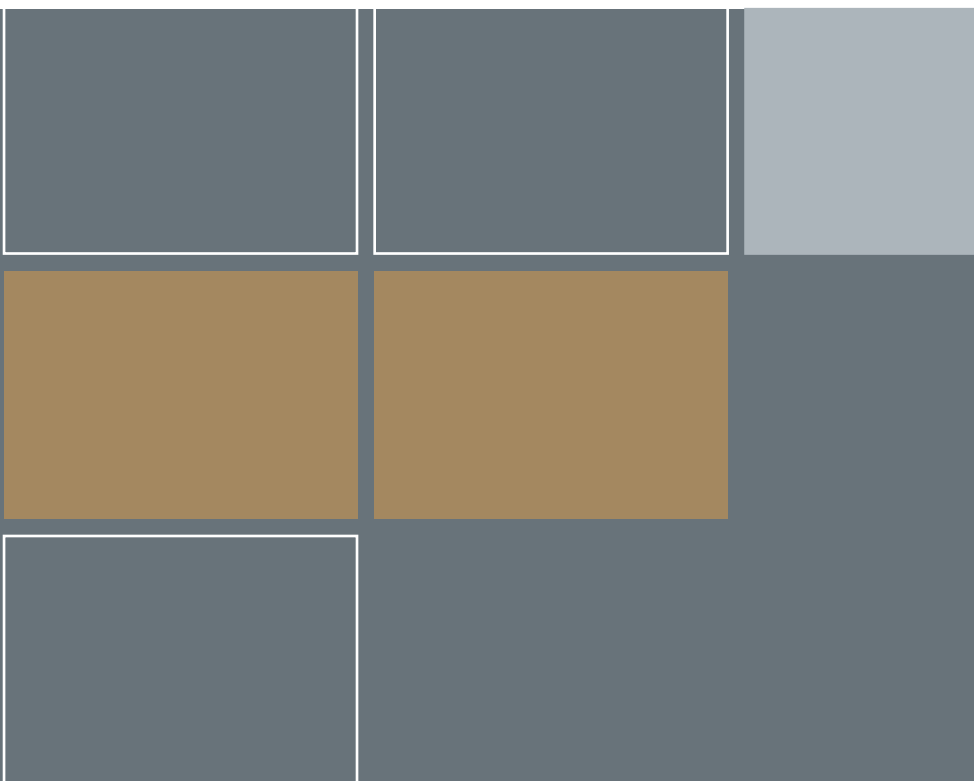
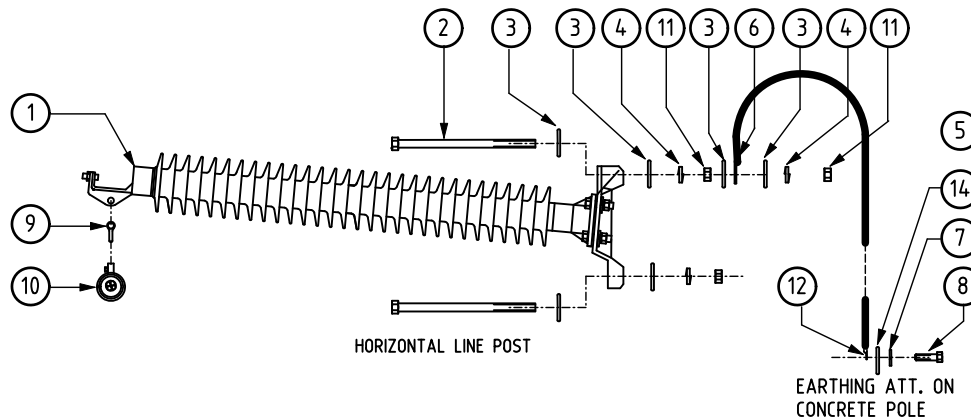
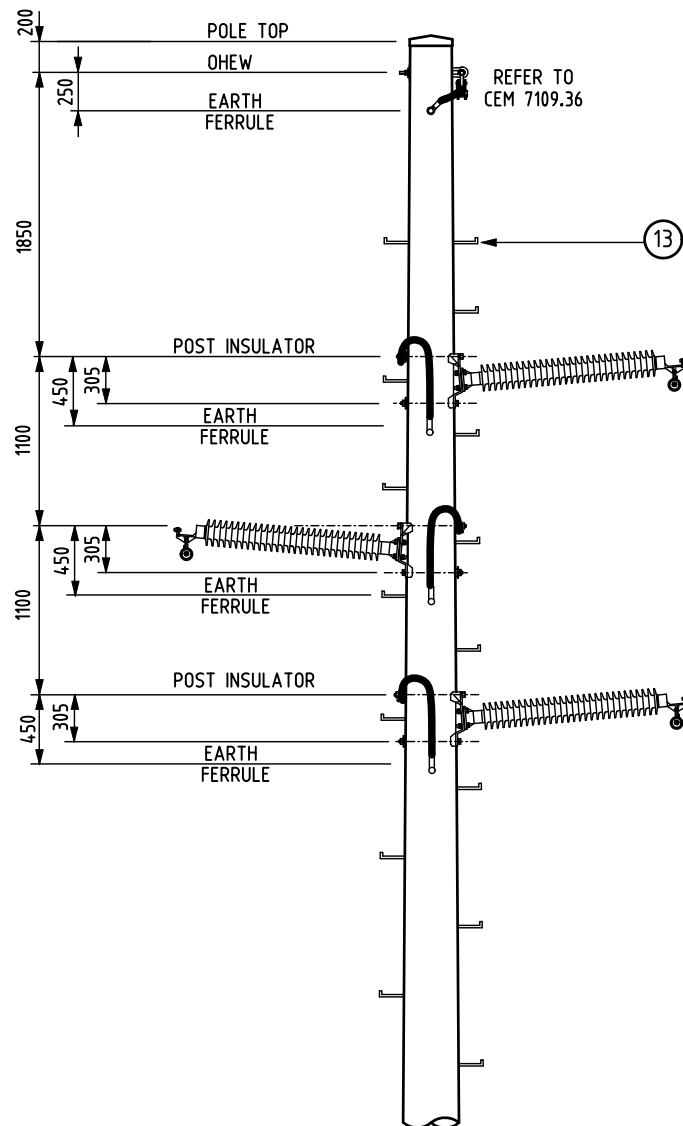
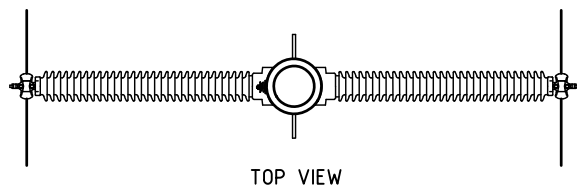




Annex F

Pole Illustrations



NOTES :

Earthing

1. All steelwork to be earthed.
2. Refer to earthing manual for pole ground earth arrangement.
3. Pole earth not to exceed 10 ohms

General

1. Pole steps to be fitted at 450mm centres on alternative sides of the pole to within 8000mm of ground level.
2. For pole footing detail, refer Project Design.
3. All dimensions in millimetres.
4. Lightly centre punch threads on bolts to stop nuts from vibrating loose.
5. Phase spacings shown are minimum. Any variation will be detailed within Project Design.
6. For concrete pole schedule refer drawing- CEM7402.01 sheet 2

14	1	3	WASHER M12 FLAT ROUND S/S	109580
13	REFER TABLE		POLE STEP SCREW IN	275790
12	1	3	LUG CRIMP 70mm M12 HOLE Cu	234310
11	1	3	NUT M20 GALV. HEX	108950
10	1	3	AGS SUSPENSION UNIT WITH ARMOUR ROD	TO SUIT CONDUCTOR
9	1	3	SHACKLE D STIRRUP ASSEMBLY	272430
8	1	3	SET SCREW M12x25mm C/W NUT S/S	100310
7	1	3	WASHER M12 SPRING S/S	110450
6	1	3	EARTH CLIP 7/4.50 20mm HOLE (REFER DRG A4 ZS00E00)	291460
5	0.7m	2.1m	CABLE 70MM 19/2.14 SDI BLACK Cu	442770
4	3	9	WASHER M20 SPRING S/S	110455
3	6	18	WASHER M20 60x4mm FLAT ROUND GALV	110180
2	2	6	BOLT M20x400mm C/W NUT GALV	106040
1	1	3	INSULATOR 132kV HORIZONTAL LINE POST	261955
Item	Q'ty/Assy	Q'ty Total	Description	Cat. No

AMENDMENT DETAILS

2	DRWN	L.R.WOODWARD
	CHCKD	S.PALMER
	DATE	18 JAN 2008
DRAWING AUTHORISATION WAS SHOWN AS TERRY HOLMES.		
ITEM 8 WAS M12x40mm SET SCREW.		

SCALE	NTS
ISSUE DATE	1/06/05
DRAWN BY	D.J.DARKE / LRW
CHECKED	S.PALMER
PLOT DATE	18 JAN 2008

AUTHORISED BY:

Ian Thompson

GROUP MANAGER STANDARDS
AND DEMAND MANAGEMENT

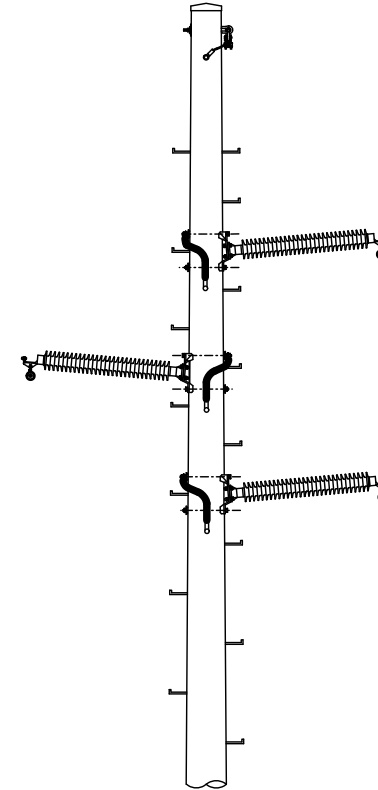
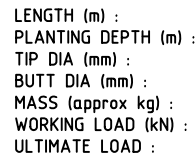
CEM7402.01

1 of 2 A4

132kV OFFSET
INTERMEDIATE
CONSTRUCTION
ON CONCRETE POLE

countryenergy

- 1 : For pole size and dimensions, refer to Project Design.
- 2 : Poles to be ordered with pole steps.
The number of steps will be dependent upon pole height.
- 3 : Pole number to be supplied to manufacturer with the pole order.
Pole number to be marked on nameplate.

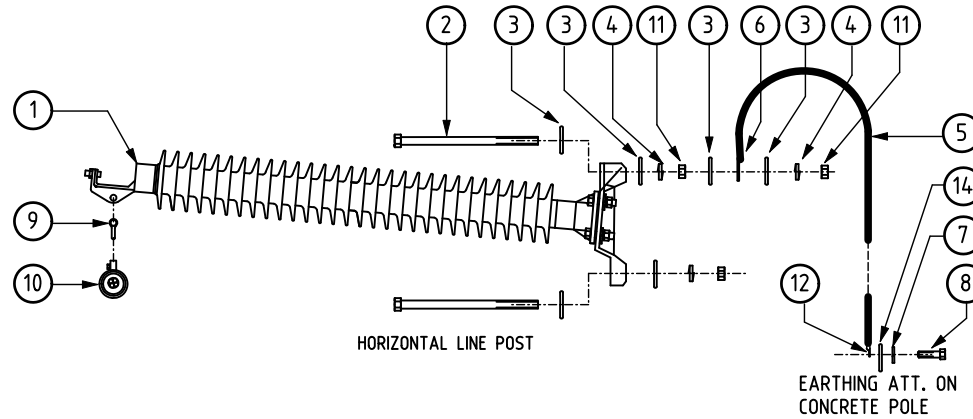
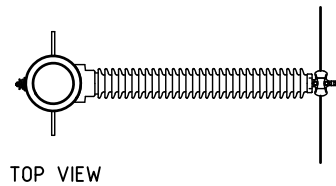


POLE HEIGHT	POLE STEP QTY
17m	16
18.5m	19
20m	22
21.5m	25
23m	28

CEM7402.01

132kV OFFSET
INTERMEDIATE
CONSTRUCTION
CONCRETE POLE
SCHEDULE

countryenergy



NOTES :

Earthing

1. All steelwork to be earthed.
2. Refer to earthing manual for pole ground earth arrangement.
3. Pole earth not to exceed 10 ohms

General

1. Pole steps to be fitted at 450mm centres on alternative sides of the pole to within 8000mm of ground level.
2. For pole footing detail, refer Project Design.
3. All dimensions in millimetres.
4. Lightly centre punch threads on bolts to stop nuts from vibrating loose.
5. Phase spacings shown are minimum. Any variation will be detailed within Project Design.
6. For concrete pole schedule refer drawing- CEM7402.02 sheet 2

Staying Arrangement

Staying arrangement will be as specified by project design.
Stays may be eyebolt or wrap-around type.

14	1	3	WASHER M12 FLAT ROUND S/S	109580
13	REFER TABLE		POLE STEP SCREW IN	275790
12	1	3	LUG CRIMP 70mm M12 HOLE Cu	234310
11	1	3	NUT M20 GALV. HEX	108950
10	1	3	AGS SUSPENSION UNIT WITH ARMOUR ROD	TO SUIT CONDUCTOR
9	1	3	SHACKLE D ASSEMBLY	272430
8	1	3	SET SCREW M12x25mm C/W NUT S/S	100310
7	1	3	WASHER M12 SPRING S/S	110450
6	1	3	EARTH CLIP 7/4.50 20mm HOLE (REFER DRG A4 ZS00E00)	291460
5	0.7m	2.1m	CABLE 70MM 19/2.14 SDI BLACK Cu	442770
4	3	9	WASHER M20 SPRING S/S	110455
3	6	18	WASHER M20 60x4mm FLAT ROUND GALV	110180
2	2	6	BOLT M20x400mm C/W NUT GALV	106040
1	1	3	INSULATOR 132kV HORIZONTAL LINE POST	261955
Item	Q'ty/Assy	Q'ty Total	Description	Cat. No

AMENDMENT DETAILS

2	DRWN	L.R.WOODWARD
	CHCKD	S.PALMER
	DATE	18 JAN 2008

DRAWING AUTHORISATION WAS SHOWN AS TERRY HOLMES.

ITEM 8 WAS M12x40mm SET SCREW.

SCALE	NTS
ORIGINAL ISSUE DATE	1/06/05
DRAWN BY	D.J.DARKE/LRW
CHECKED	S.PALMER
PLOT DATE	18 JAN 2008

AUTHORISED BY:

Ian Thompson

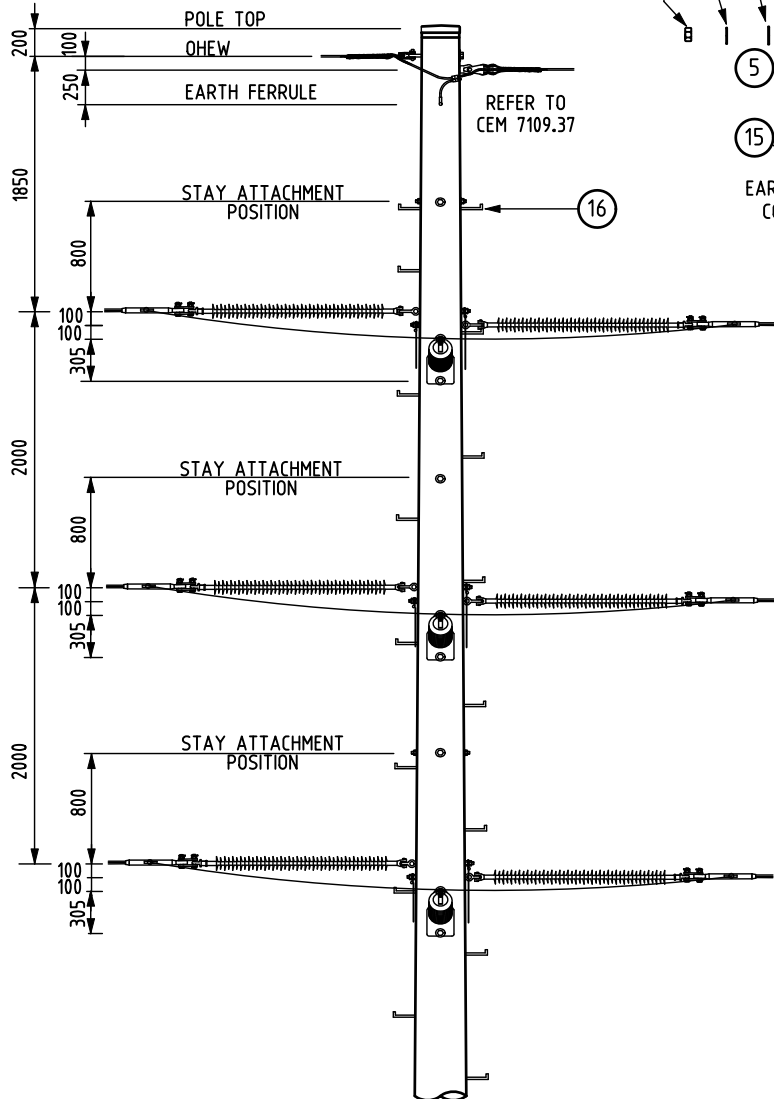
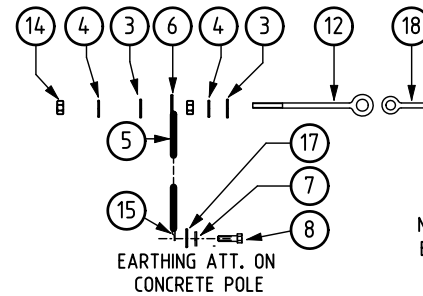
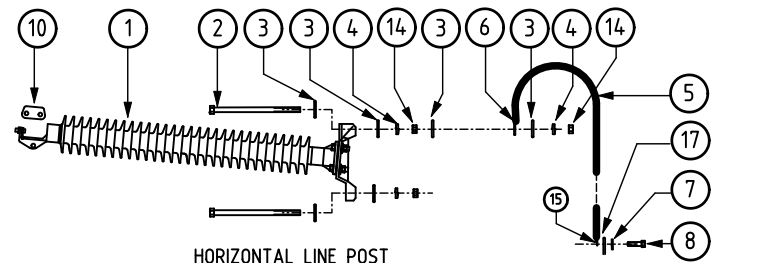
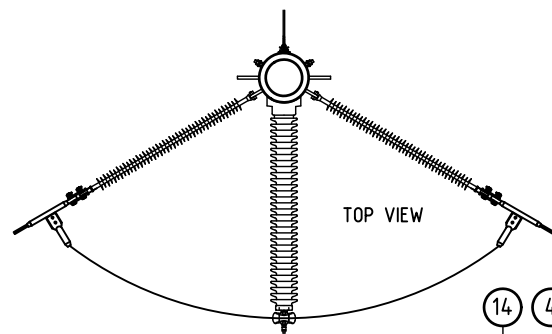
GROUP MANAGER STANDARDS
AND DEMAND MANAGEMENT

CEM7402.02

1 of 2 A4

132kV VERTICAL
INTERMEDIATE
CONSTRUCTION
ON CONCRETE POLE

countryenergy



NOTES :

Earthling 1. All steelwork to be earthed.

M12 earth fittings on pole are connected to internal earth to ground.

2. Refer to earthing manual for pole ground earth arrangement.

Earth to connect to M12 ferrule 300mm above GL

3. Pole earth not to exceed 10 ohms

General 1. Pole steps to be fitted at 450mm centres on alternative sides of the pole to within 8000mm of ground level.

2. For pole footing detail, refer Project Design.

3. All dimensions in millimetres.

4. Lightly centre punch threads on bolts to stop nuts from vibrating loose.

5. Phase spacings shown are minimum. Any variation will be detailed within Project Design.

6. For concrete pole schedule refer drawing- CEM7402.03 sheet 2

Staying Arrangement Staying arrangement will be as specified by project design.

Stays to be wrap-around type.

In line stays will be required where deviation angle exceeds 60 degrees.

18	2	6	SHACKLE D ASSEMBLY	272430
17	10	30	WASHER M12 FLAT ROUND S/S	109580
16	REFER TABLE		POLE STEP SCREW IN	275790
15	3	9	LUG CRIMP 70mm M12 HOLE Cu	234310
14	1	3	NUT M20 GALV HEX	108950
13	2	6	LINK PLATE DOUBLE 160kN 100mm CTRS	272368
12	2	6	EYEBOLT M20x400mm C/W NUT GALV	103010
11	2	6	INSULATOR 132kV STRAIN	261960
10	1	3	TOP CLAMP	TO SUIT CONDUCTOR
9	2	6	COMPRESSION DEAD END & TERMINAL LUG	TO SUIT CONDUCTOR
8	5	15	SET SCREW M12x25mm C/W NUT S/S	100310
7	5	15	WASHER M12 SPRING S/S	110450
6	3	9	EARTH CLIP 7/4.50 20mm HOLE (REFER DRG A4 ZS00E00)	291460
5	0.7m	2.1m	CABLE 70MM 19/2.14 SDI BLACK Cu	442770
4	6	18	WASHER M20 SPRING S/S	110455
3	10	30	WASHER M20 60x4mm FLAT ROUND GALV	110180
2	2	6	BOLT M20x400mm C/W NUT GALV	106040
1	1	3	INSULATOR 132kV HORIZONTAL LINE POST	261955
Item	Q'ty/Assy	Q'ty Total	Description	Cat. No

AMENDMENT DETAILS

2

DRWN	L.R.WOODWARD
CHCKD	S.PALMER
DATE	18 JAN 2008

DRAWING AUTHORISATION WAS SHOWN AS TERRY HOLMES.

ITEM 8 WAS M12x40mm SET SCREW.

SCALE	NTS
ORIGINAL ISSUE DATE	1/06/05
DRAWN BY	D.J.DARKE/LRW
CHECKED	S.PALMER
PLOT DATE	18 JAN 2008

AUTHORISED BY:

Ian Thompson

GROUP MANAGER STANDARDS
AND DEMAND MANAGEMENT

CEM7402.03

1 of 2 A4

132kV VERTICAL
THROUGH STRAIN
CONSTRUCTION
WITH
BRIDGING INSULATORS
ON CONCRETE POLE

countryenergy

NOTE - DISTANCE FROM TIP DEPENDANT UPON POLE HIEGHT REFER CONSTRUCTION PLAN



1 : For pole size and dimensions refer to Project Design.

2 : Poles to be ordered with pole steps.
The number of pole steps will be dependent upon pole height.

3 : Pole number to be supplied to manufacturer with the pole order. Pole number to be marked on nameplate.

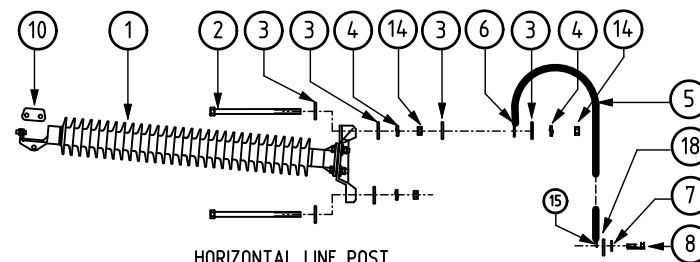
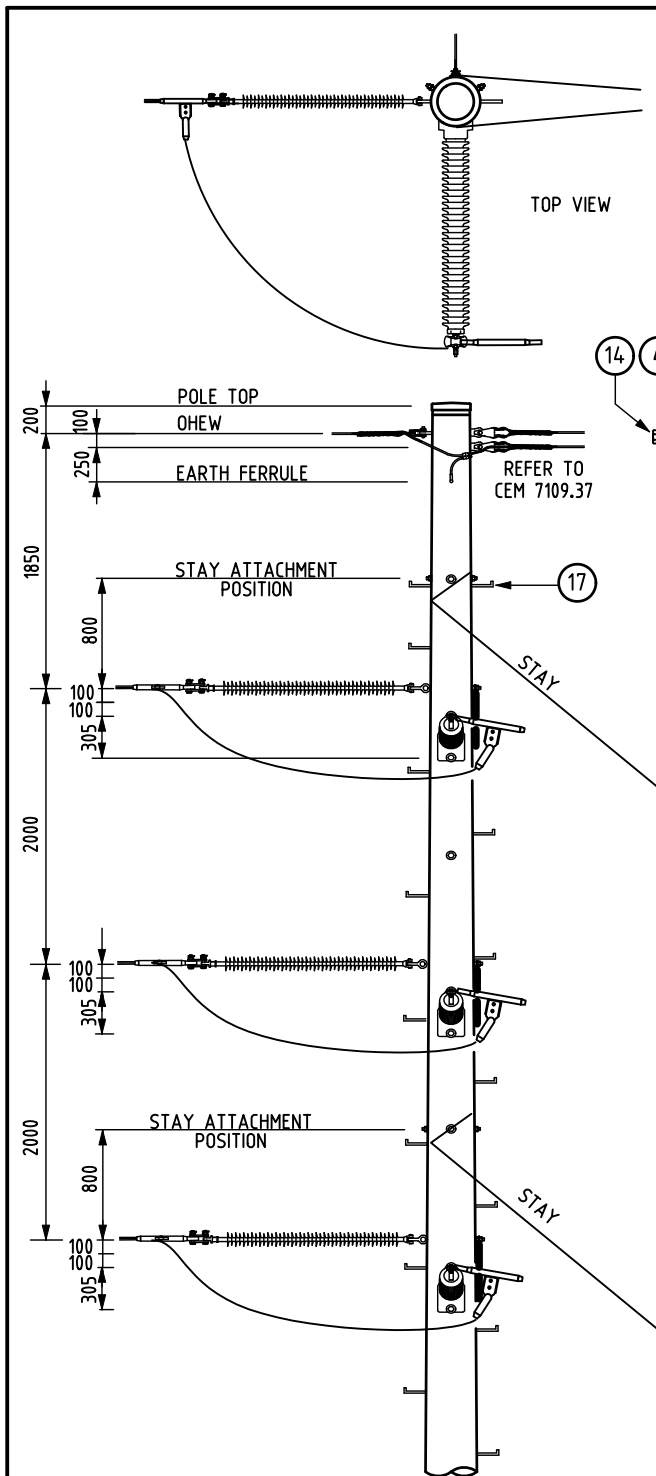
4 : Bearing A^* and B^* will be dependent upon line deviation.

POLE DIMENSION DETAIL
(Refer Concrete Pole Standard)

LENGTH (m) :
 PLANTING DEPTH (m) :
 TIP DIA (mm) :
 BUTT DIA (mm) :
 MASS (approx kg) :
 WORKING LOAD (kN) :
 ULTIMATE LOAD :

POLE HEIGHT	POLE STEP QTY
17m	15
18.5m	18
20m	21
21.5m	24
23m	27

countryenergy



NOTES :

- Earthing**
1. All steelwork to be earthed.
 2. M12 earth fittings on pole are connected to internal earth to ground.
 3. Refer to earthing manual for pole ground earth arrangement.
 4. Earth to connect to M12 ferrule 300mm above GL
 5. Pole earth not to exceed 10 ohms
- General**
1. Pole steps to be fitted at 450mm centres on alternative sides of the pole to within 8000mm of ground level.
 2. For pole footing detail, refer Project Design.
 3. All dimensions in millimetres.
 4. Lightly centre punch threads on bolts to stop nuts from vibrating loose.
 5. Phase spacings shown are minimum. Any variation will be detailed within Project Design.
 6. For concrete pole schedule refer drawing- CEM7402.04 sheet 2

Staying Arrangement

Staying arrangement will be as specified by project design.
Stays may be eyebolt or wrap-around type.

19	1	3	SHACKLE D STIRRUP ASSEMBLY	272430
18	10	30	WASHER M12 FLAT ROUND S/S	109580
17	REFER TABLE		POLE STEP SCREW IN	275790
16	2	6	BOW SHACKLE 70kN C/W PIN	603450
15	2	6	LUG CRIMP 70mm M12 HOLE Cu	234310
14	2	6	NUT M20 GALV HEX	108950
13	1	3	LINK PLATE DOUBLE 160kN 100mm CTRS	272368
12	1	3	EYEBOLT M20x400mm C/W NUT GALV	103010
11	1	3	INSULATOR 132kV STRAIN	261960
9	2	6	COMPRESSION DEAD END & TERMINAL LUG	TO SUIT CONDUCTOR
8	6	18	SET SCREW M12x25mm C/W NUT S/S	100310
7	6	18	WASHER M12 SPRING S/S	110450
6	2	6	EARTH CLIP 7/4.50 20mm HOLE (REFER DRG A4 ZS00E00)	291460
5	1.5m	4.5m	CABLE 70MM 19/2.14 SDI BLACK Cu	442770
4	5	15	WASHER M20 SPRING S/S	110455
3	9	27	WASHER M20 60x4mm FLAT ROUND GALV	110180
2	2	6	BOLT M20x400mm C/W NUT GALV	106040
1	1	3	INSULATOR 132kV HORIZONTAL LINE POST	261955
Item	Q'ty/Assy	Q'ty Total	Description	Cat. No

AMENDMENT DETAILS

2	DRWN	L.R.WOODWARD
	CHCKD	S.PALMER
	DATE	18 JAN 2008

DRAWING AUTHORISATION WAS SHOWN AS TERRY HOLMES.

ITEM 8 WAS M12x40mm SET SCREW.

SCALE	NTS
ORIGINAL ISSUE DATE	1/06/05
DRAWN BY	D.J.DARKE/LRW
CHECKED	S.PALMER
PLOT DATE	18 JAN 2008

AUTHORISED BY:

Ian Thompson
GROUP MANAGER STANDARDS
AND DEMAND MANAGEMENT

CEM7402.04

1 of 2 A4

132kV LANDING SPAN
CONSTRUCTION
ON CONCRETE POLE

countryenergy

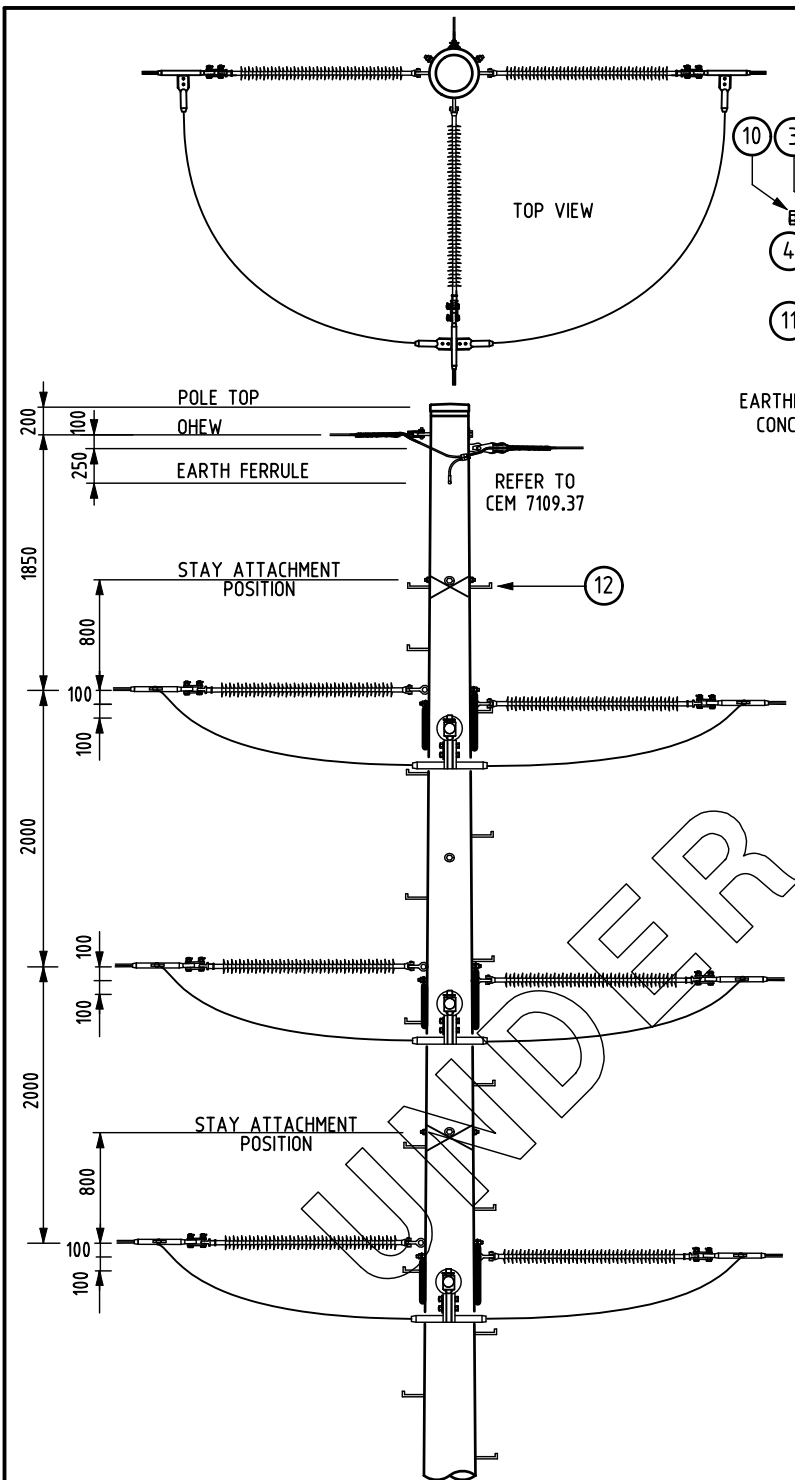
A technical drawing of a vertical mast or pole. The mast is a long, thin cylinder with several horizontal rungs or steps along its length. At the top of the mast, there is a horizontal crossbar. Three guy wires are attached to the mast at different heights. Each guy wire is connected to a pulley or sheave on the mast and extends outwards to a fixed point. The drawing is a line drawing with no shading.

- 1 : For pole size and dimensions refer to Project Design.
- 2 : Poles to be ordered with pole steps. The number of pole steps will be dependent upon pole height.
- 3 : Pole number to be supplied to manufacturer with the pole order. Pole number to be marked on nameplate.

LENGTH (m) :
 PLANTING DEPTH (m) :
 TIP DIA (mm) :
 BUTT DIA (mm) :
 MASS (approx kg) :
 WORKING LOAD (kN) :
 ULTIMATE LOAD :

POLE HEIGHT	POLE STEP QTY	H	M16 STAINLESS STEEL FERRULE	2	
		I	NAME PLATE	1	ID PLATE
17m	15	J	DEPTH INDICATION MARK	1	
18.5m	18				
20m	21				
21.5m	24	M	STAINLESS STEEL BUTT PLATE	1	
23m	27	N	76 O.D. S/S TUBE WALL THICKNESS	1	

AMENDMENT DETAILS		
2	DRWN	L.R.WOODWARD
	CHCKD	S.PALMER
	DATE	18 JAN 2008
REFER SHEET 1		
SCALE	NTS	
ORIGINAL ISSUE DATE	1/06/05	
DRAWN BY	D.J.DARKE	
CHECKED	S.PALMER	
PLOT DATE	18 JAN 2008	
AUTHORISED BY:		
<i>Ian Thompson</i>		
GROUP MANAGER STANDARDS AND DEMAND MANAGEMENT		
CEM7402.04		
	2 of 2	A4
132kV LANDING SPAN CONSTRUCTION CONCRETE POLE SCHEDULE		
		



EARTHING ATT. ON
CONCRETE POLE

NOTES:

- Earthling
1. All steelwork to be earthed.
 2. M12 earth fittings on pole are connected to internal earth to ground.
 3. Refer to earthing manual for pole ground earth arrangement.
 4. Earth to connect to M12 ferrule 300mm above GL
 5. Pole earth not to exceed 10 ohms

General

1. Pole steps to be fitted at 450mm centres on alternative sides of the pole to within 8000mm of ground level.
2. For pole footing detail, refer Project Design.
3. All dimensions in millimetres.
4. Lightly centre punch threads on bolts to stop nuts from vibrating loose.
5. Phase spacings shown are minimum. Any variation will be detailed within Project Design.
6. For concrete pole schedule refer drawing- CEM7402.05 sheet 2

Staying Arrangement

Staying arrangement will be as specified by Project Design.
All stays to be of the 'wrap-a-round' type.

15	3	9	SHACKLE D STIRRUP ASSEMBLY	272430
14	3	9	WASHER M20 SPRING S/S	110455
13	15	45	WASHER M12 FLAT ROUND S/S	109580
12	REFER TABLE		POLE STEP SCREW IN	275790
11	3	9	LUG CRIMP 70mm M12 HOLE Cu	234310
10	3	9	NUT M20 GALV HEX	108950
9	3	9	LINK PLATE DOUBLE 160kN 100mm CTRS	272368
8	3	9	COMPRESSION DEAD END & TERMINAL LUG	TO SUIT CONDUCTOR
7	11	33	SET SCREW M12x25mm C/W NUT S/S	100310
6	11	33	WASHER M12 SPRING S/S	110450
5	3	9	EARTH CLIP 7/4.50 20mm HOLE (REFER DRG A4 ZS00E00)	291460
4	1.5m	4.5m	CABLE 70MM 19/2.14 SDI BLACK Cu	442770
3	6	18	WASHER M20 60x4mm FLAT ROUND GALV	110180
2	3	9	EYEBOLT M20x400mm C/W NUT GALV	103010
1	3	9	INSULATOR 132kV STRAIN	261960
Item	Q'ty/Assy	Q'ty Total	Description	Cat. No

AMENDMENT DETAILS

2	DRWN	L.R.WOODWARD
	CHCKD	S.PALMER
	DATE	18 JAN 2008

DRAWING AUTHORISATION WAS SHOWN
AS TERRY HOLMES.

ITEM 7 WAS M12x40mm SET SCREW.

SCALE	NTS
ORIGINAL ISSUE DATE	1/06/05
DRAWN BY	D.J.DARKE/LRW
CHECKED	S.PALMER
PLOT DATE	18 JAN 2008

AUTHORISED BY:

Ian Thompson

GROUP MANAGER STANDARDS
AND DEMAND MANAGEMENT

CEM7402.05

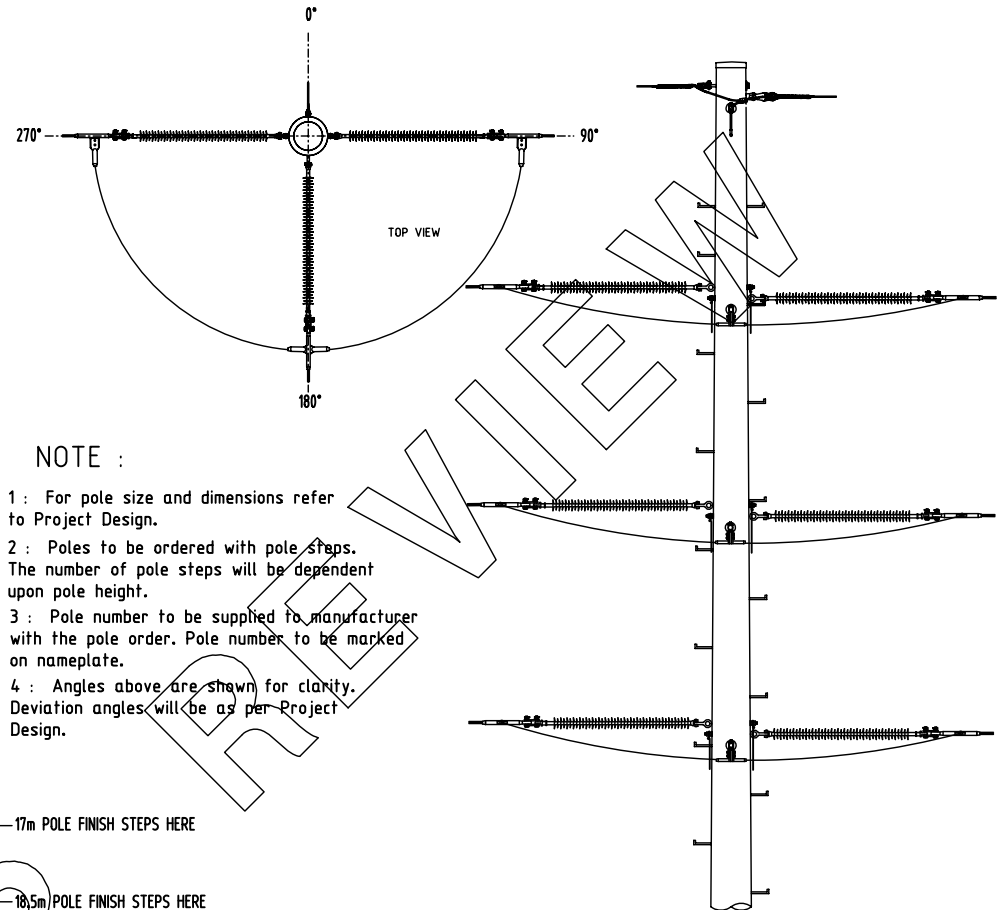
1 of 2 A4

132kV VERTICAL TEE
CONSTRUCTION
ON CONCRETE POLE

countryenergy

FIG TYPE	DISTANCE FROM TIP mm	0°	90°	180°	270°	REMARKS
B	0					POLE CAP
E	200		E		E	25 OD TUBE (OHEW)
E	300		E		E	25 OD TUBE (OHEW)
E	400	E		E		25 OD TUBE (OHEW)
Gx2	650	G		G		M12 S/S EARTH FERRULE
Hx3	1250	H	H		H	M16 S/S FERRULE (ANCHOR GUYS)
Hx2	1300		H		H	M16 S/S FERRULE (POLE STEP)
H	1750			H		M16 S/S FERRULE (POLE STEP)
E	2050		E		E	25 OD TUBE (STRAIN INSULATOR)
E	2150		E		E	25 OD TUBE (STRAIN INSULATOR)
H	2200		H			M16 S/S FERRULE (POLE STEP)
E	2250	E		E		25 OD TUBE (STRAIN INSULATOR)
Gx4	2500	G	G	G	G	M12 S/S EARTH FERRULE
H	2650			H		M16 S/S FERRULE (POLE STEP)
H	3100		H			M16 S/S FERRULE (POLE STEP)
H	3550			H		M16 S/S FERRULE (POLE STEP)
H	4000		H			M16 S/S FERRULE (POLE STEP)
E	4050		E		E	25 OD TUBE (STRAIN INSULATOR)
E	4150		E		E	25 OD TUBE (STRAIN INSULATOR)
E	4250	E		E		25 OD TUBE (STRAIN INSULATOR)
H	4450			H		M16 S/S FERRULE (POLE STEP)
Gx4	4500	G	G	G	G	M12 S/S EARTH FERRULE
H	4900		H			M16 S/S FERRULE (POLE STEP)
Hx3	5250	H		H	H	M16 S/S FERRULE (ANCHOR GUYS)
H	5350			H		M16 S/S FERRULE (POLE STEP)
H	5800		H			M16 S/S FERRULE (POLE STEP)
E	6050		E		E	25 OD TUBE (STRAIN INSULATOR)
E	6150		E		E	25 OD TUBE (STRAIN INSULATOR)
H	6250			H		M16 S/S FERRULE (POLE STEP)
E	6250	E		E		25 OD TUBE (STRAIN INSULATOR)
Gx4	6500	G	G	G	G	M12 S/S EARTH FERRULE
Hx2	6700		H		H	M16 S/S FERRULE (POLE STEP)
H	7150			H		M16 S/S FERRULE (POLE STEP)
H	7600		H			M16 S/S FERRULE (POLE STEP)
Hx2	8050		H		H	M16 S/S FERRULE (POLE STEP)
POLE STEPS TO CONTINUE AT 450mm c/s TO APPROX 8000mm ABOVE G/LEVEL.						
Hx2	8000mm ABOVE G/L		H		H	M16 S/S FERRULE (POLE STEP)
I	*		I		1500mm ABOVE G/L	NAME PLATE
Gx2	*	G		G	300mm ABOVE G/L	M12 S/S EARTH FERRULE (GROUND EARTH)
J	*		J			DEPTH INDICATION MARK (GROUND LEVEL)
M	*					S/S BUTT PLATE (POLE BASE)

NOTE - DISTANCE FROM TIP DEPENDANT UPON POLE HEIGHT REFER CONSTRUCTION PLAN



NOTE :

- 1 : For pole size and dimensions refer to Project Design.
- 2 : Poles to be ordered with pole steps. The number of pole steps will be dependent upon pole height.
- 3 : Pole number to be supplied to manufacturer with the pole order. Pole number to be marked on nameplate.
- 4 : Angles above are shown for clarity. Deviation angles will be as per Project Design.

← 17m POLE FINISH STEPS HERE

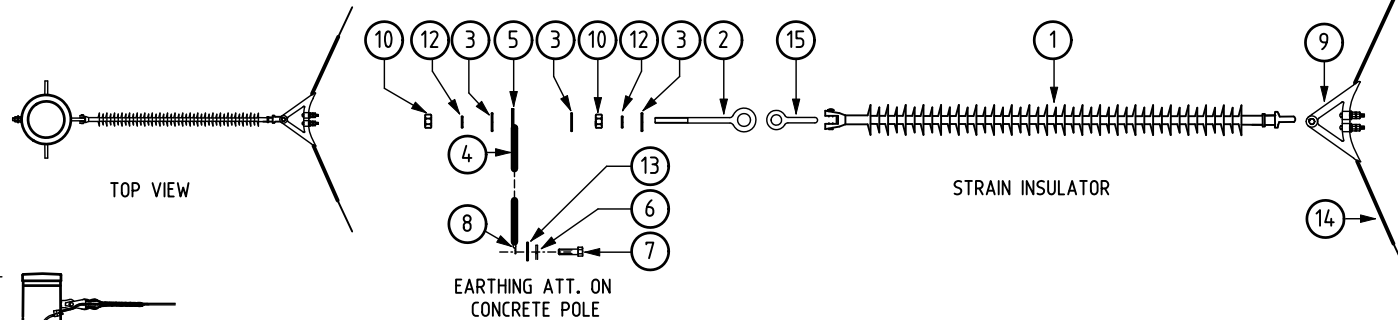
← 18.5m POLE FINISH STEPS HERE

POLE DIMENSION DETAIL (Refer Concrete Pole Standard)

LENGTH (m) :
PLANTING DEPTH (m) :
TIP DIA (mm) :
BUTT DIA (mm) :
MASS (approx kg) :
WORKING LOAD (kN) :
ULTIMATE LOAD :

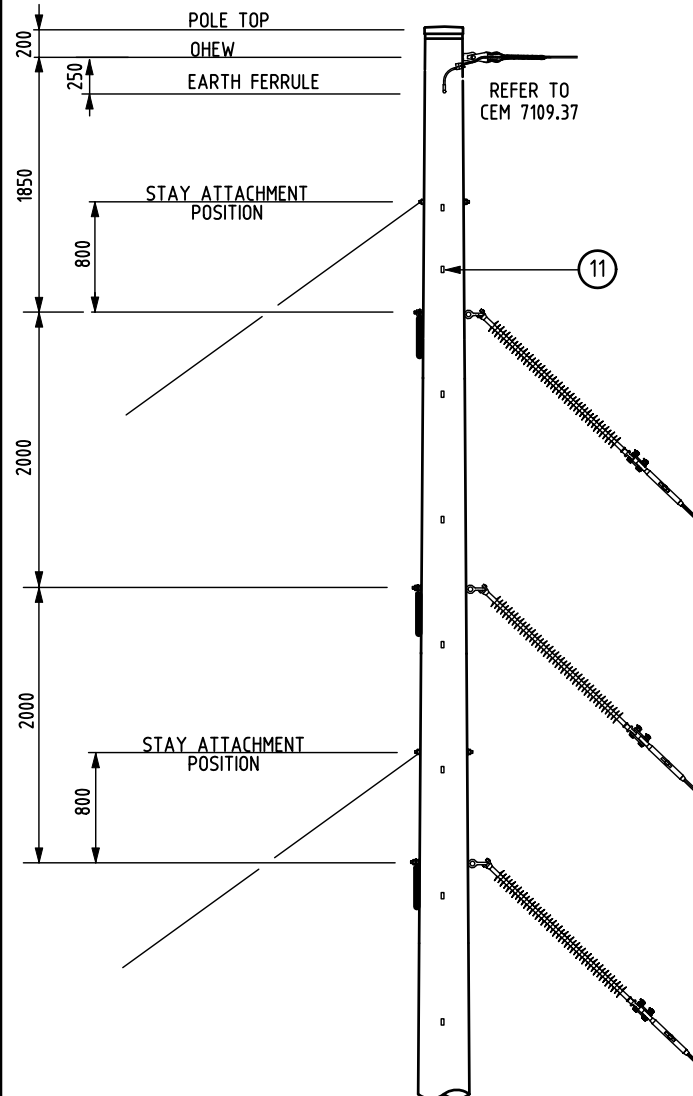
POLE HEIGHT	POLE STEP QTY	FTG. TYPE	DESCRIPTION	NO. OFF	USE
17m	15	B	POLE CAP (PLAIN)	1	
18.5m	18				
20m	21				
21.5m	24				
23m	27				
		E	25 O.D. STAINLESS STEEL TUBE	12	M20 BOLTS
		G	M12 SS FERRULE	16	EARTH
		H	M16 STAINLESS STEEL FERRULE	--	STEP BOLTS
		H	M16 STAINLESS STEEL FERRULE	6	
		I	NAME PLATE	1	ID PLATE
		J	DEPTH INDICATION MARK	1	
		M	STAINLESS STELL BUTT PLATE	1	
		N	76 O.D. S/S TUBE WALL THICKNESS	1	

AMENDMENT DETAILS		
2	DRWN	L.R.WOODWARD
	CHCKD	S.PALMER
	DATE	18 JAN 2008
REFER SHEET 1		
SCALE		
NTS		
ISSUE DATE		
1/06/05		
DRAWN BY		
D.J.DARKE		
CHECKED		
S.PALMER		
PLOT DATE		
18 JAN 2008		
AUTHORISED BY:		
Ian Thompson		
GROUP MANAGER STANDARDS AND DEMAND MANAGEMENT		
CEM7402.05		
2 of 2		
A4		
132kV VERTICAL TEE CONSTRUCTION WITH OHEW CONCRETE POLE SCHEDULE		
countryenergy		



TOP VIEW

REFER TO
CEM 7109.37



EARTHING ATT. ON
CONCRETE POLE

NOTES :
Earthing

1. All steelwork to be earthed.
2. Refer to earthing manual for pole ground earth arrangement.
3. Pole earth not to exceed 10 ohms

General

1. Pole steps to be fitted at 450mm centres on alternative sides of the pole to within 800mm of ground level.
2. For pole footing detail, refer Project Design.
3. All dimensions in millimetres.
4. Lightly centre punch threads on bolts to stop nuts from vibrating loose.
5. Phase spacings shown are minimum. Any variation will be detailed within Project Design.
6. For concrete pole schedule refer drawing- CEM7402.06 sheet 2

Staying Arrangement

Staying arrangement will be as specified by Project Design.
Stays may be eyebolt or wrap-around type.

15	1	3	BOW SHACKLE 70kN C/W PIN	630450
14	1	3	ARMOUR ROD	CEM7106.01
13	1	3	WASHER M12 FLAT ROUND S/S	109580
12	2	6	WASHER M20 SPRING S/S	110455
11	REFER TABLE		POLE STEP SCREW IN	275790
10	1	3	NUT M20 GALV HEX	108950
9	1	3	ANGLE CLAMP	TO SUIT CONDUCTOR
8	1	3	LUG CRIMP 70mm M12 HOLE Cu	234310
7	1	3	SET SCREW M12x25mm C/W NUT S/S	100310
6	1	3	WASHER M12 SPRING S/S	110450
5	1	3	EARTH CLIP 7/4.50 20mm HOLE (REFER DRG A4 ZS00E00)	291460
4	0.5m	1.5m	CABLE 70MM 19/2.14 SDI BLACK Cu	442770
3	3	9	WASHER M20 60x4mm FLAT ROUND GALV	110180
2	1	3	EYEBOLT M20x400mm C/W NUT GALV	103010
1	1	3	INSULATOR 132kV STRAIN	261960
Item	Q'ty/Assy	Q'ty Total	Description	Cat. No

AMENDMENT DETAILS

2	DRWN	L.R.WOODWARD
	CHCKD	S.PALMER
	DATE	18 JAN 2008

DRAWING AUTHORISATION WAS SHOWN
AS TERRY HOLMES.

ITEM 7 WAS M12x40mm SET SCREW.

SCALE	NTS
ORIGINAL ISSUE DATE	1/06/05
DRAWN BY	D.J.DARKE/LRW
CHECKED	S.PALMER
PLOT DATE	18 JAN 2008

AUTHORISED BY:

Ian Thompson

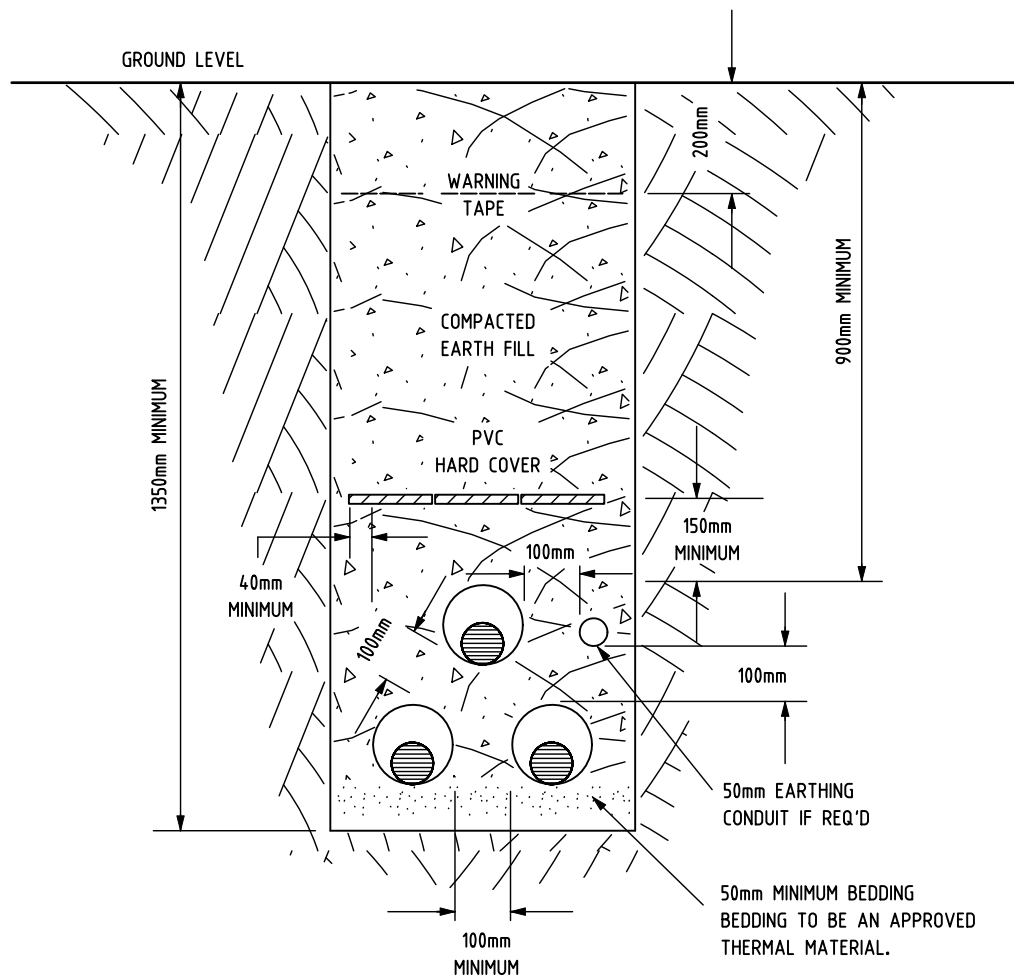
GROUP MANAGER STANDARDS
AND DEMAND MANAGEMENT

CEM7402.06

1 of 2 A4

132kV VERTICAL ANGLE
CONSTRUCTION
ON CONCRETE POLE

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SUBTRANSMISSION
CABLE IN CONDUITS

NOTES

Minimum spacing between cables or conduits 100mm

Minimum bedding around cables or conduits 50mm bedding to be of an approved thermal material.

The typical trench details shown are minimum requirements, final trench details are subject to approval by Subtransmission Design. Such detail as circuit separations, trench depths, provisions of spare conduits etc... are dependant upon the applicable circuit security.

66kV CABLE

630mm CU XLPE

OVERALL DIAMETER 78.6 - 79.9mm

MINIMUM CONDUIT SIZE 150mm CLASS 12 (ORANGE)

MINIMUM BENDING RADIUS OF CABLE DURING INSTAL 1570mm

MINIMUM BENDING RADIUS OF CONDUIT 1.8m.

MINIMUM TRENCH WIDTHS ONE CIRCUIT- 500mm.

33kV CABLE

630mm CU XLPE

OVERALL DIAMETER 60.9mm

MINIMUM CONDUIT SIZE 125mm CLASS 6 (ORANGE)

MINIMUM BENDING RADIUS CABLE 1530mm

MINIMUM TRENCH WIDTHS ONE CIRCUIT- 450mm.

AMENDMENT DETAILS

2	DRWN	D.DARKE
	CHCKD	WAYNE JOHNSON
	DATE	19 SEPT 2007

SUBTRANSMISSION ADDED TO TITLE.
"33/66kV UNDERGROUND" REMOVED
FROM TITLE. CABLE DATA ADDED.
DRAWING AUTHORISATION WAS
SHOWN AS TERRY HOLMES.

SCALE	NTS
ORIGINAL ISSUE DATE	30 July 2004
DRAWN BY	D.D./C.HANSEN
CHECKED	WAYNE JOHNSON
PLOT DATE	19 SEPT 2007

AUTHORISED BY:

Ian Thompson

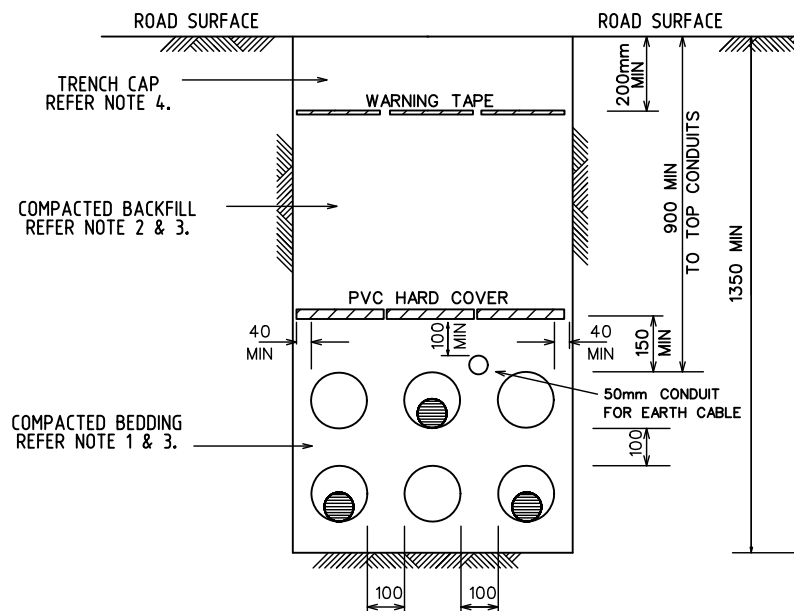
GROUP MANAGER STANDARDS
AND DEMAND MANAGEMENT

CEM7501.01

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SUBTRANSMISSION
CABLE TRENCH
IN CONDUIT

countryenergy



SUBTRANSMISSION CABLE
IN CONDUIT UNDER ROAD

NOTES

- 1 : Bedding material around conduits to be 14:1 sand-cement mix.
Minimum bedding depth below and beside conduits is to be 50mm.
- 2 : Backfill material above pvc cable cover to be 20:1 sand cement mix.
- 3 : The bedding and backfill material is to be installed in layers no greater than 200mm, with a relative compaction equal to or greater than 95% density index for each layer.
- 4 : The trench is to be capped with road base at a thickness of 200mm.
- 5 : Earthing cable conduits are to be 50mm pvc.
- 6 : Minimum spacing between conduits is to be 100mm.
- 7 : The typical trench details shown are minimum requirements.
final trench detail is subject to approval by subtransmission design.
Such detail as circuit separations, trench depths, provision of spare conduits etc are dependant upon the applicable circuit security.
- 8 : Road surface reinstatement, trench cap depth & backfill compaction are subject to local council requirements.

66kV CABLE

630mm CU XLPE
OVERALL DIAMETER 78.6 - 79.9mm
MINIMUM CONDUIT SIZE 150mm CLASS 12 (ORANGE)
MINIMUM BENDING RADIUS OF CABLE DURING INSTAL 1570mm
MINIMUM BENDING RADIUS OF CONDUIT 1.8m.
MINIMUM TRENCH WIDTH 750mm.

33kV CABLE

630mm CU XLPE
OVERALL DIAMETER 60.9mm
MINIMUM CONDUIT SIZE 125mm CLASS 12 (ORANGE)
MINIMUM BENDING RADIUS CABLE 1530mm
MINIMUM TRENCH WIDTH 675mm.

AMENDMENT DETAILS

2	DRWN	DDARKE
	CHCKD	WAYNE JOHNSON
	DATE	19 SEPT 2007

TITLE ALTERED.
CABLE DATA ADDED.
EARTH CONDUIT ADDED.
TRENCH DETAIL ALTERED.
TITLE WAS 33kV UNDERGROUND CABLE
INSTALLATION TRENCH CROSS SECTION
(ROADWAY).
DRAWING AUTHORISATION WAS
SHOWN AS TERRY HOLMES.

SCALE	NTS
ORIGINAL ISSUE DATE	30 July 2004
DRAWN BY	LCAUSEVIK/C.HANSEN
CHECKED	WAYNE JOHNSON
PLOT DATE	19 SEPT 2007

AUTHORISED BY:

Ian Thompson

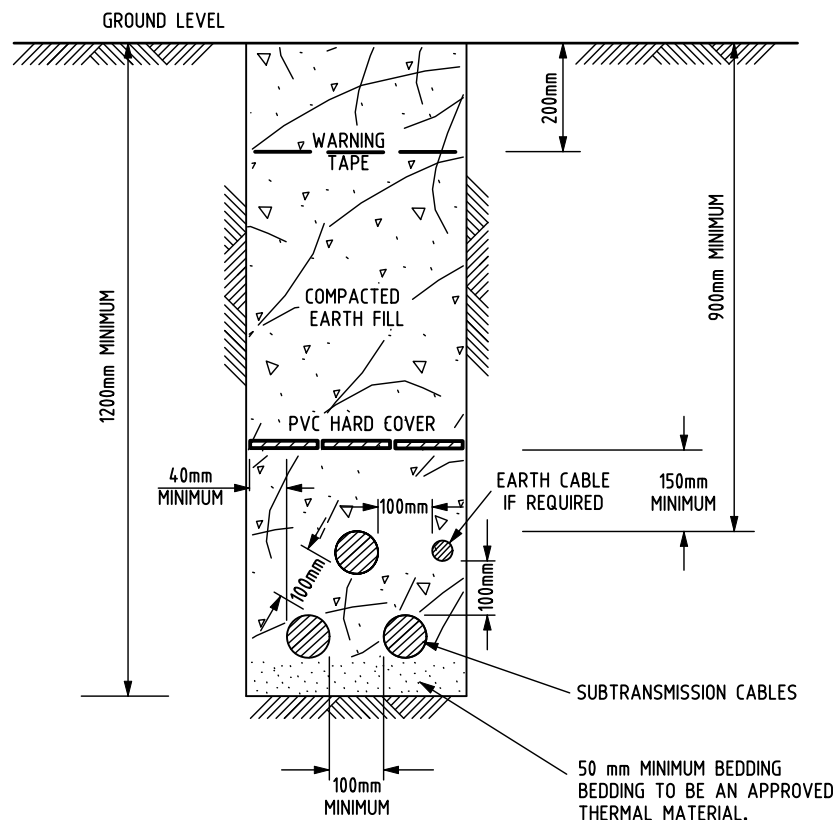
GROUP MANAGER STANDARDS
AND DEMAND MANAGEMENT

CEM7501.02

1 of 1 A4

CABLE TRENCH
SUBTRANSMISSION
UNDER ROADWAY

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SUBTRANSMISSION
CABLE DIRECT BURIED

NOTES

1. Minimum spacing between cables or conduits 100mm
2. Minimum bedding around cables or conduits 50mm.
Bedding to be of an approved thermal material.
3. The typical trench details shown are minimum requirements,
final trench details are subject to approval by Subtransmission
Design. Such detail as circuit separations, trench depths,
provisions of spare conduits etc... are dependant upon the
applicable circuit security.

66kV CABLE

630mm CU XLPE
OVERALL DIAMETER 78.6mm
MINIMUM CONDUIT SIZE 150mm CLASS 12 (ORANGE)
MINIMUM BENDING RADIUS OF CABLE
MINIMUM BENDING RADIUS OF CONDUIT 1.8m.
MINIMUM TRENCH WIDTHS ONE CIRCUIT-
DIRECT BURIED 375mm, IN CONDUIT 500mm.

33kV CABLE

630mm CU XLPE
OVERALL DIAMETER 60.9mm
MINIMUM CONDUIT SIZE 125mm CLASS 6 (ORANGE)
MINIMUM BENDING RADIUS CABLE 1.53m
MINIMUM TRENCH WIDTHS ONE CIRCUIT-
DIRECT BURIED 350mm, IN CONDUIT 450mm.

AMENDMENT DETAILS

2	DRWN	DDARKE
	CHCKD	WAYNE JOHNSON
	DATE	19 SEPT 2007

CABLE DATA ADDED.
EARTH CONDUIT ADDED.
DRAWING AUTHORISATION WAS
SHOWN AS TERRY HOLMES.

SCALE	NTS
ORIGINAL ISSUE DATE	30 July 2004
DRAWN BY	DAVID. RAE/C.HANSEN
CHECKED	WAYNE JOHNSON
PLOT DATE	19 SEPT 2007

AUTHORISED BY:

Ian Thompson

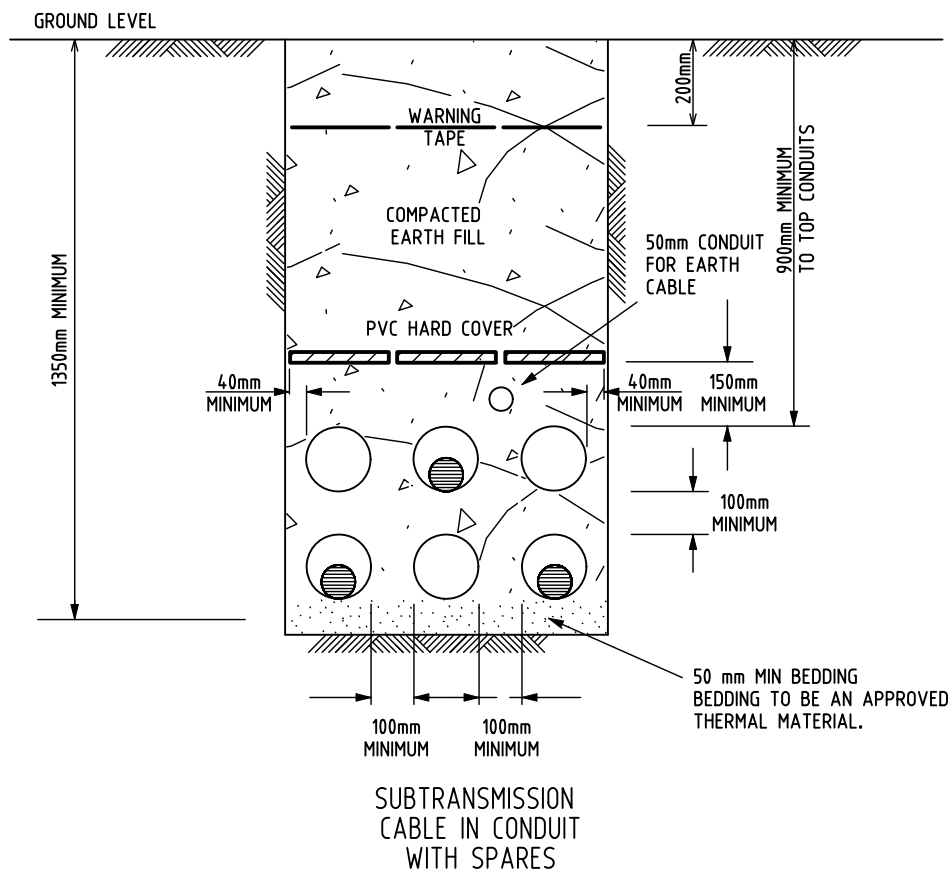
GROUP MANAGER STANDARDS
AND DEMAND MANAGEMENT

CEM7501.05

1 of 1 A4

SUBTRANSMISSION
CABLE TRENCH
DIRECT BURIED

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NOTES

1. Minimum spacing between cables or conduits 100mm
2. Minimum bedding around cables or conduits 50mm. Bedding to be of an approved thermal material.
3. The typical trench details shown are minimum requirements, final trench details are subject to approval by Subtransmission Design. Such detail as circuit separations, trench depths, provisions of spare conduits etc... are dependant upon the applicable circuit security.

66kV CABLE

630mm CU XLPE
 OVERALL DIAMETER 78.6mm
 MINIMUM CONDUIT SIZE 150mm CLASS 12 (ORANGE)
 MINIMUM BENDING RADIUS OF CABLE DURING INSTAL 1570mm
 MINIMUM BENDING RADIUS OF CONDUIT 1.8m.
 MINIMUM TRENCH WIDTH 750mm.

33kV CABLE

630mm CU XLPE
 OVERALL DIAMETER 60.9mm
 MINIMUM CONDUIT SIZE 125mm CLASS 6 (ORANGE)
 MINIMUM BENDING RADIUS CABLE 1.53m
 MINIMUM TRENCH WIDTH 675mm.

AMENDMENT DETAILS

2	DRWN	DDARKE
	CHCKD	WAYNE JOHNSON
	DATE	19 SEPT 2007

CABLE DATA ADDED.
 EARTH CONDUIT ADDED.
 TITLE WAS "SUBTRANSMISSION
 CABLE IN CONDUIT AND FUTURE USE".
 DRAWING AUTHORISATION WAS
 SHOWN AS TERRY HOLMES.

SCALE	NTS
ORIGINAL ISSUE DATE	30 July 2004
DRAWN BY	DAVID. RAE/C.HANSEN
CHECKED	WAYNE JOHNSON
PLOT DATE	19 SEPT 2007

AUTHORISED BY:

Ian Thompson

GROUP MANAGER STANDARDS
 AND DEMAND MANAGEMENT

CEM7501.06

1 of 1 A4

SUBTRANSMISSION
 CABLE TRENCH
 IN CONDUIT
 WITH SPARES

countryenergy