - CONICAL, M20, GALVANISED	517278	H39655	5
9	WASHER - SQUARE, M20 x 75 x 75 x 6mm	518081	H39231	5
8	BOLT & NUT - M20, HEX, GALVANISED, LENGTH TO SUIT	515466		2
7	ARRESTER & CAP - 11kV		111948	6
6	S&C INTELLIRUPTER PULSECLOSER		181888	1
5	CCT EARTHING POINT COVER		144741	9
4	COVERED CONDUCTOR THICK - TO SUIT FEEDER RATING (MINIMUM CCT 120)			AS REQ.
3	11kV OVERHEAD ARRANGEMENT 2-11CCT (MINUS BRIDGING)	174962		1
2	11kV OVERHEAD ARRANGEMENT 2-11 (MINUS BRIDGING)	513915		1
1	POLE - WOOD, TO SUIT (MINIMUM 14m x 12kN)			1

RECORD ONLY

Ausgrid
ASSET ENGINEERING, POLICY & STANDARDS
TRANSMISSION & DISTRIBUTION SUBSTATION ENGINEERING
570 GEORGE STREET, SYDNEY

SCALE	AS SHOWN
DESIGNED	P.JARVIS
DRAWN	P.JARVIS
CHECKED	M.ANDREWS
APPROVED	D.GRCEV
DATE	11.5.11
PROJECT NUMBER	SI-00056-1-2-2
PROJTRAK NUMBER	

11kV S&C INTELLIRUPTER PULSECLOSER WITH PHASE TO EARTH VT MOUNTED ON A TIMBER POLE FOR CONTROLLING A POLE MOUNTED REGULATOR GENERAL ARRANGEMENT

SIZE	DRAWING No	SHEET	AMD
A1	224228	1	5

CAD DRAWING
DO NOT MANUALLY AMEND

AMENDMENTS

1. SURGE ARRESTOR CONNECTIONS RELOCATED FROM INTELLIRUPTER TERMINALS TO PARALLEL CLAMPS ON CONNECTING CABLES.
ITEM 32 WERE CABLE LUGS:.
ITEM 63 RENUMBERED AS ITEM 32.
PN PM 02-2010-1-3-1
P.JARVIS 6.9.11
CHECKED: M.ANDREWS
APPROVED: M.ANDREWS

2. TO LV ABC CONNECTION ITEM 43.
NOTE 14 ALTERED TO SHOW ALTERNATIVES FOR ANTENNA (ITEM 45).
PN PM 02-2010-1-3-1
P.JARVIS 20.12.11
CHECKED: M.ANDREWS
APPROVED: M.ANDREWS

3. DETAIL 7, NOTE 17 AND ITEMS 63 & 64ADDED.
COMBINED EARTHING NOTE ADDED TO LV NEUTRAL CONNECTION ON EARTHING SCHEMATIC.
SEGREGATED EARTH CABLE & ROD ADDED TO SIDE VIEW & SECTION A-A.
LIFTING RING NOTE ADDED TO FRONT VIEW & SECTION A-A.
PN PM 02-2010-1-3-1
P.JARVIS 16.12
CHECKED: M.ANDREWS/N.O'KELLY
APPROVED: P.GUNATILLEKE

4. EARTH CONNECTION TO ITEM 14 ALTERED TO COMPLY WITH NETWORK STANDARD 127.
DETAIL 8 ADDED.
NOTE 15 ALTERED.
PM PM 02-92013-0-21013
P.JARVIS 16.9.14
CHECKED: M.ANDREWS
APPROVED: M.ANDREWS

5. ITEM 5 ADDED TO REGULATOR SUPPLY CABLE.
DRAWING TITLE ALTERED.
DRAWING ENDORSEMENT CHANGED TO "RECORD ONLY"
PM 292784A
P.JARVIS 25.7.18
CHECKED: C.MABBUTT
APPROVED: D.GRCEV

20110714