


Company Directive

STANDARD TECHNIQUE : OH4P

Steelwork for Overhead Lines

Author: P Hooper

Implementation Date: January 2007

Approved by 
Policy Manager

Date: 16-01-07

All references to Western Power Distribution or WPD must be read as National Grid Electricity Distribution or NGED

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IMPLEMENTATION PLAN

Introduction

The drawing on page 18 has been amended to show the Section/Terminal Strap (Heavy) WPD 43-95/13 with elongated slots.

Main Changes

As above.

Impact of Changes

None - the section strap is already in use.

Implementation Actions

Team Managers shall advise staff who are required to carry out overhead construction that this document has been amended.

Document Revision & Review Table		
Date	Comments	Author
June 2014	The drawing on page 18 has been amended to show the Section/Terminal Strap (Heavy) WPD 43-95/13 with elongated slots. The slots have been extended from 65mm to 80mm.	P Hooper

1.0 SCOPE

- 1.1 This Standard Technique is designed to provide a simplified version of ENA TS 43-95 and contains drawings for steelwork to be used on the Overhead Line Network within Western Power Distribution.
- 1.2 Where this Standard Technique does not contain the relevant drawing, the appropriate drawing may be found within the full version of ENA TS 43-95 which can be accessed via the following hyperlink :

[EA TS 43-95 5.pdf](#)

2.0 STEELWORK

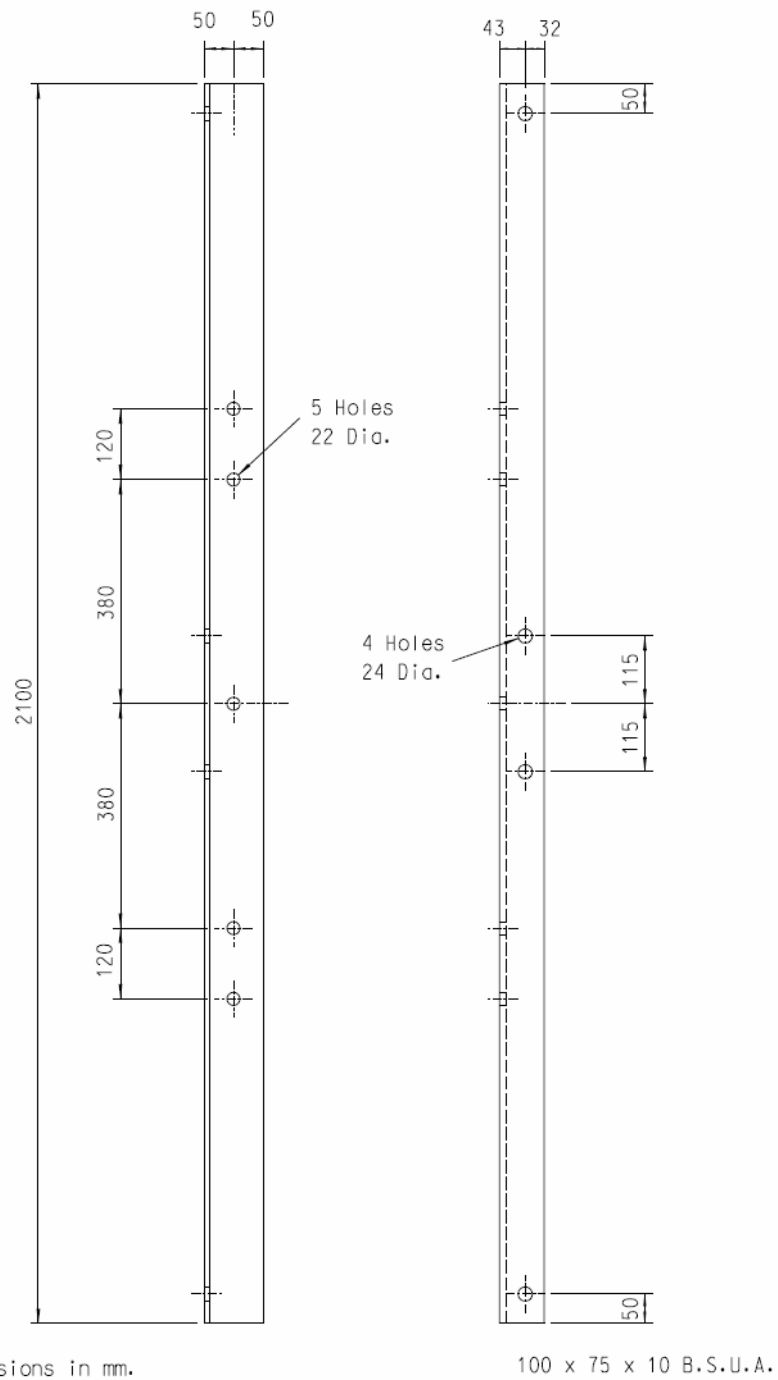
- 2.1 All steelwork shall comply with WPD Engineering Specification 60.
- 2.2 Drawings of the Steelwork to be used on the Overhead Line Network within Western Power Distribution are shown in Appendix A.

Page revised 25 November 2009

STEELWORK FOR OVERHEAD LINES

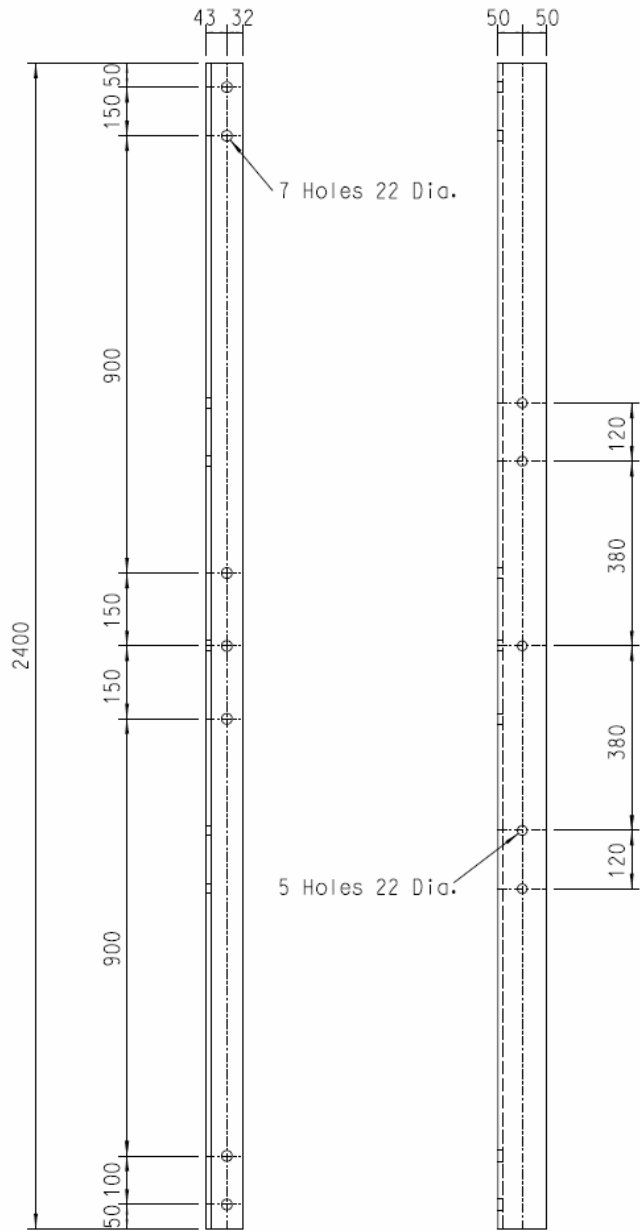
Crossarm, 11kV Light Intermediate & Pin Angle (2.1m)	WPD 43-95/1
Crossarm, 11kV Light Intermediate Section Angle (2.4m)	WPD 43-95/2
Crossarm, 11kV Terminal (2.1m)	WPD 43-95/3
Crossarm, Heavy Terminal (2.6m)	WPD 43-95/4
Bracket, 11kV Cable Termination/Pilot	WPD 43-95/5
Crossarm, 11kV Cable Pilot	WPD 43-95/6
Bracket, 33kV Air Break Disconnector	WPD 43-95/7
Bracket, 33kV Sealing End/ Surge Arrester	WPD 43-95/8
Crossarm, 33kV Cable Support	WPD 43-95/9
Bracket, 33kV Cable Support	WPD 43-95/10
Troughing, 33kV Cable	WPD 43-95/11
Fixing Components for Steel Tower Safety Signs	WPD 43-95/12
Strap, Section/Terminal (Heavy)	WPD 43-95/13
Crossarm, 11/33kV Dual Circuit (3.5m)	WPD 43-95/14
Crossarm, 11/33kV Dual Circuit (4.11m)	WPD 43-95/15
Bracket, 11kV Expulsion Fuse	WPD 43-95/16
Bracket, Cable Cleat Stand-off	WPD 43-95/17
Bracket, 33kV Surge Arrester	WPD 43-95/18
Bracket, 11kV Expulsion Fuse (S & C and AB Chance)	WPD 43-95/19
Troughing, 33kV Cable (Single Pole)	WPD 43-95/20
Crossarm, 11/33kV Dual Circuit (2.75m)	WPD 43-95/21
Crossarm Strut-Rutter Poles	WPD 43-95/22
Bracket, House Service (Concentric) Two Hole Fixing	WPD 43-95/23
Bracket, 11kV Auxiliary Equipment	WPD 43-95/24
Crossarm, 11kV Auxiliary Equipment	WPD 43-95/25
Bracket, Overhead Service Cable Distribution	WPD 43-95/26
Bracket, Pilot Insulator	WPD 43-95/27
Insulator Stool	WPD 43-95/28
Strap, Line Terminating	WPD 43-95/29
Bracket, Stay Outrigger	WPD 43-95/30
Strap, For Safety Signs to be used on Caravan Sites	WPD 43-95/31
Pole Step Detachable	WPD 43-95/32
Pole Step Plate	WPD 43-95/33
Pole Step	WPD 43-95/34
Crossarm, 4.1m	WPD 43-95/35
'U' Link, 66kV Suspension Insulators	WPD 43-95/36
132kV Insulator Mounting Plate	WPD 43-95/37
Platform, 11kV Air Break Switch Disconnector Single & 'H' Pole	WPD 43-95/38
Air Break Switch Disconnector Locking Off Point	WPD 43-95/39
Crossarm Strut (Heavy Lines)	WPD 43-95/40
Crossarm Brace (Heavy Lines)	WPD 43-95/41
Strap, Crossarm Tie (Light)	WPD 43-95/42
Strap, Section/Terminal (Light)	WPD 43-95/43
Strap, LV Extension	WPD 43-95/44
Bracket, LV Outrigger	WPD 43-95/45
Bracket, Housing Service (Flat)	WPD 43-95/46
Bracket, Housing Service (Corner)	WPD 43-95/47
Bracket, Eaves Extension	WPD 43-95/48
Bracket Insulator (LV)	WPD 43-95/49
Crossarm, Heavy Construction (2.5m)	WPD 43-95/50
Crossarm, Heavy Construction (2.9m)	WPD 43-95/51
Crossarm, Heavy Construction (4.1m)	WPD 43-95/52
Bracket - Insulator	WPD 43-95/53
Stabilizing Bracket for 33kV Surge Arrester Support Bracket	WPD 43-95/54

Page revised 21 February 2011



CROSSARM - INTERMEDIATE AND PIN ANGLE
BASED ON ESI DRAWING No. 439501
(Light lines to ESI Standard 43-10)

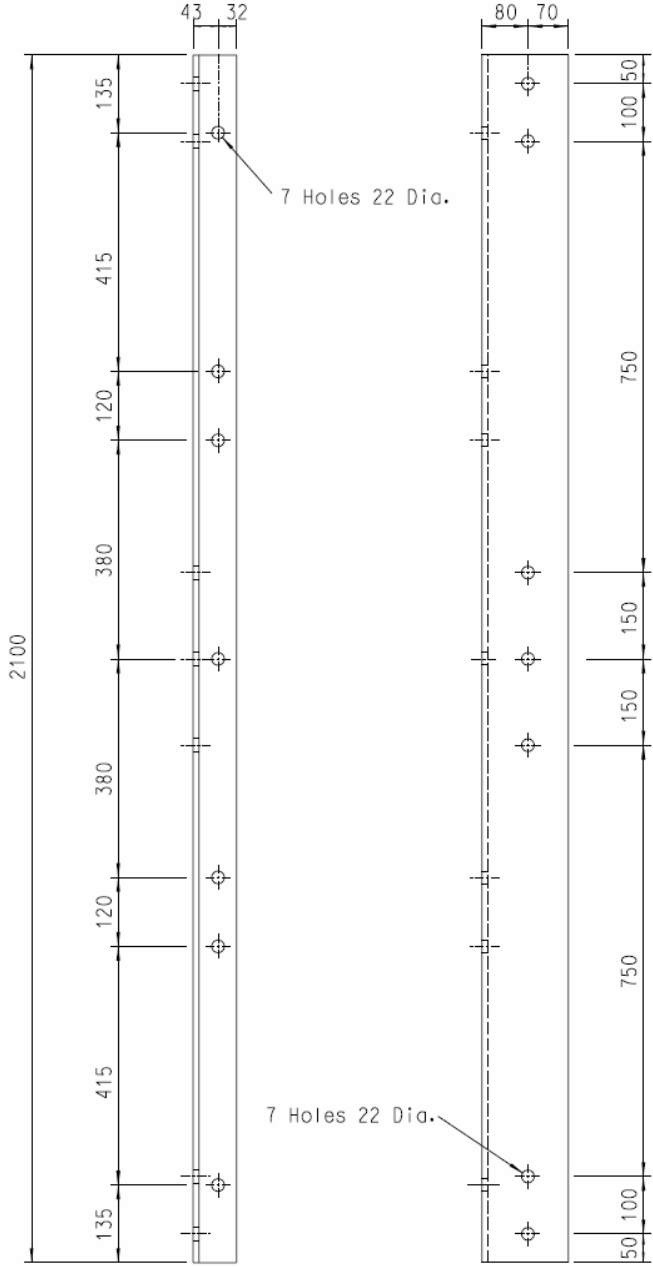
WPD 43-9502
Issue 1
February 2001



All dimensions in mm.

100 x 75 x 10 B.S.U.A.

CROSSARM - SECTION ANGLE
BASED ON ESI DRAWING No. 439502
(Light Lines to ESI 43-10)

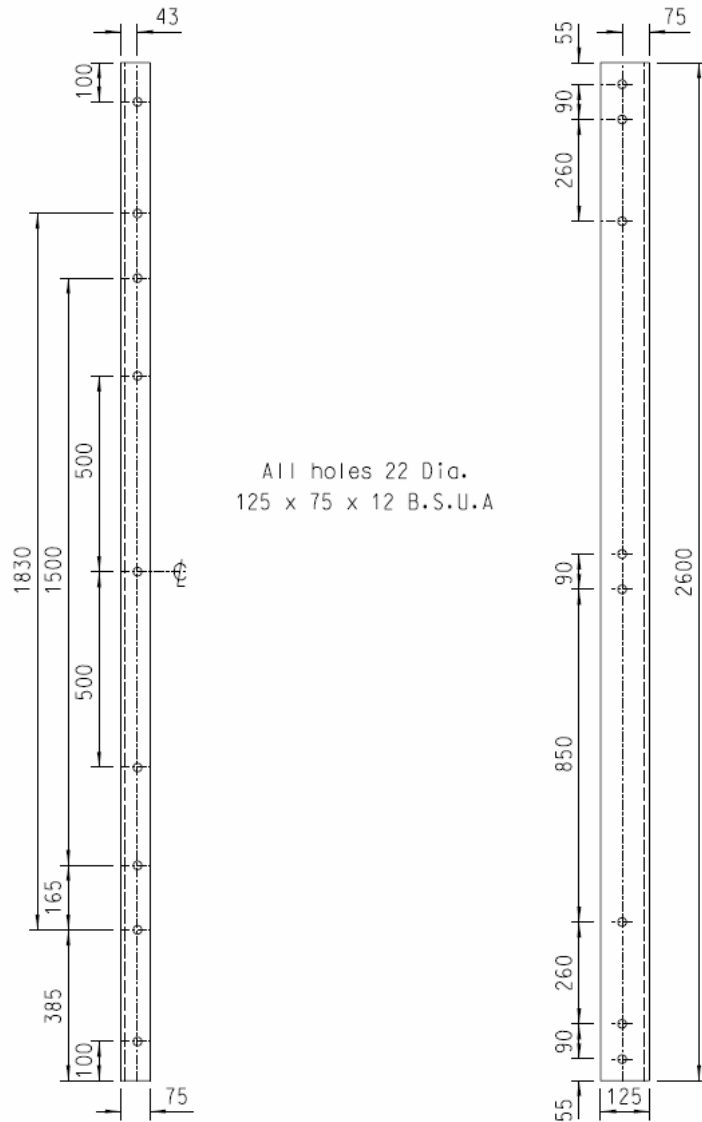


All dimensions in mm.

150 x 75 x 10 B.S.U.A.

CROSSARM - TERMINAL
BASED ON ESI DRAWING No. 439503
(Light lines to ESI Standard 43-10)

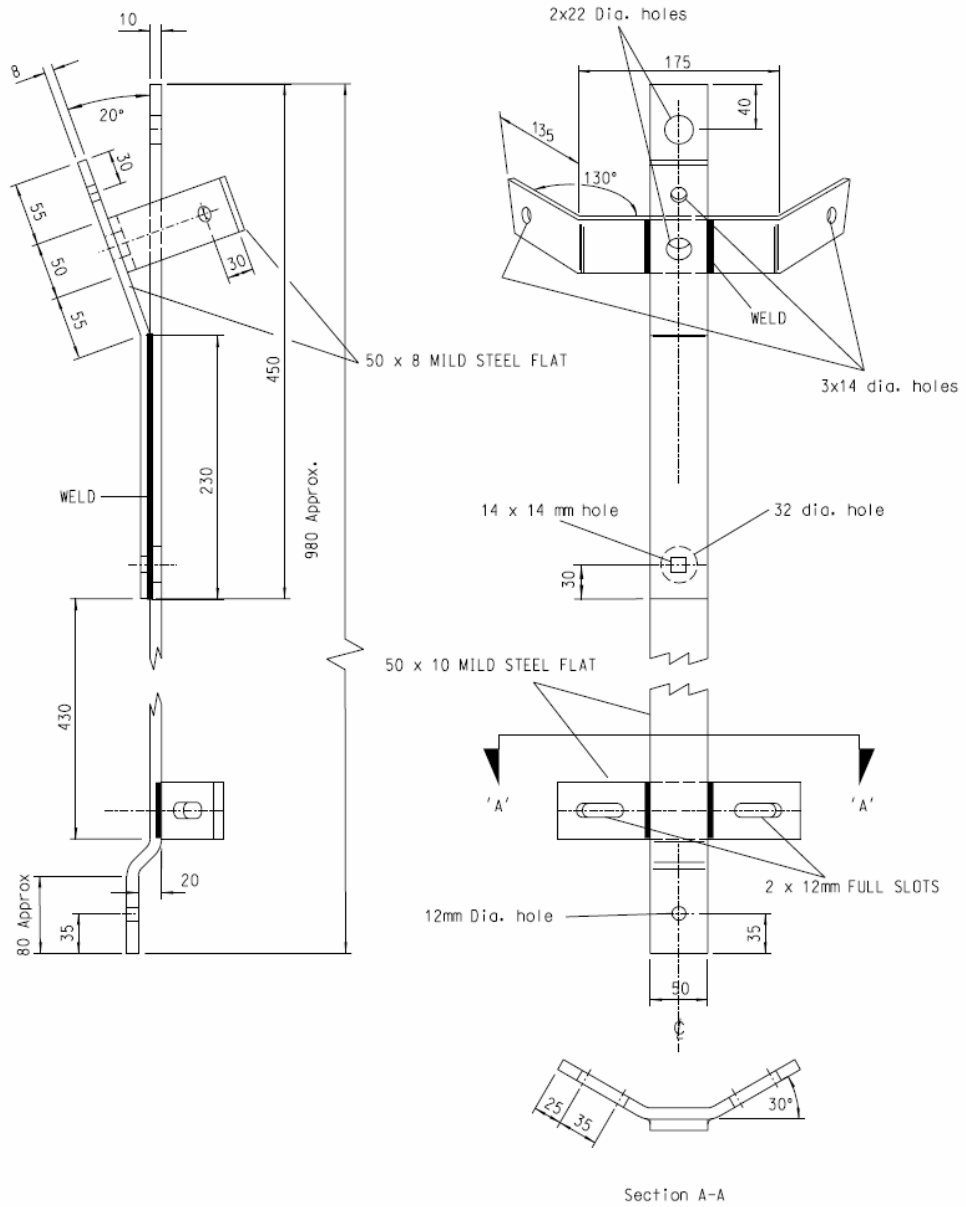
WPD 43-954
Issue 1
March 1987



Notes

1. Dimensions in millimetres.
2. Material and finish in accordance with ESI Standard 43-95.
3. This crossarm used in WPD on 11kV and 33kV Heavy Lines to ESI Standard 43-20. Crossarm as ESI Drg. No. 439522 but with two additional holes for H poles to be erected at 1500mm centres on 33kV cable poles.

CROSSARM - 2.6m - HEAVY TERMINAL
(11kV & 33kV Lines to ESI 43-20)

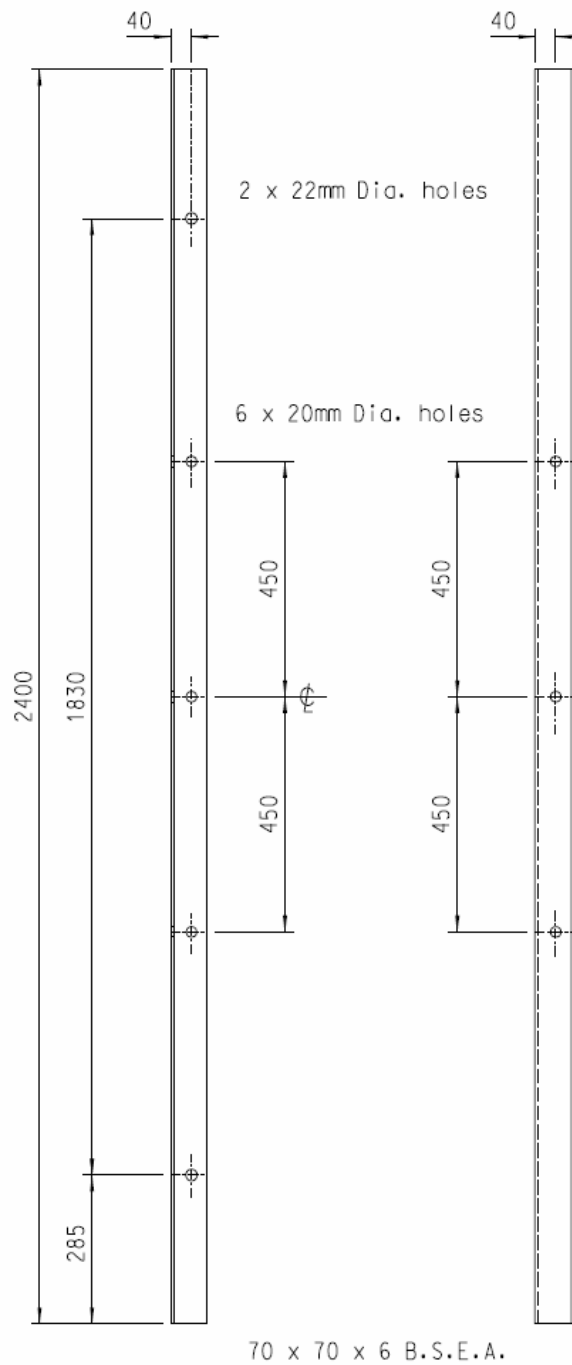


Notes

1. Dimensions in millimetres.
2. Material and finish in accordance with ESI Standard 43-95.
3. Use copper earthing strip (item no. 40422) with this bracket.

BRACKET 11kV CABLE TERMINATION
 (11kV Lines to ESI 43-10 & 43-20)

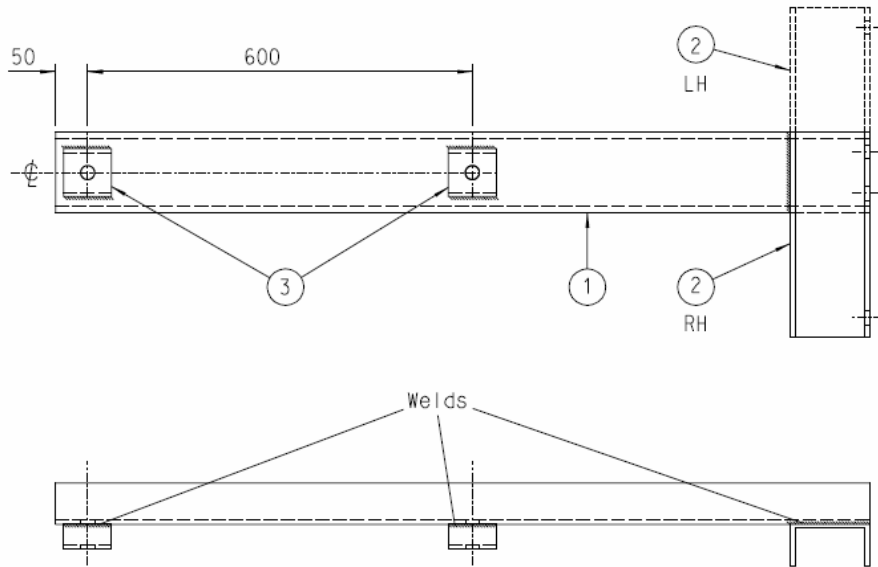
WPD 43-95/6
Issue 1
March 1987



Notes

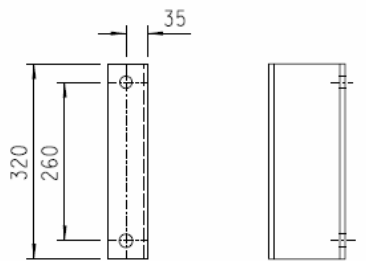
1. Dimensions in millimetres.
2. Material and finish in accordance with ESI Standard 43-95.

CROSSARM 11kV PILOT
(11kV Lines to ESI 43-10 & 43-20)

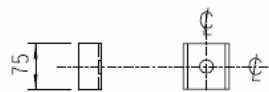


Complete Welded Assembly
 (See Note 3)

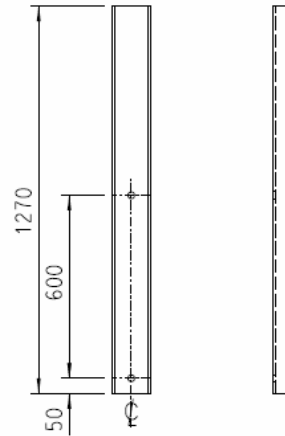
All holes 22 Dia.



Item 2
 125 x 65 x 14 M.S.P.F.C.



Item 3
 76 x 38 x 6.7kg/m Channel to BS 4



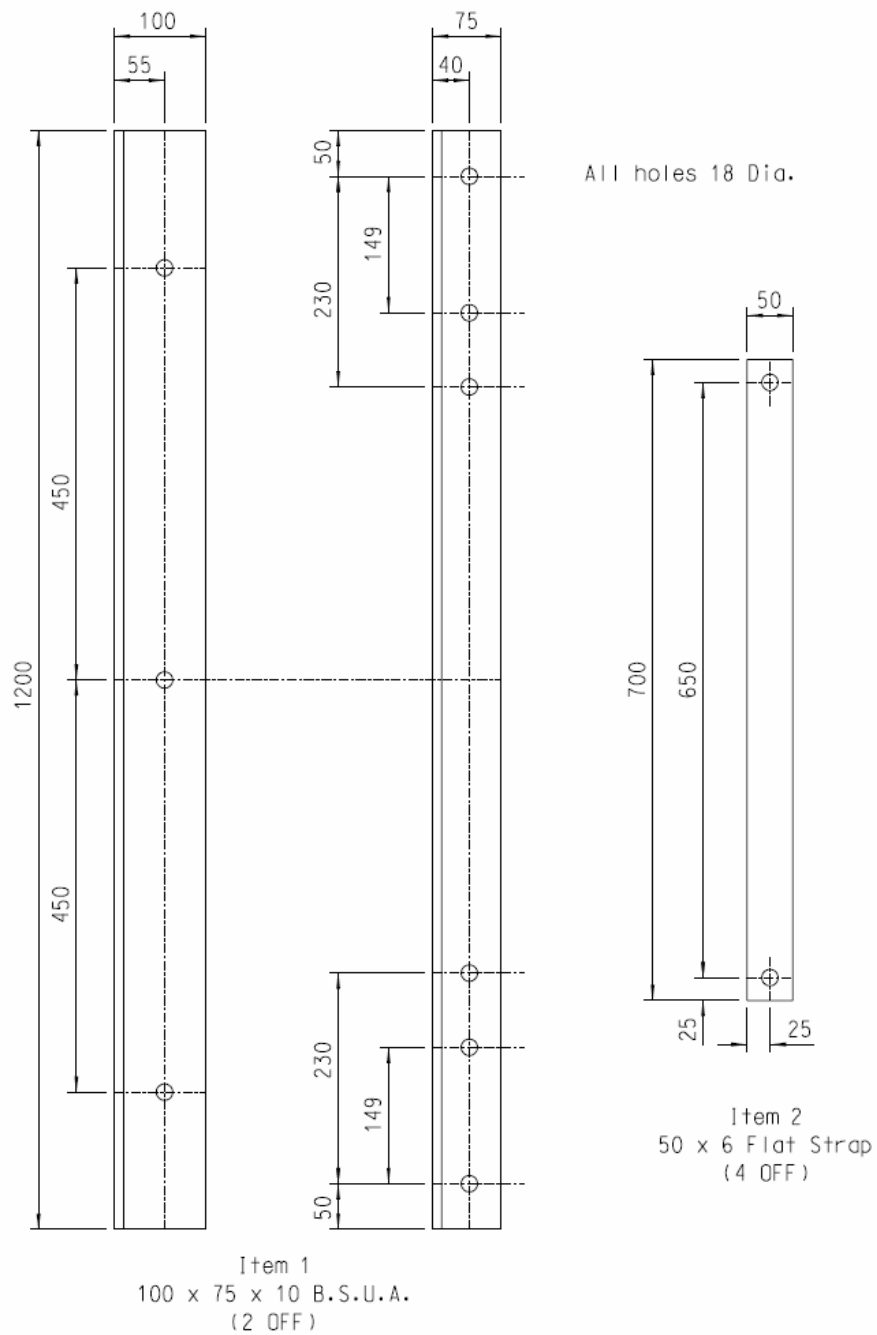
Item 1
 125 x 65 x 14 M.S.P.F.C.

Notes

1. Dimensions in millimetres.
2. Material and finish in accordance with ESI Standard 43-95.
3. To be supplied in pairs 1 x RH ; 1 x LH.

BRACKET, 33kV AIR BREAK SWITCH DISCONNECTOR
 (33kV Lines to ESI 43-20)

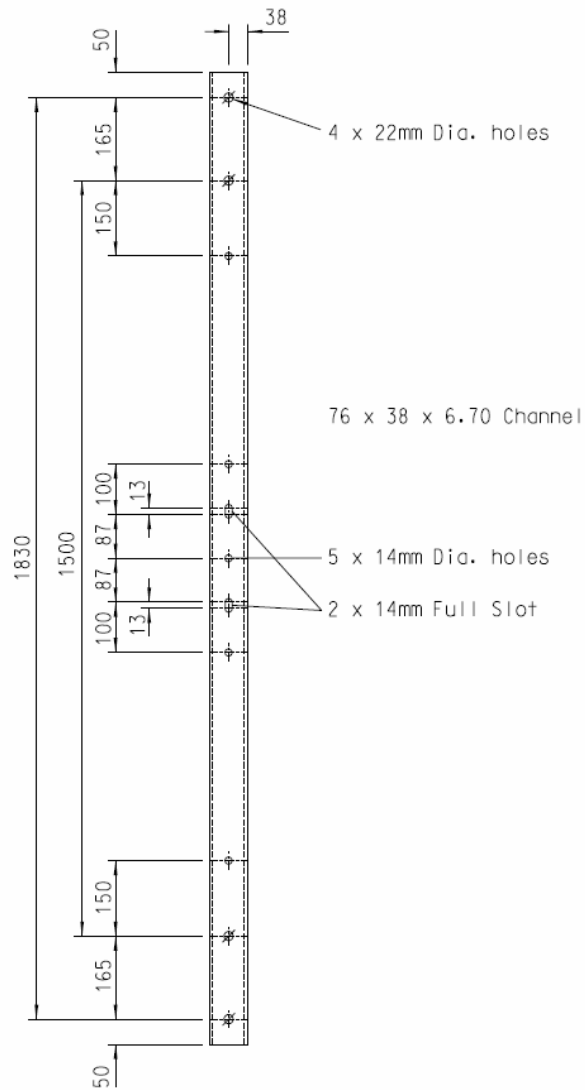
WPD 43-95/8
 Issue 1
 March 1987



Notes

1. Dimensions in millimetres.
2. Material and finish in accordance with ESI Standard 43-95.
3. To be supplied as complete platform i.e. 2 off item 1; 4 off item 2.

PLATFORM, 33kV SEALING ENDS /SURGE ARRESTERS
 (33kV Lines to ESI 43-20)

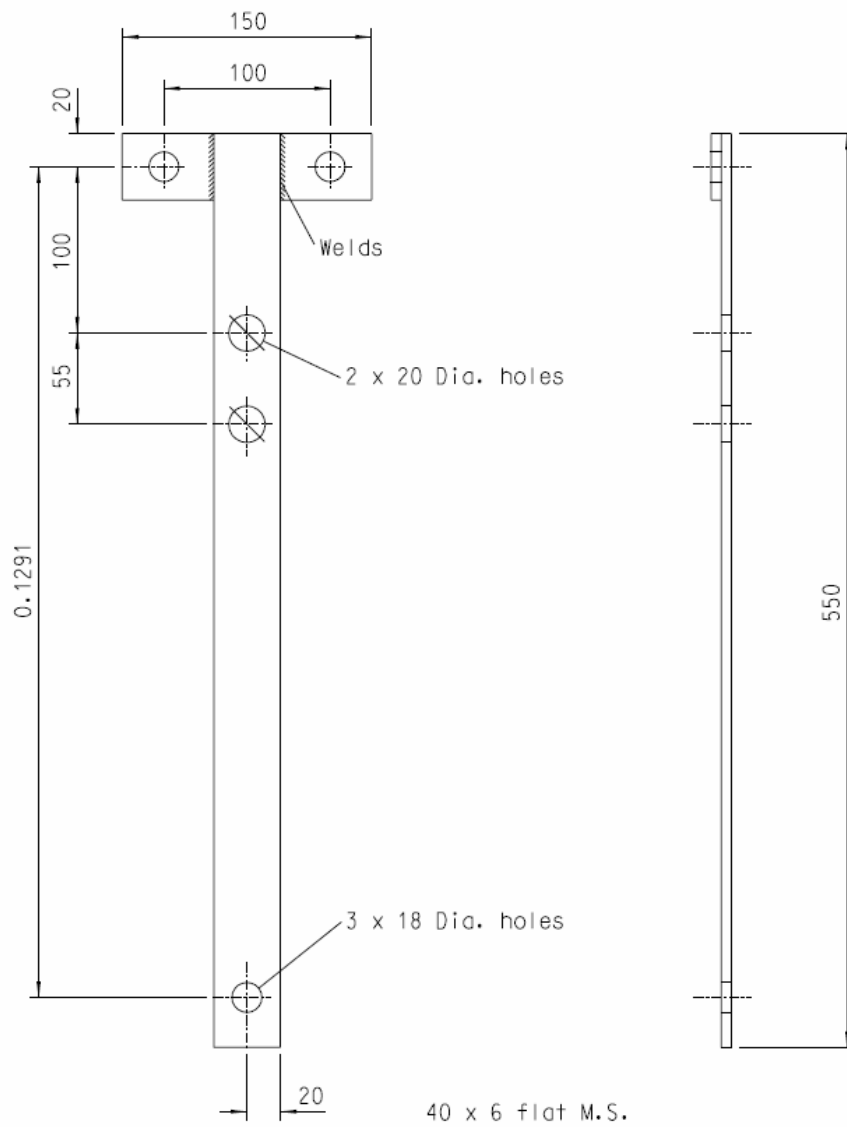


Notes

1. All dimensions in millimetres.
2. Material and finish in accordance with ESI Standard 43-95.

CROSSARM, 33kV CABLE SUPPORT
'H' POLE ARRANGEMENT
(33kV Lines to ESI 43-20)

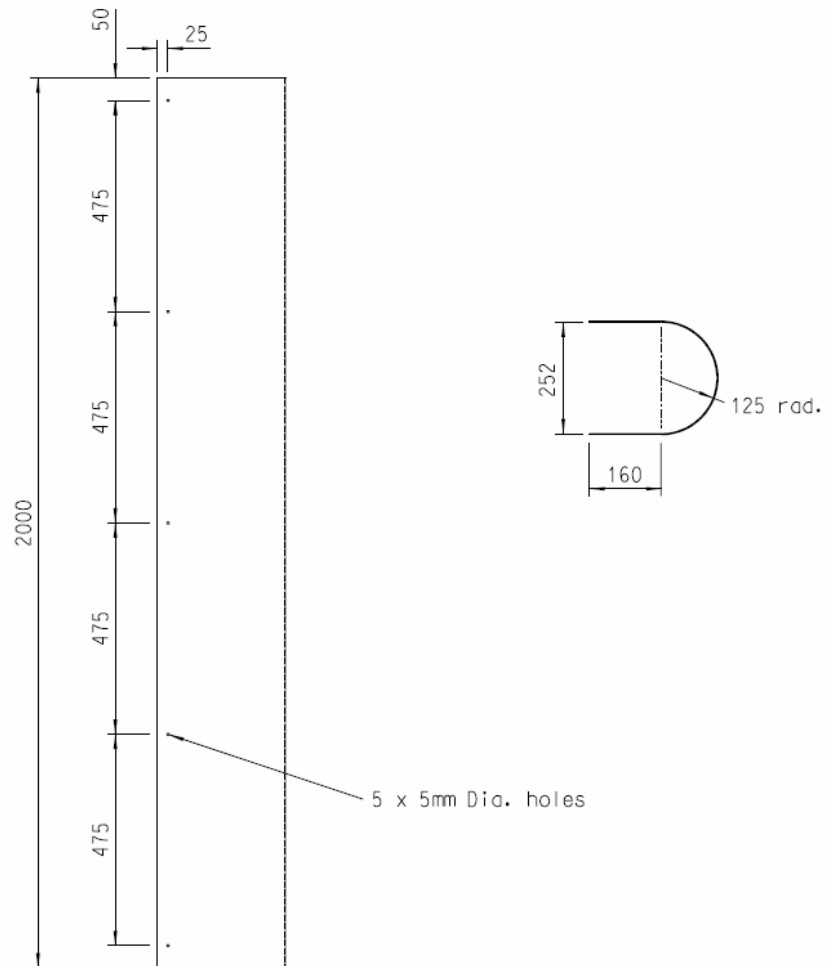
WPD 43-95/10
Issue 1
March 1987



Notes

1. Dimensions in millimetres.
2. Material and finish in accordance with ESI Standard 43-95.

BRACKET, 33kV CABLE SUPPORT
(33kV Lines to ESI 43-20)

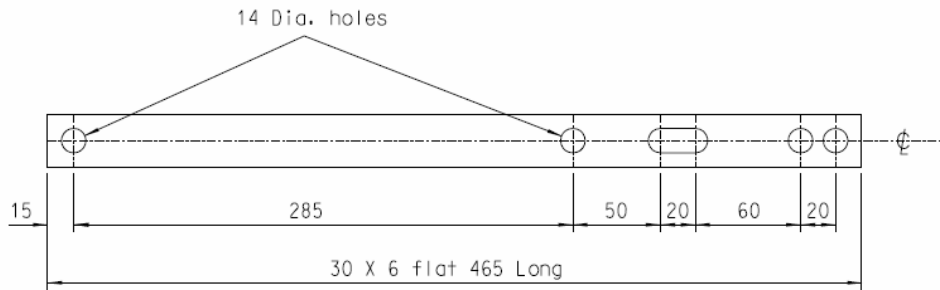


Notes

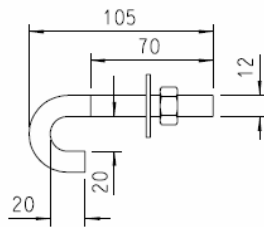
1. All dimensions in millimetres.
2. Material to be 2.5mm Sheet Steel galvanised to BS 729 after manufacture.

TROUGHING, FOR 33kV CABLES
'H' POLE ARRANGEMENT

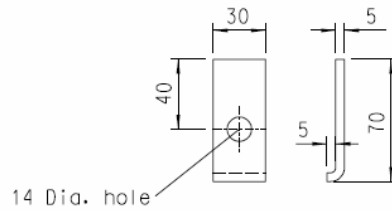
WPD 43-95/12
 Issue 1
 September 1990



DETAIL OF SUPPORTING STRAP



DETAIL OF 'J' BOLT

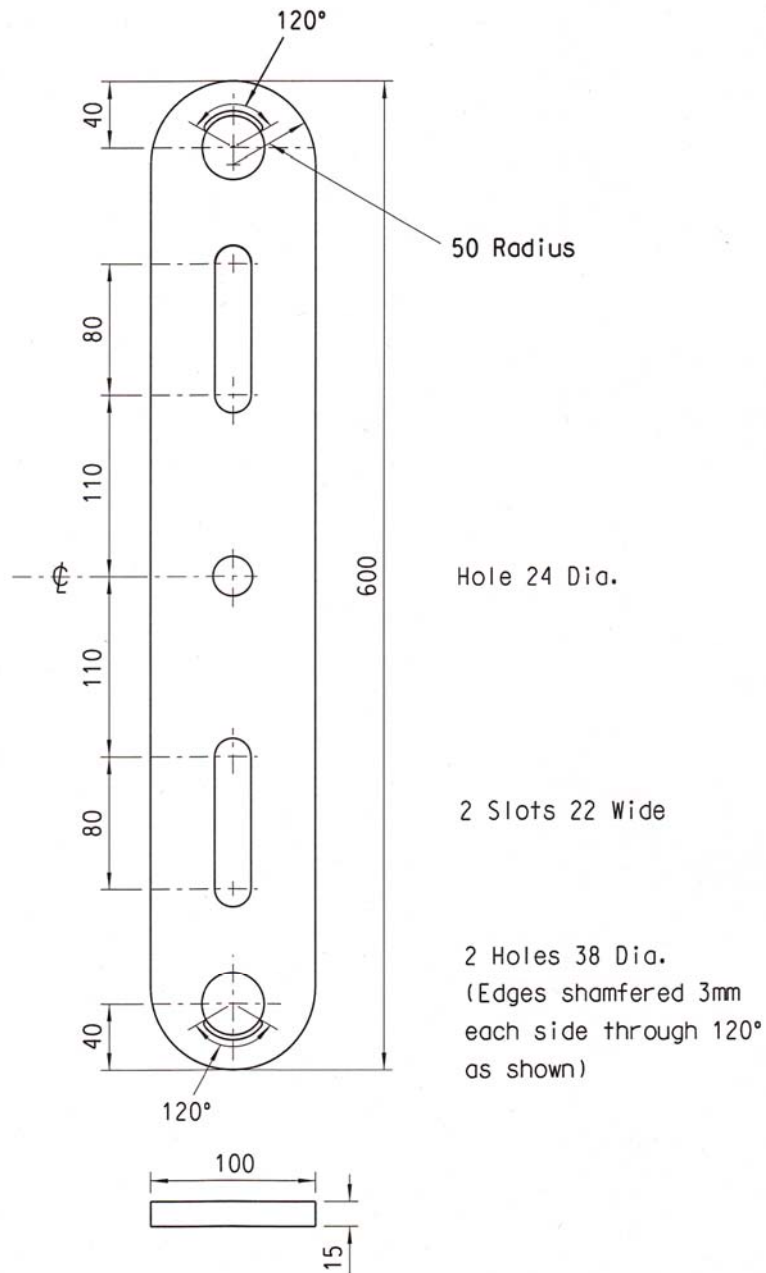


DETAIL OF FIXING CLIP

Notes

1. Dimensions in millimetres.
2. Material and finish in accordance with ESI Standard 43-95.
3. To be supplied as complete fixing set per Safety Sign as follows :-
 - 2 off - Supporting Straps.
 - 2 off - 'J' bolts complete with washer and nut.
 - 2 off - Fixing clips complete with M12 bolts 35 long with washer and nut.
- 4 off - Plate fixing M12 bolts 35 long with 2 fibre washers, flat washer and nut.

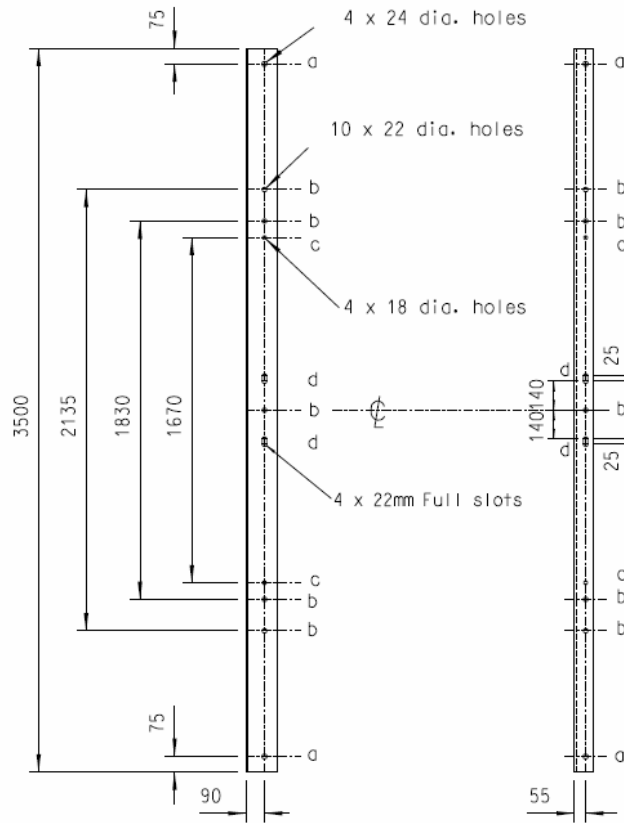
FIXING COMPONENTS FOR STEEL TOWER SAFETY SIGN



Notes

1. All dimensions in millimetres.
2. Material and finish in accordance with ESI Standard 43-95.

STRAP (STANDARD) - SECTION / TERMINAL
 (11kV & 33kV Lines to ESI 43-20)

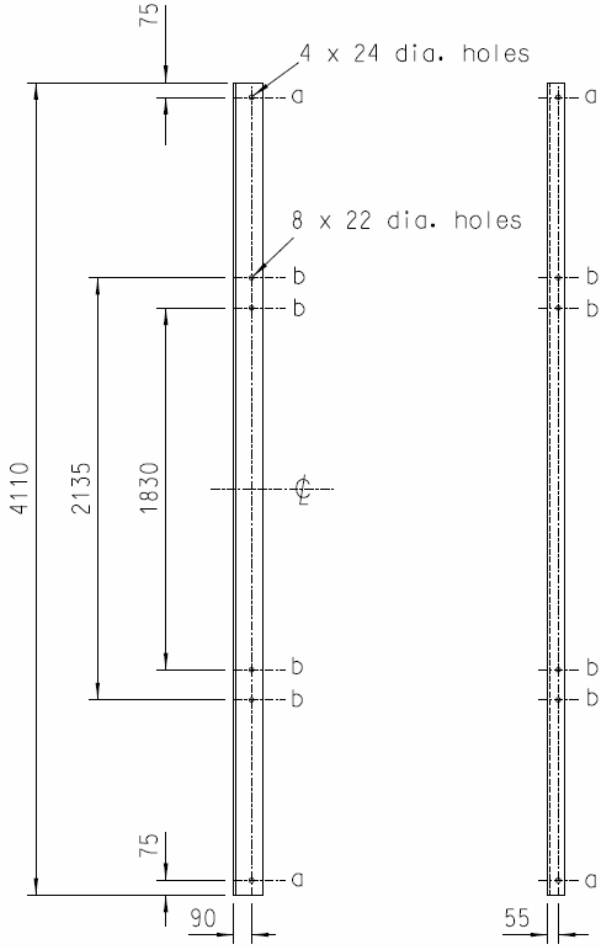


150 x 90 x 10 B.S.U.A

NOTES

1. All dimensions in millimetres.
2. Material and finish in accordance with ESI Standard 43-95.

CROSSARM, 11/33kV DUAL CIRCUIT (3.5m)
 (Replacement Steelwork for H Poles and Rutter Poles)

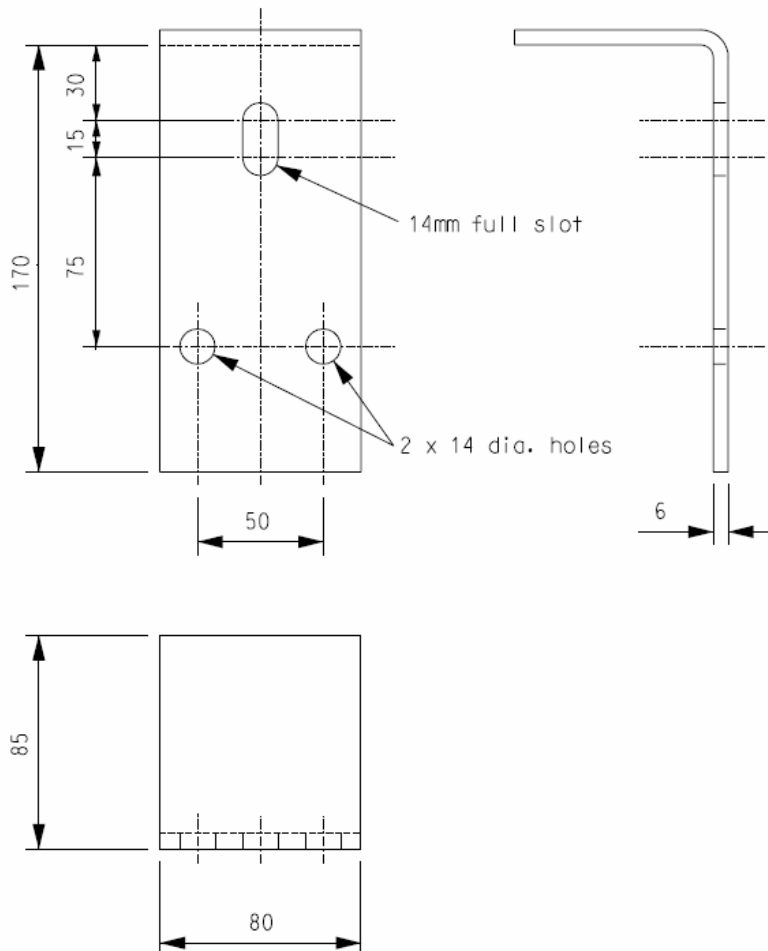


150 x 90 x 10 B.S.U.A

- NOTES
- 1. All dimensions in millimetres.
 - 2. Material and finish in accordance with ESI Standard 43-95.

CROSSARM, 11/33kV DUAL CIRCUIT (4.11m)
(Replacement Steelwork for Existing Construction)

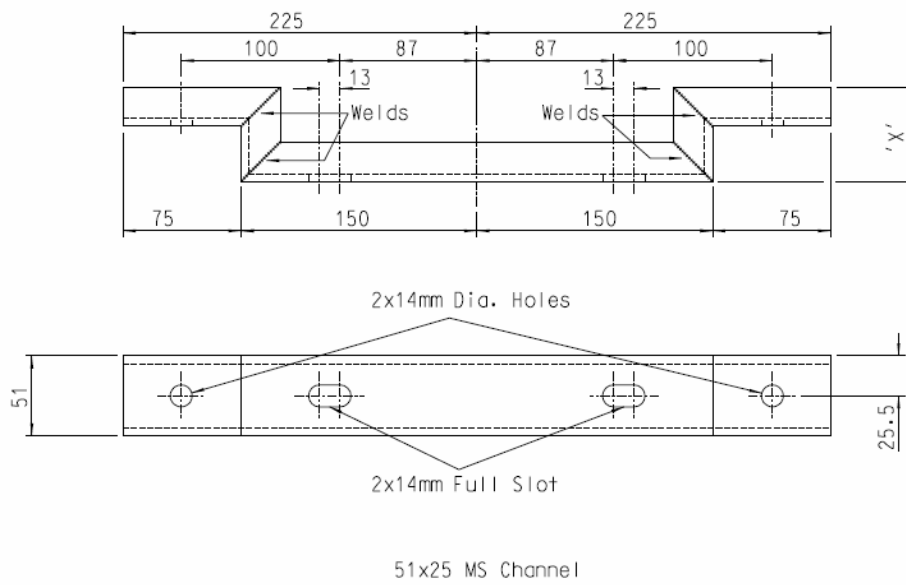
WPD 43-95/16
Issue 1
December 1994



NOTES

1. All dimensions are in millimetres.
2. Material and finish in accordance with ESI Standard 43-95.

11kV EXPULSION FUSE BRACKET
(Used to mount 2 bolt fuse unit on single hole crossarm)

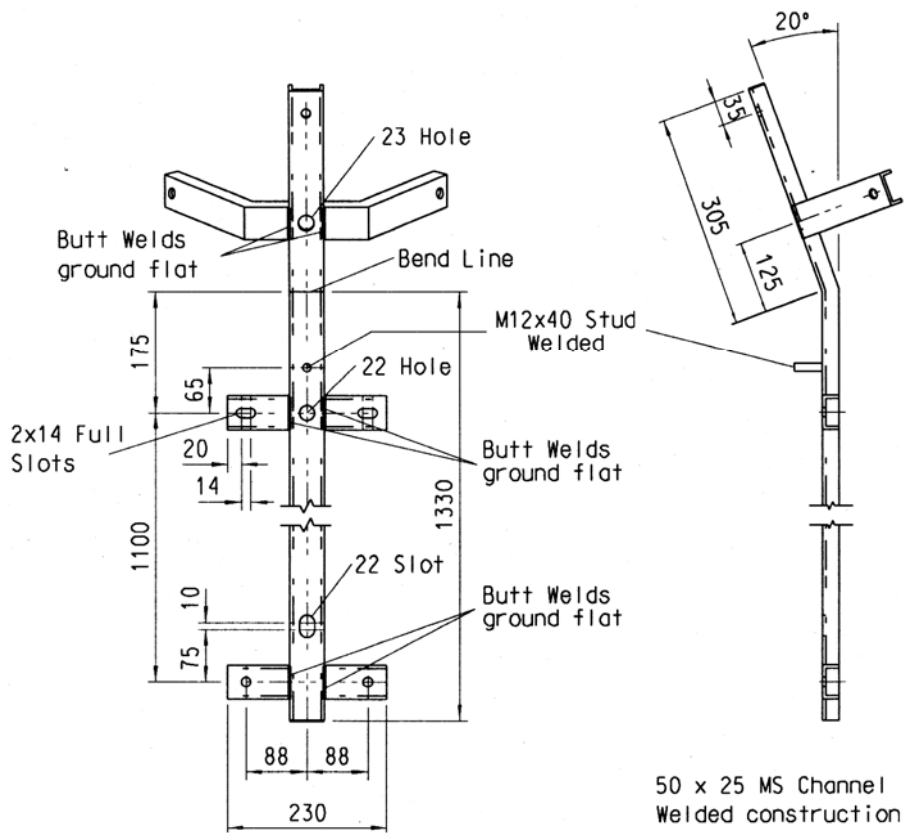
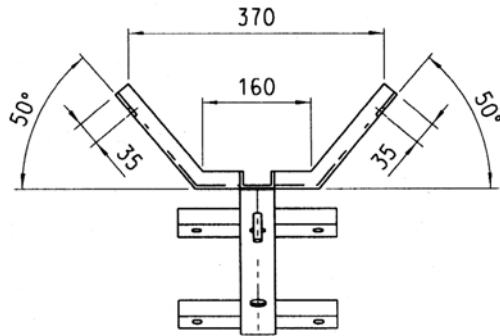


TYPE	DIMENSION 'X'
A	160
B	60

Note:

1. All dimensions in millimetres.
2. Material and finish in accordance with ESI Standard 43-95.

CABLE CLEAT STAND-OFF BRACKET

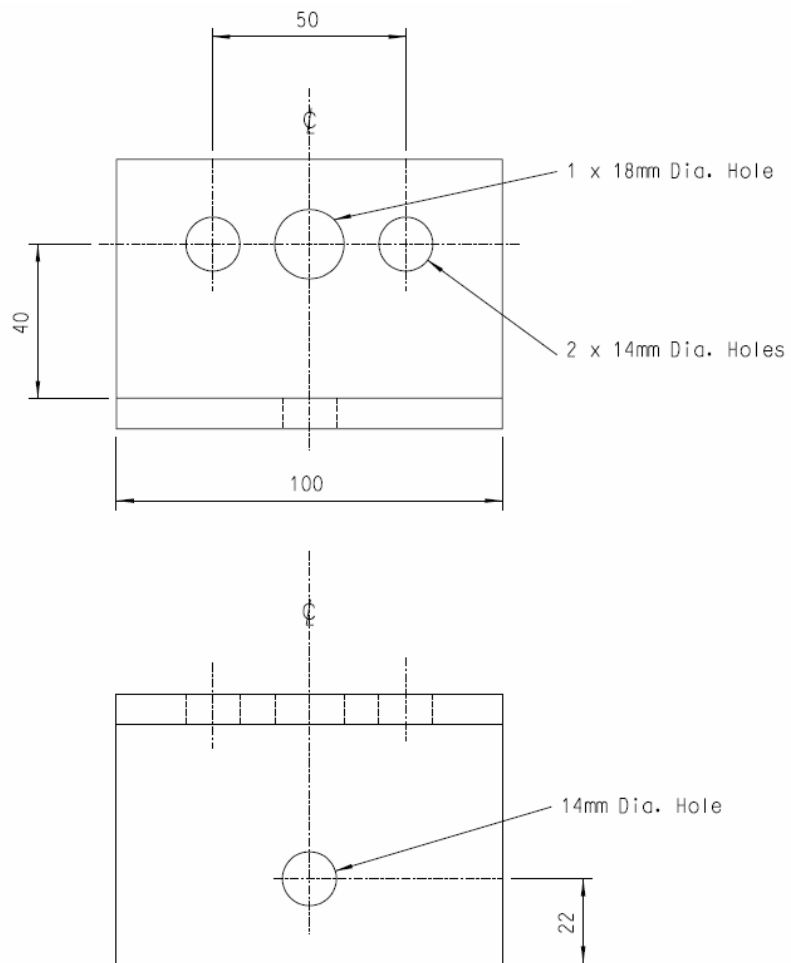


NOTES:-

1. All dimensions are in millimetres.
2. Material and finish in accordance with ESI Standard 43-95.
3. All holes 14 dia. unless otherwise stated.

**INSULATOR / SURGE ARRESTER SUPPORT BRACKET FOR
 33kV POLE MOUNTED TERMINATION**

Page revised 16 February 2011

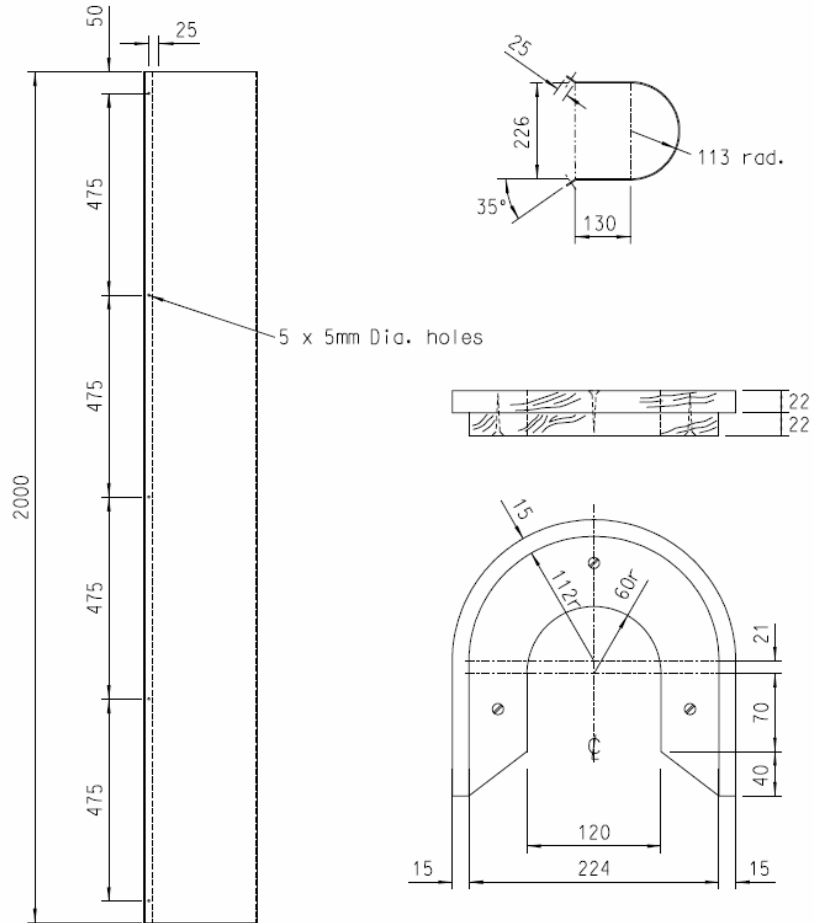


70x70x8 B.S.E.A.

NOTES

1. All dimensions are in millimetres.
2. Material and finish in accordance with ESI Standard 43-95.

11kV FUSE MOUNTING BRACKET
(S & C Fusegear and A B Chance Fusegear)

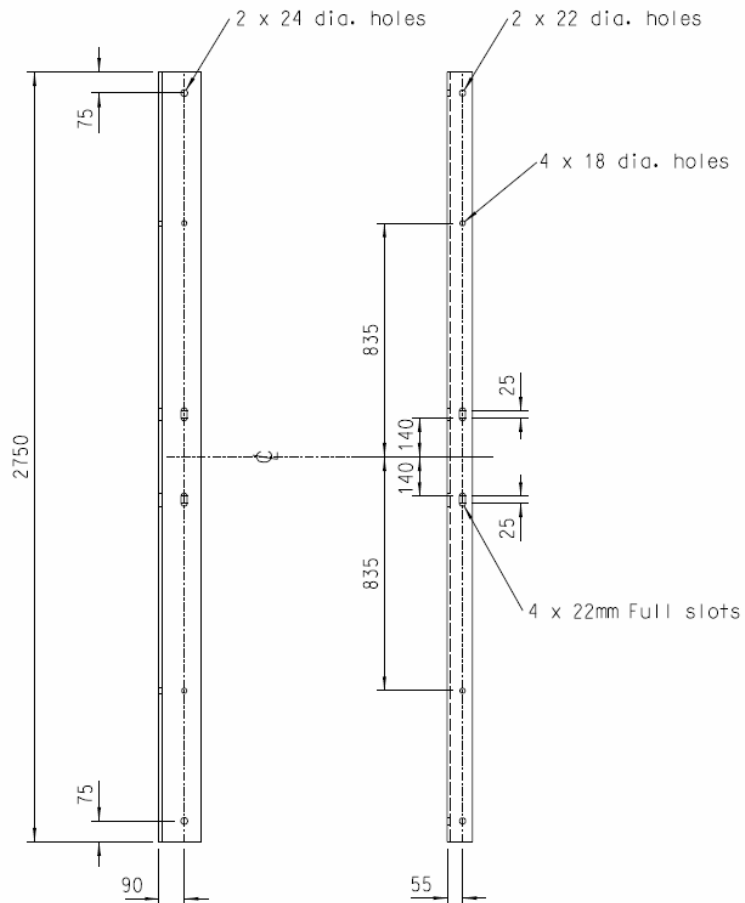


Item 2 - Lid
 Two pieces to be glued
 and screwed together.

Notes

1. All dimensions in millimetres.
2. Material to be 2.5mm Sheet Steel galvanised to BS 729 after manufacture.
3. Lid to be manufactured from Deal, timber to be straight grained and free from large shakes and knots.

TROUGHING, FOR 33kV CABLES
 SINGLE POLE ARRANGEMENT



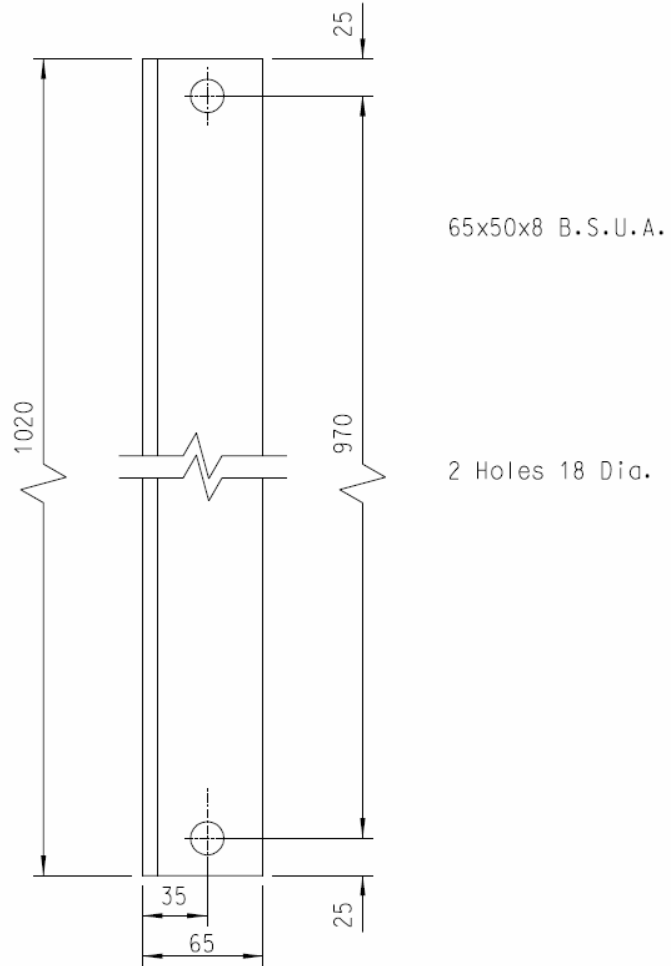
150 x 90 x 10 B.S.U.A

NOTES

1. All dimensions in millimetres.
2. Material and finish in accordance with ESI Standard 43-95.

CROSSARM 11/33kV DUEL CIRCUIT (2.75m)

WPD 43-95/22
Issue 1
March 2000

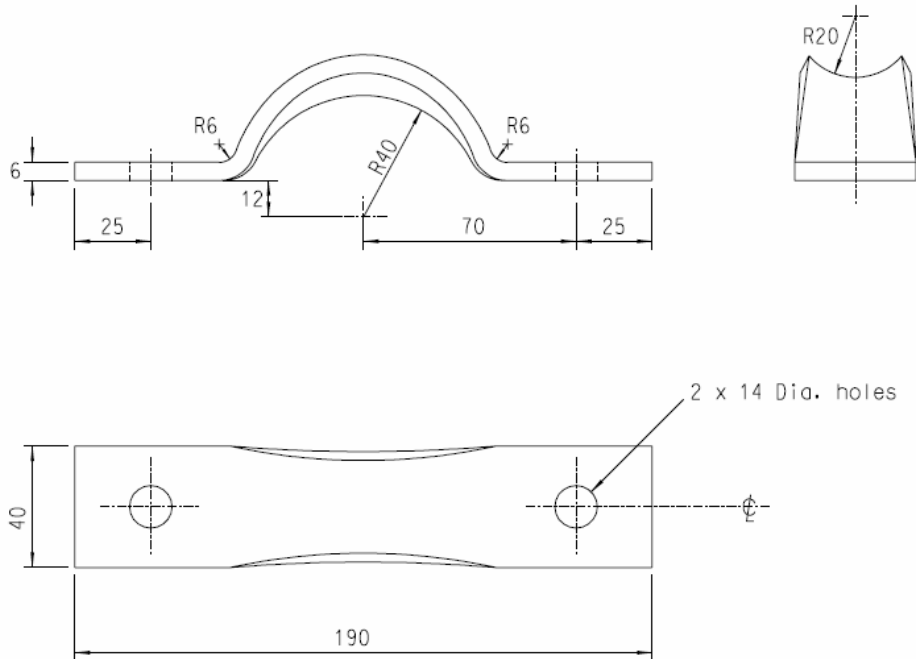


NOTES

1. All dimensions in millimetres.
2. Material and finish in accordance with ESI Standard 43-95.

CROSSARM STRUT - RUTTER POLES

Sharp edges to be removed
prior to galvanising.

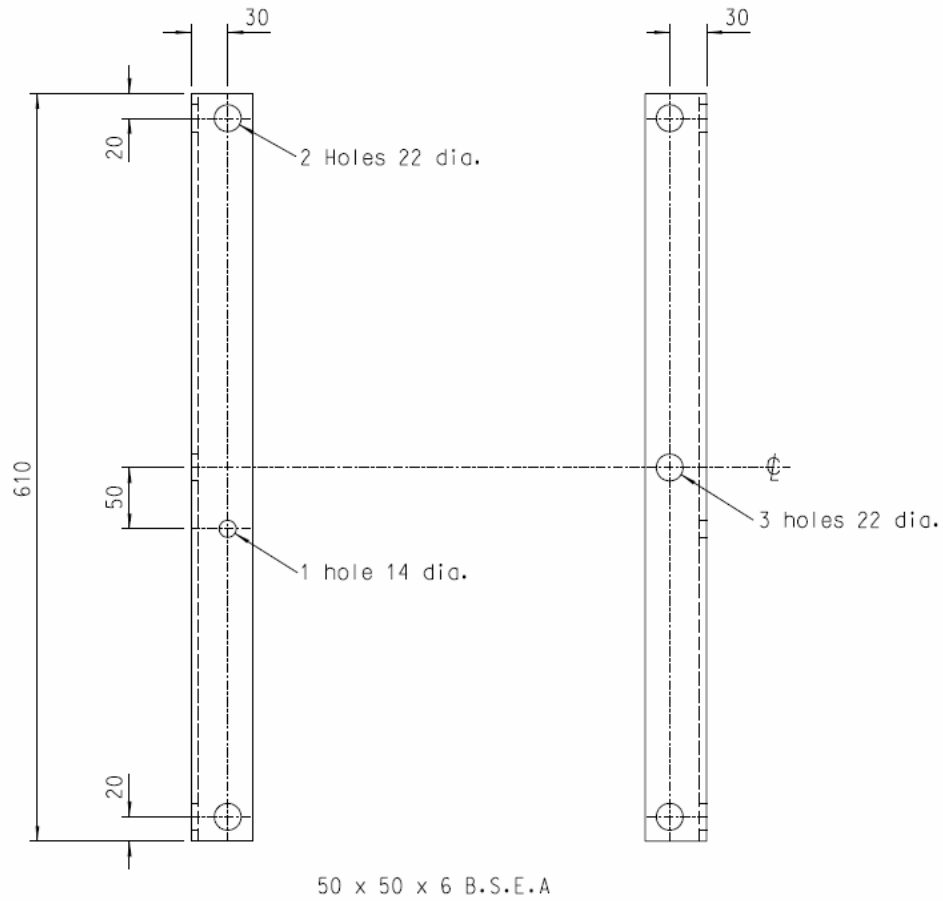


Notes

1. All dimensions in millimetres.
2. Material and finish in accordance with ESI Standard 43-95.
3. This bracket is suitable for use with preformed terminations at pole-end of service. Where four-hole fixing is required, bracket to ESI Drawing 439514 should be used.

BRACKET - HOUSE SERVICE (CONCENTRIC), TWO-HOLE FIXING

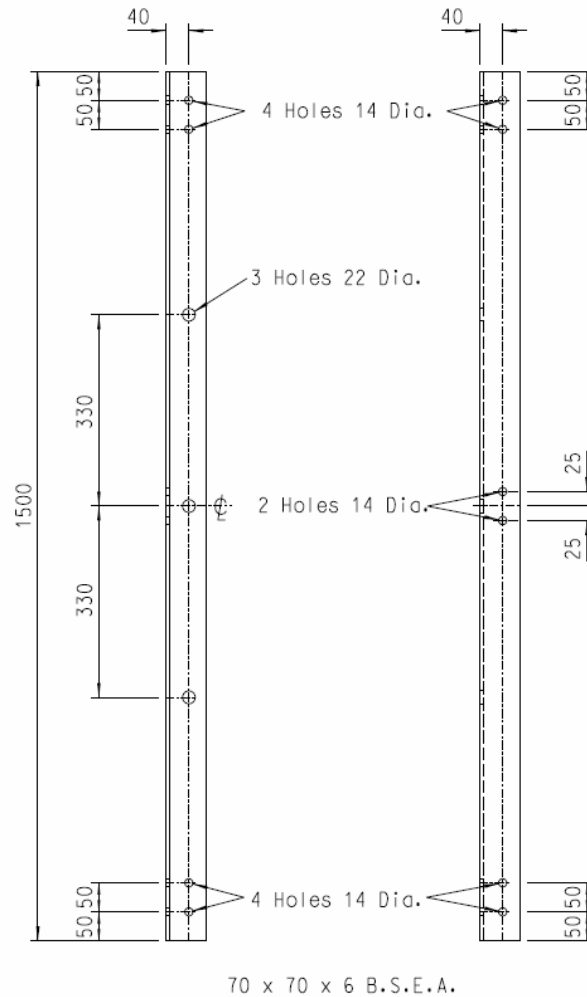
LV Lines to ESI 43-30



Notes

1. Dimensions in millimetres.
2. Material and finish in accordance with ESI Standard 43-95.

BRACKET - 11kV AUXILIARY EQUIPMENT
(11kV Lines to ESI 43-10 & 43-20)

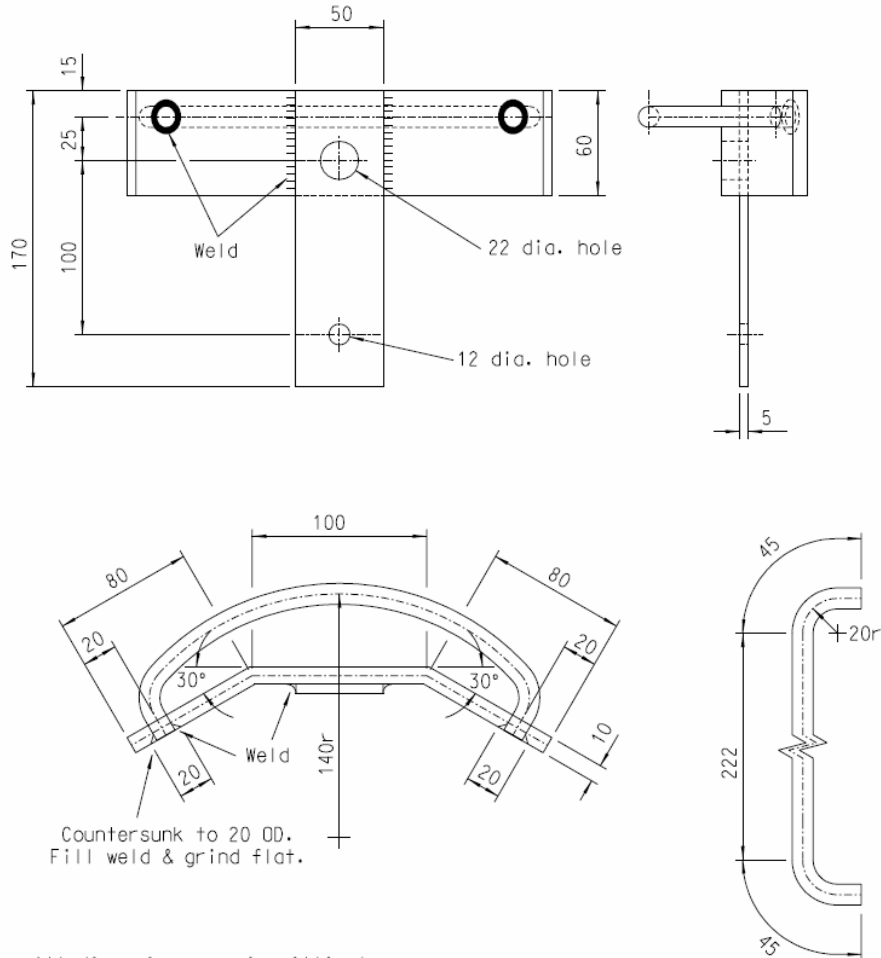


Notes

1. Dimensions in millimetres.
2. Material and finish in accordance with ESI Standard 43-95.

CROSSARM - 11kV AUXILIARY EQUIPMENT
(11kV Lines to ESI 43-10 & 43-20)

WPD 43-95/26
 Issue 1
 June 2001

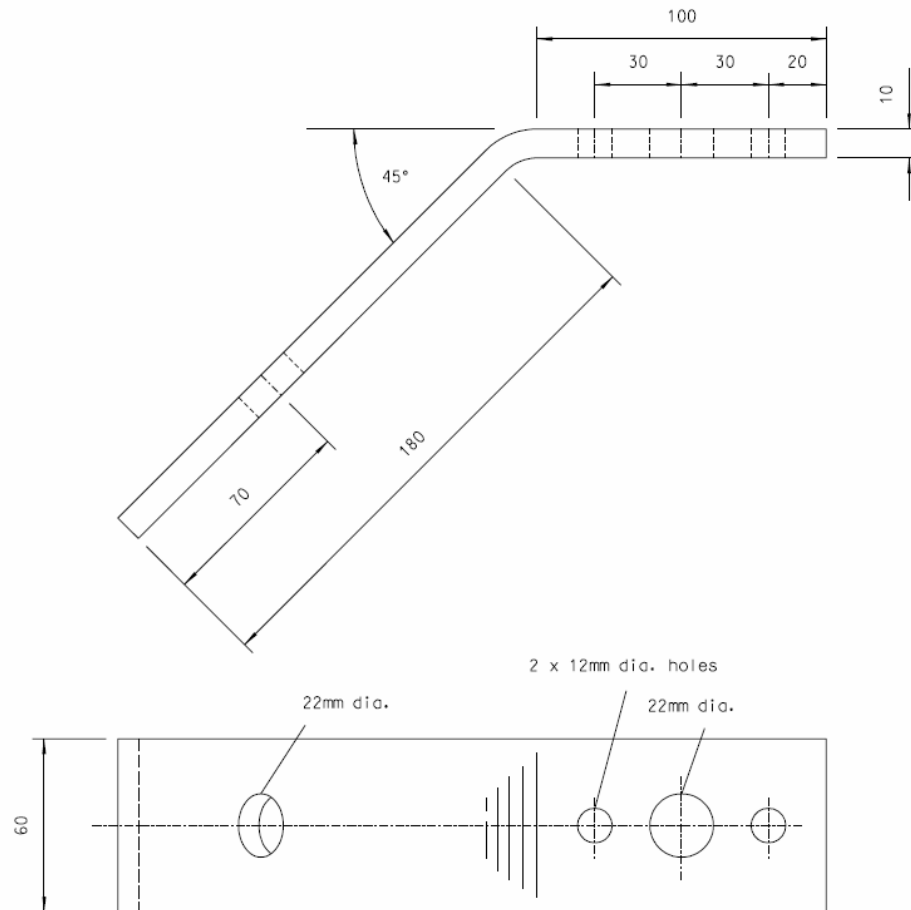


All dimensions are in millimetres.

MATERIAL: Mild steel to BS EN10025 Grade Fe430A to be galvanised to BS EN ISO 1461 after cutting and welding.

DETAIL OF 12 DIA BAR
 BEFORE BENDING TO 140r

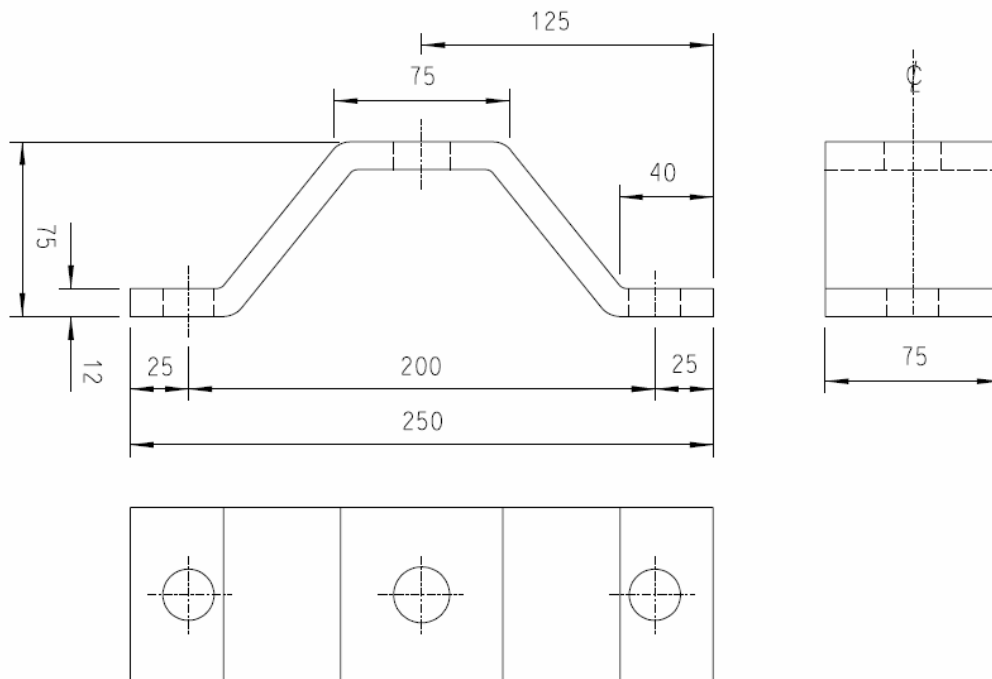
OVERHEAD SERVICE CABLE DISTRIBUTION
 POLE MOUNTED BRACKET



NOTES:-

1. All dimensions are in millimetres.
2. Material :- Mild steel to BS EN10025 grade FE430A to be galvanised to BS EN ISO 1461 after cutting and drilling.
3. Section :- 10 x 60 Flat.

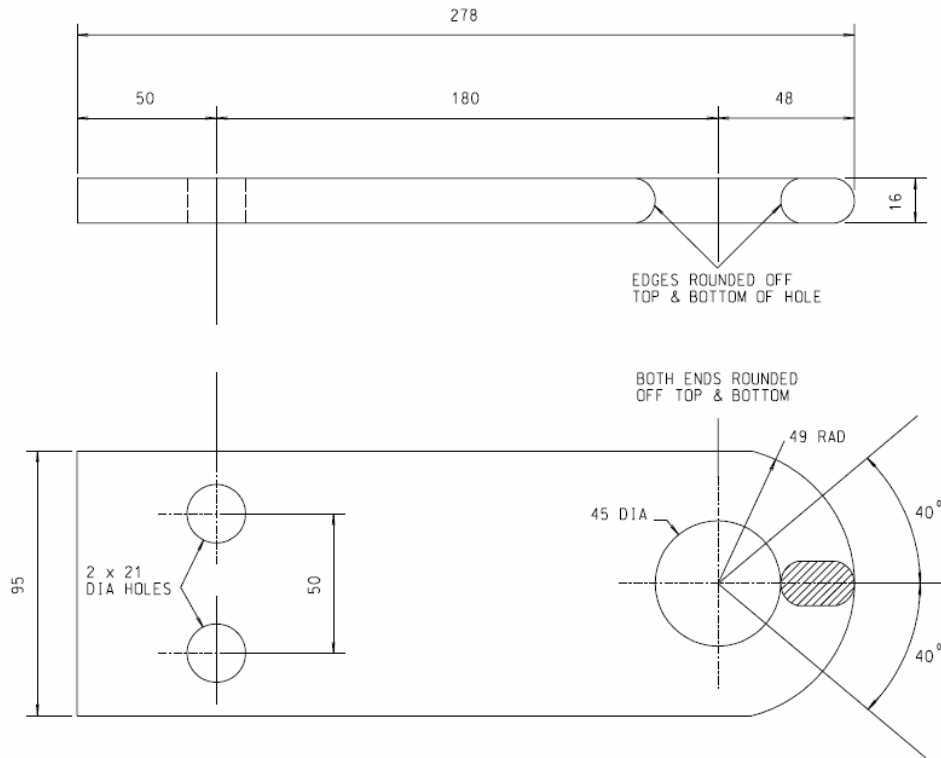
PILOT INSULATOR BRACKET
(South Wales)



NOTES:-

1. All dimensions are in millimetres.
2. MATERIAL: Mild steel to BS EN10025 Grade Fe430A to be galvanised to BS EN ISO 1461 after cutting and welding.
3. Surfaces A & B must be dead flat and clean and parallel to one another.

INSULATOR STOOL
(South Wales)

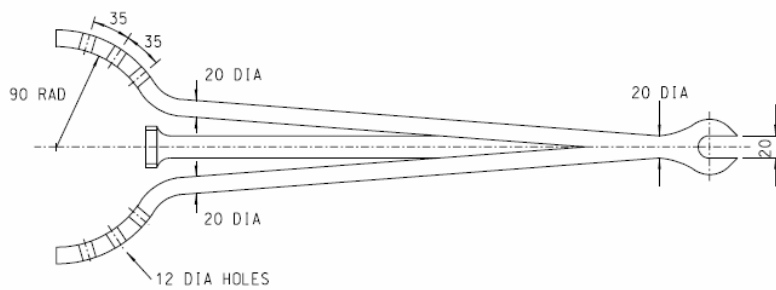
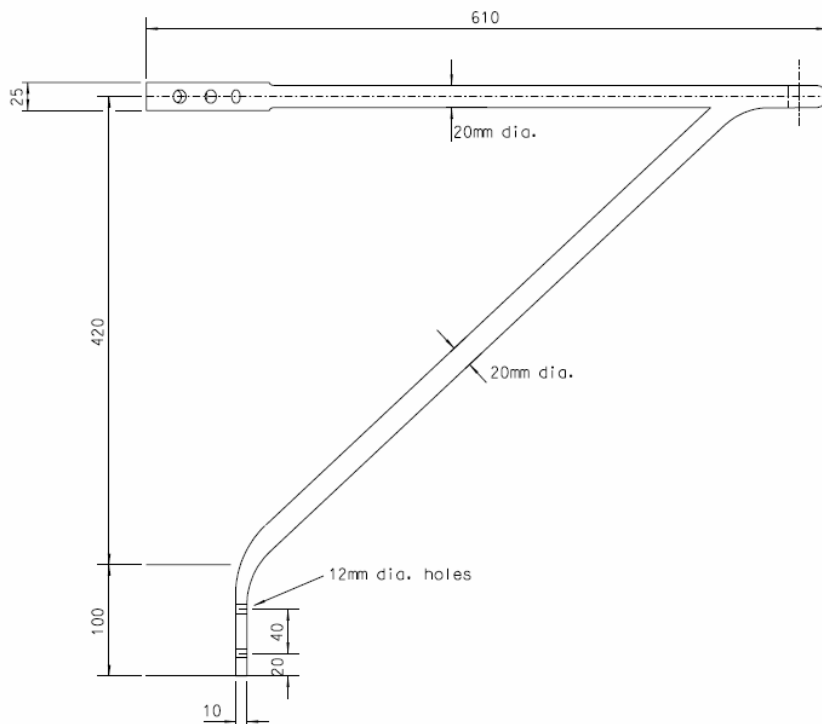


NOTES:-

1. All dimensions are in millimetres.
2. Material :- Mild steel to BS EN10025 grade FE430A to be galvanised to BS EN ISO 1461 after cutting and drilling.
3. Section :- 16 x 95 Flat.

LINE TERMINATING STRAP
(South Wales)

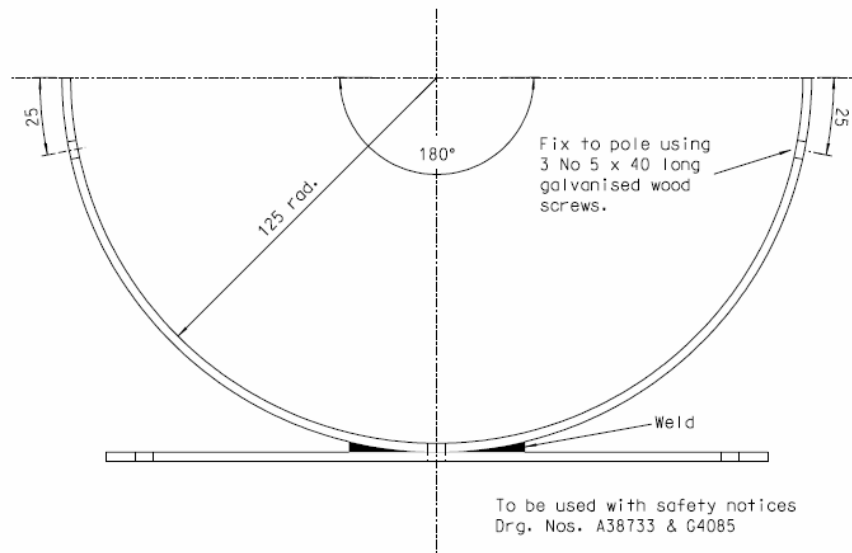
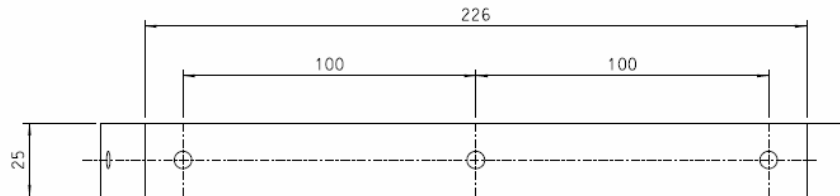
WPD 43-95/30
Issue 1
February 2002



NOTES:-

1. All dimensions are in millimetres.
2. Material :- Mild steel to BS EN10025 grade FE430A to be galvanised to BS EN ISO 1461 after cutting and drilling.
3. Section :- 16 x 95 Flat.

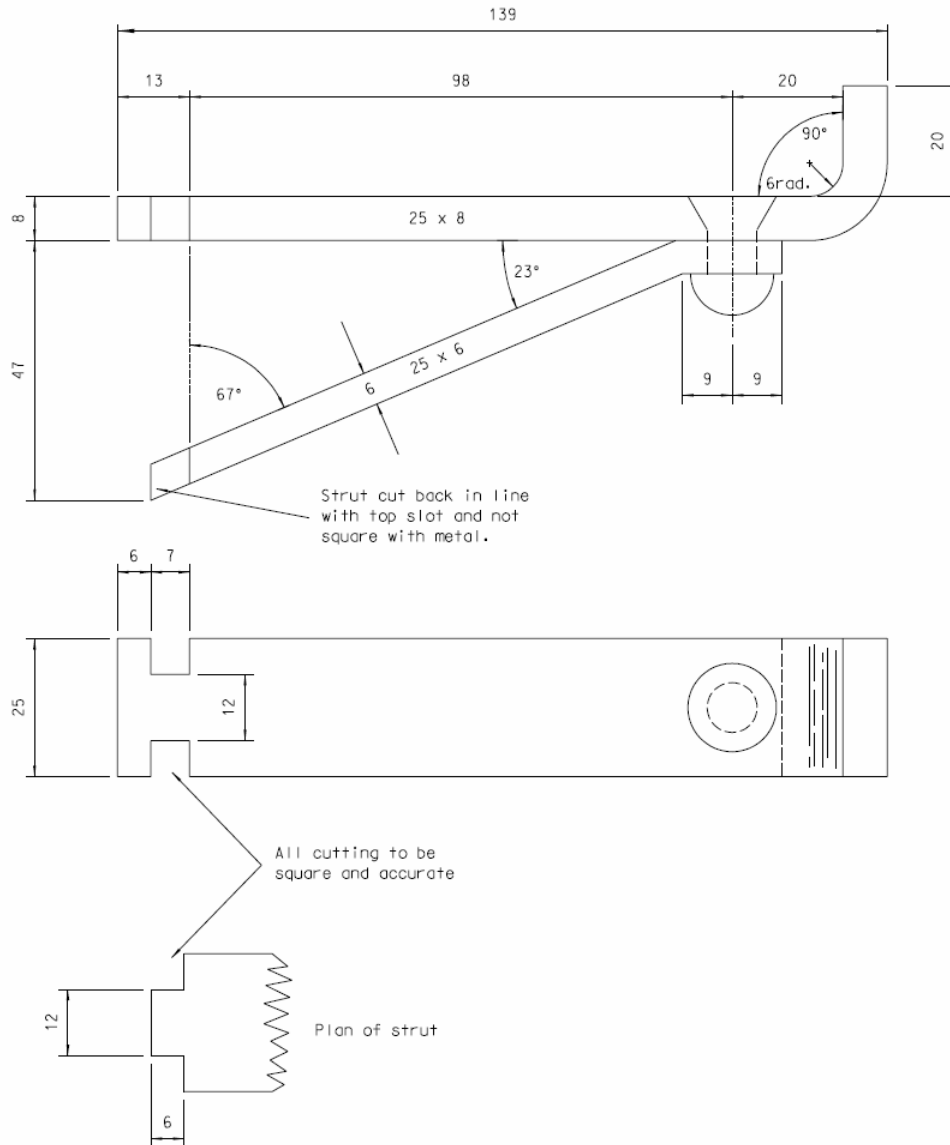
STAY OUTRIGGER BRACKET



NOTES:-

1. All dimensions are in millimetres.
2. Material :- 25 x 3 flat mild steel to BS EN 10025 grade Fe 430A to be galvanised to BS EN ISO 1461 after fabrication.
3. Holes to be 6mm clear after galvanising.
4. Fixing strap complete with 2 No M5 x 25 bolts, nuts & washers.

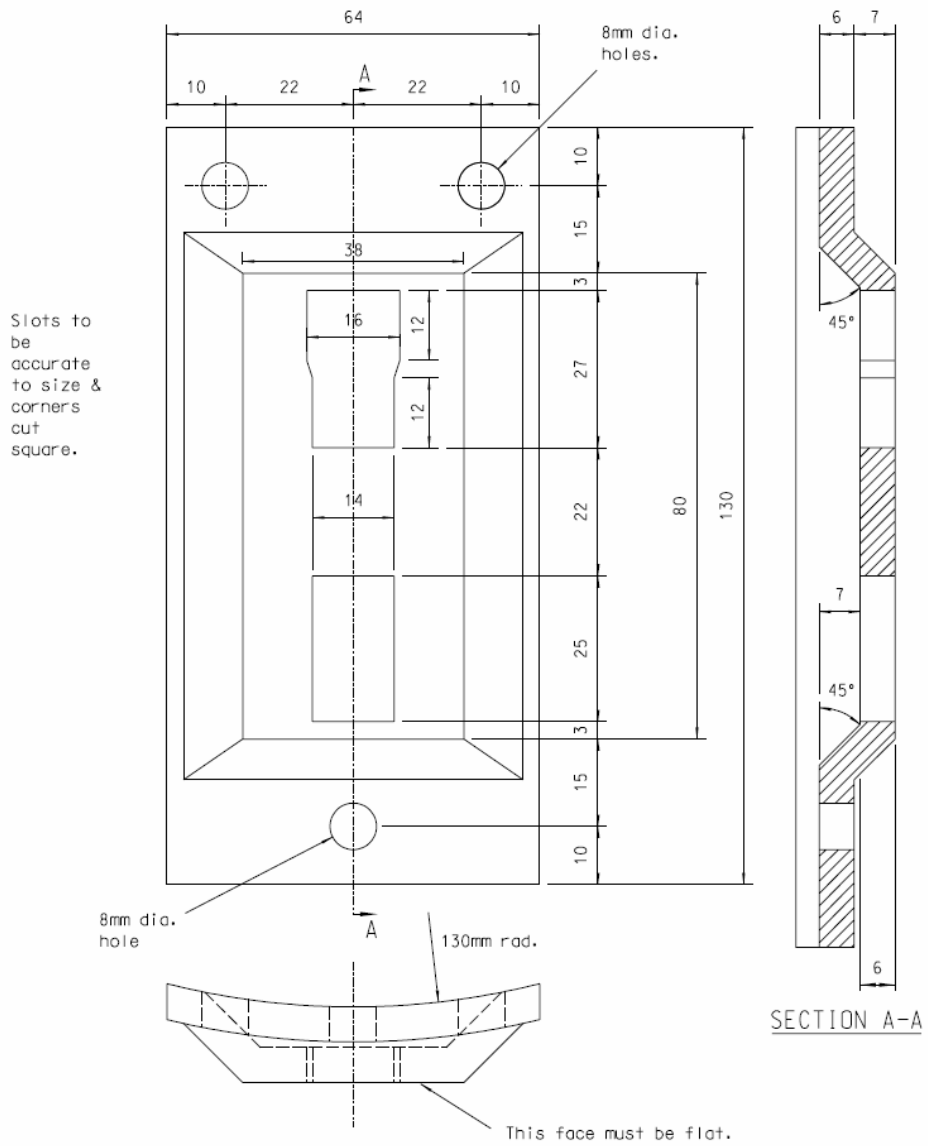
FIXING STRAP FOR SAFETY SIGNS WARNING NOTICE
FOR USE ON CARAVAN SITES



NOTES:-

1. All dimensions are in millimetres.
2. Material :- Mild steel to BS EN10025 grade FE430A to be galvanised to BS EN ISO 1461 after manufacture.

DETACHABLE POLE STEP
 (South Wales)

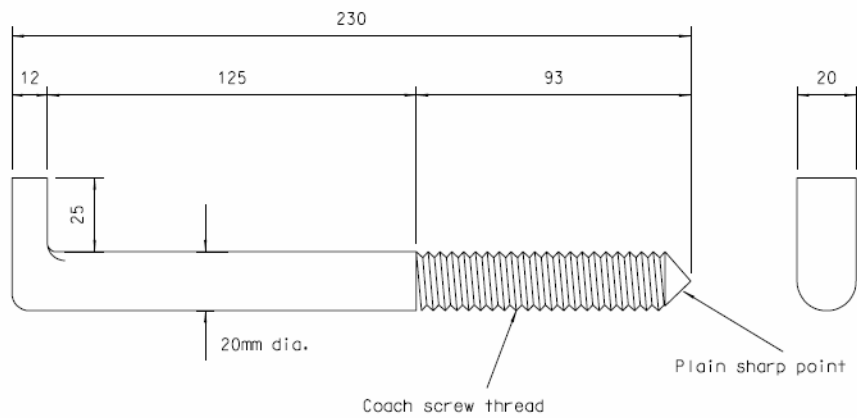


NOTES:-

1. All dimensions are in millimetres.
2. Material :- Mild steel to BS EN10025 grade FE430A to be galvanised to BS EN ISO 1461 after manufacture.
3. To be fixed with 3 - 75mm x 6mm drive screws.
4. To be used with detachable pole steps.

POLE STEP PLATE
 (South Wales)

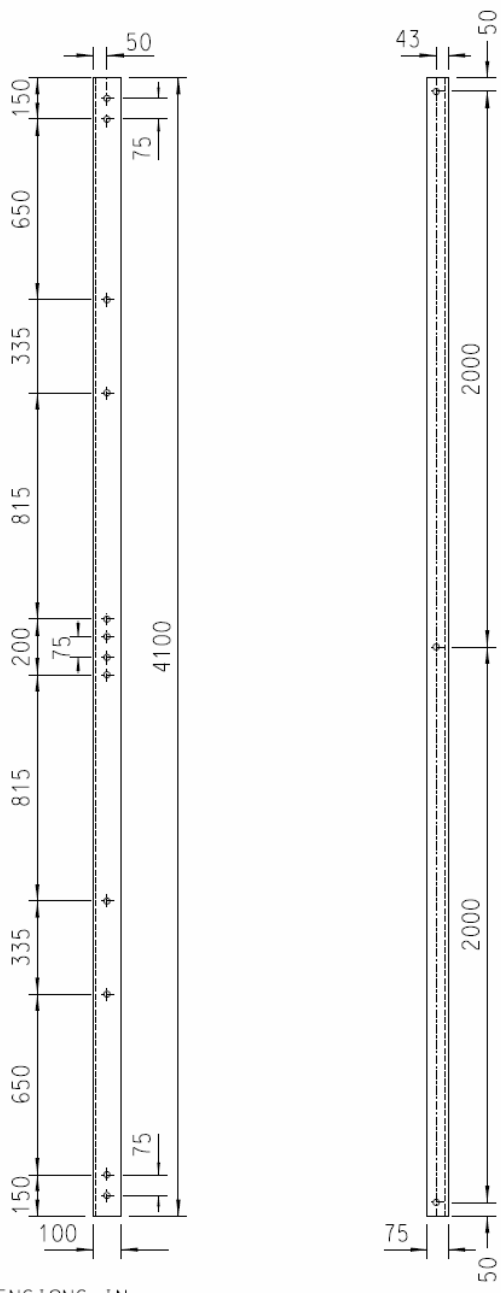
WPD 43-95/34
Issue 1
February 2002



NOTES:-

1. All dimensions are in millimetres.
2. Material :- Mild steel to BS EN10025 grade FE430A to be galvanised to BS EN ISO 1461 after manufacture.

POLE STEP
(South Wales)

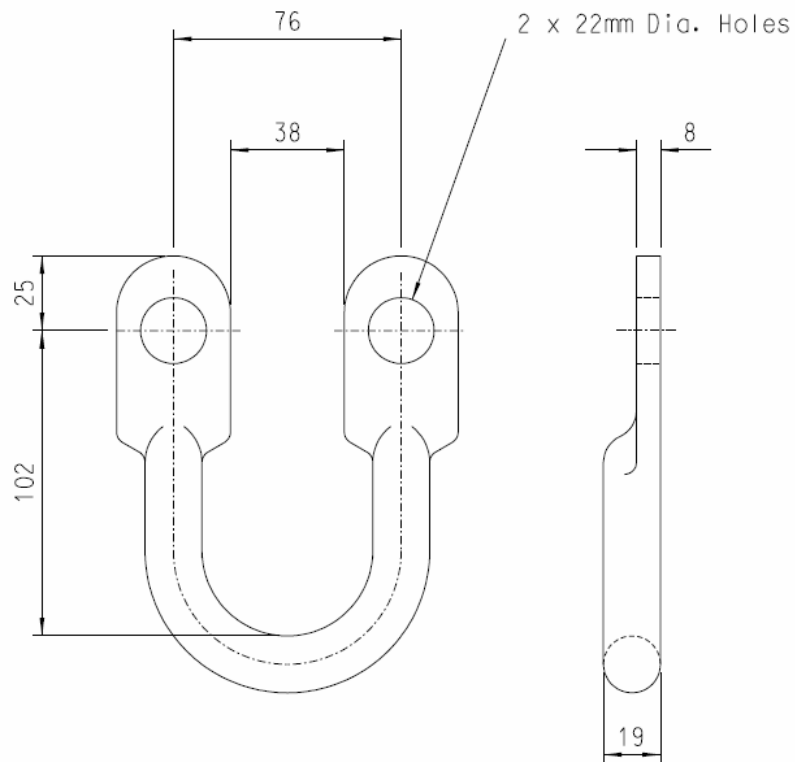


100x75x12
B.S.U.A.
Holes
22 Dia.

ALL DIMENSIONS IN mm

CROSSARM - 4.1m
FOR 66kV WOOD POLE LINES

WPD 43-9536
Issue 1
July 2003

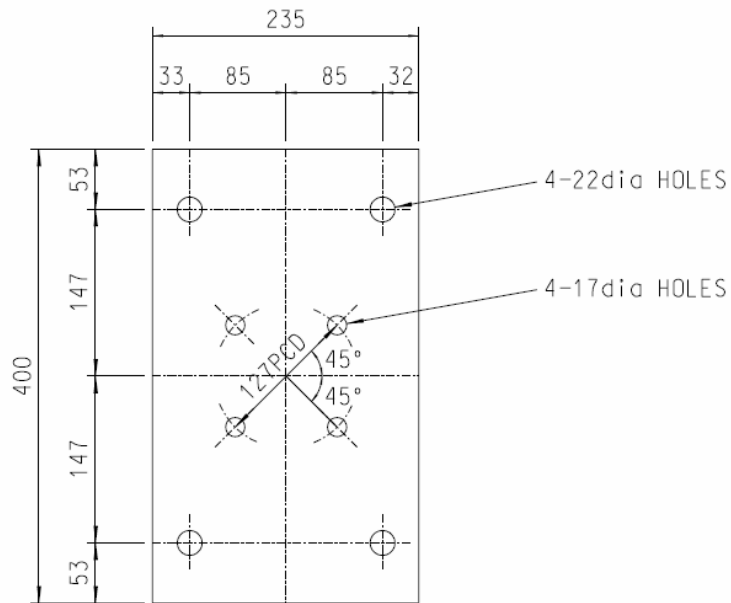


MINIMUM FAILING LOAD - 70kN

MATERIAL:- FORGED STEEL GALVANISED TO B.S. 729

BOLTS:- USE 2 OFF ITEM No. 30116

'U' LINK FOR SUSPENSION INSULATORS
ON 66kV WOOD POLE LINES



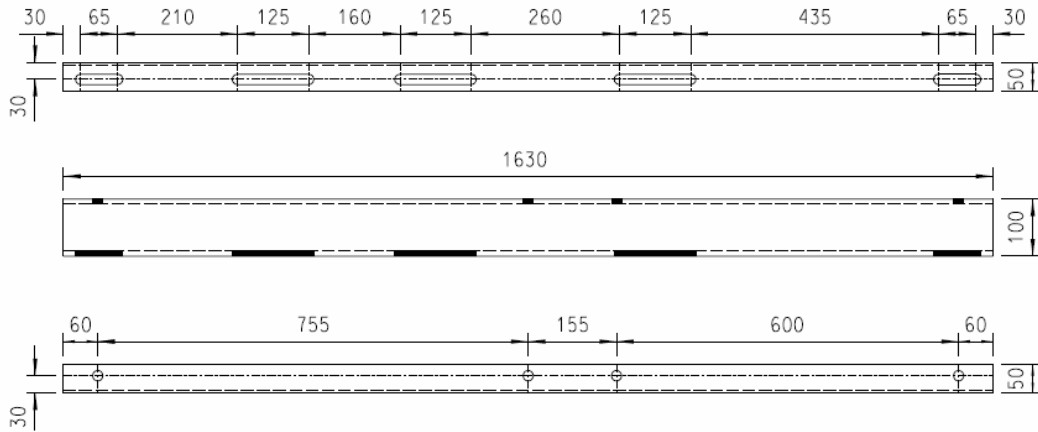
MATERIAL : 12mm STEEL FLAT

Notes

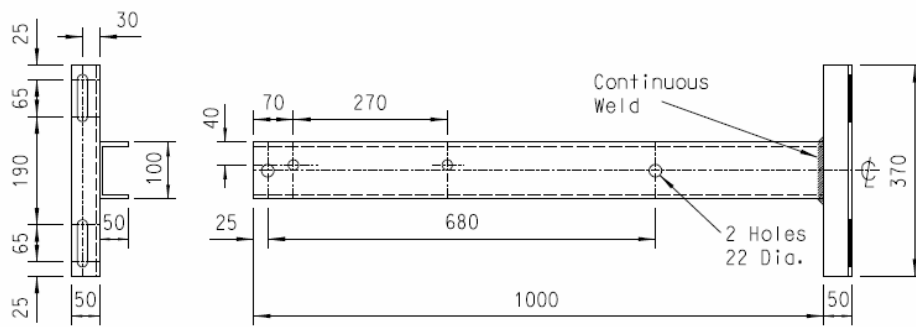
1. Dimensions in millimetres.
2. Material and finish in accordance with ENA Standard 43-95.
3. For insulators with 127mm PCD fixing bolts. For insulators to original Trident design, ENA Standard drg. no. 439307 use plates to ENA Standard drg. no. 439540.

132kV INSULATOR MOUNTING PLATE

WPD 43-95/38
 Issue 1
 January 2005



ITEM ① 100 x 50 x 10 PFC. 2 OFF



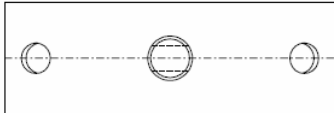
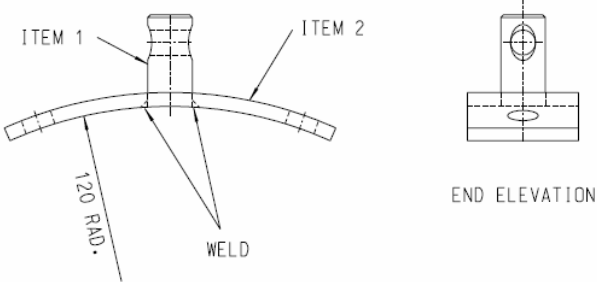
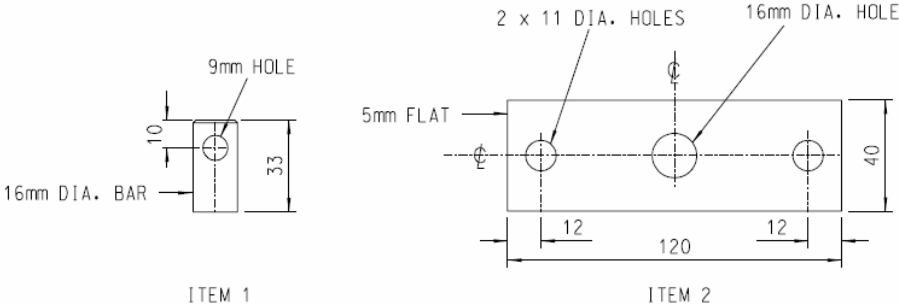
ITEM ② 100 x 50 x 10 PFC. } Welded as shown
 2 OFF 50 x 50 x 6 B.S.E.A. }

NOTES:-

1. All dimensions in mm.
2. All slots 18 wide & all holes 18 dia. unless otherwise stated.
3. 'Hook stick mechanism base' (Item 3) to be supplied by ABSD manufacturer.

Item N^ 30543

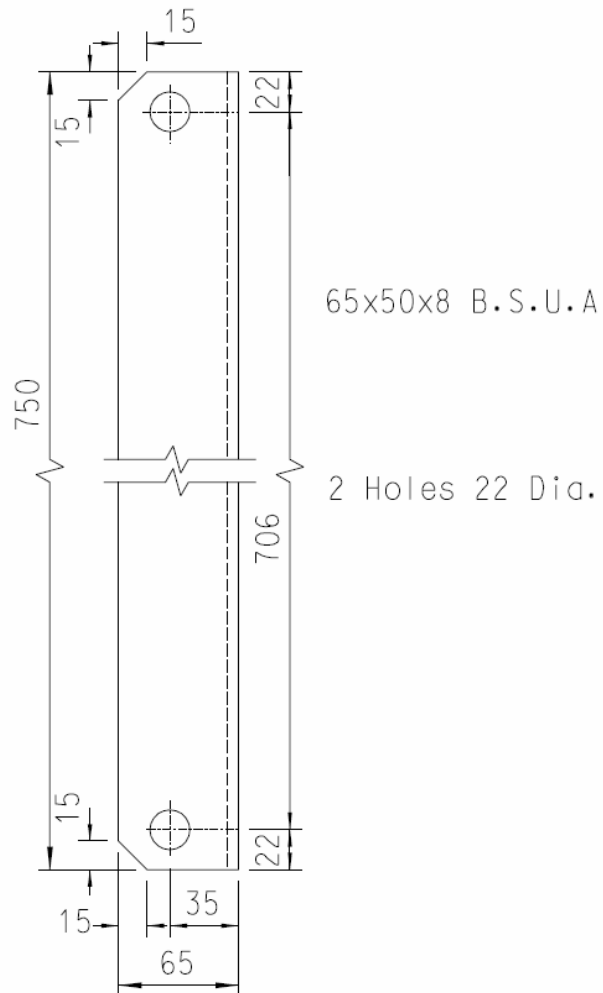
PLATFORM - 11kV AIR-BREAK SWITCH DISCONNECTOR
 SINGLE AND 'H' POLE
 (Based on ENATS Drawing 439527)



PLAN

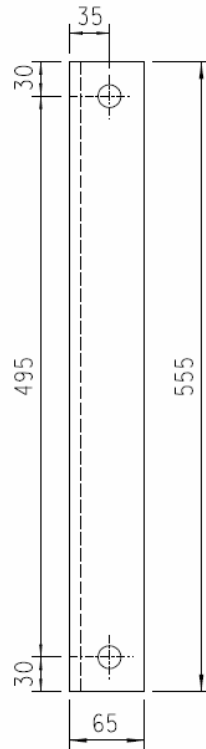
- NOTES:-
1. All dimensions are in millimetres.
 2. Material :- Mild steel to BS EN10025 grade FE430A to be galvanised to BS EN ISO 1461 after manufacture.

ABSD LOCKING OFF POINT



ALL DIMENSIONS IN mm

Strut-Crossarm
(Heavy lines)



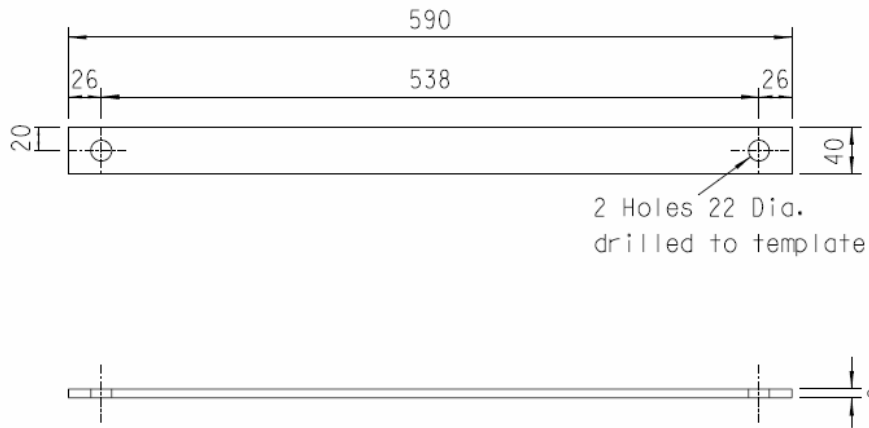
65x50x8 B.S.U.A.

2 Holes 22 Dia.

ALL DIMENSIONS IN mm

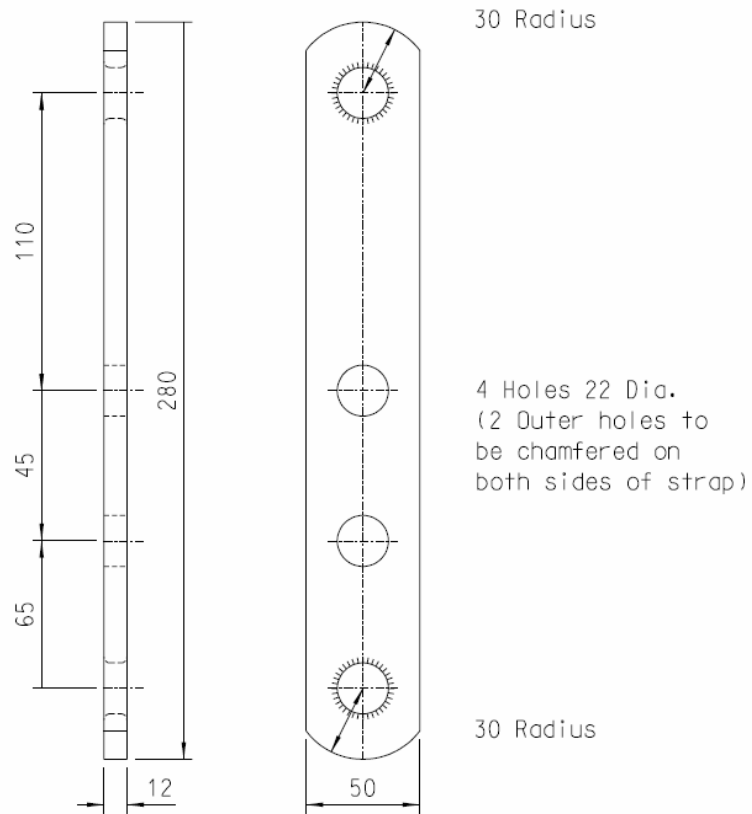
Brace-Crossarm
(Heavy lines)

WPD 43-9542
Issue 1
November 2006



All dimensions in mm

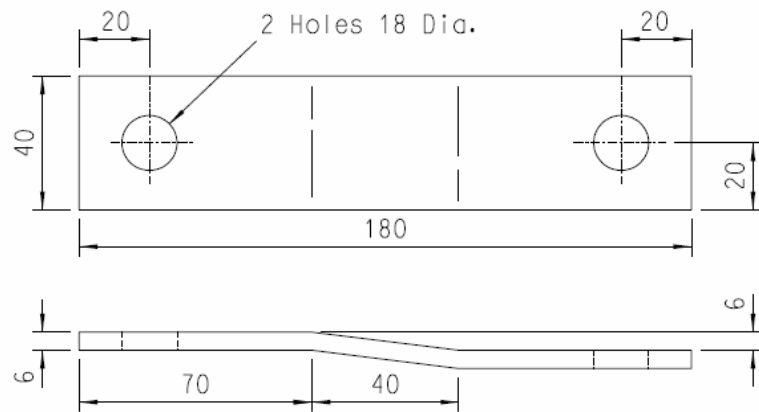
Strap - Crossarm tie
(Light lines)



All dimensions in mm

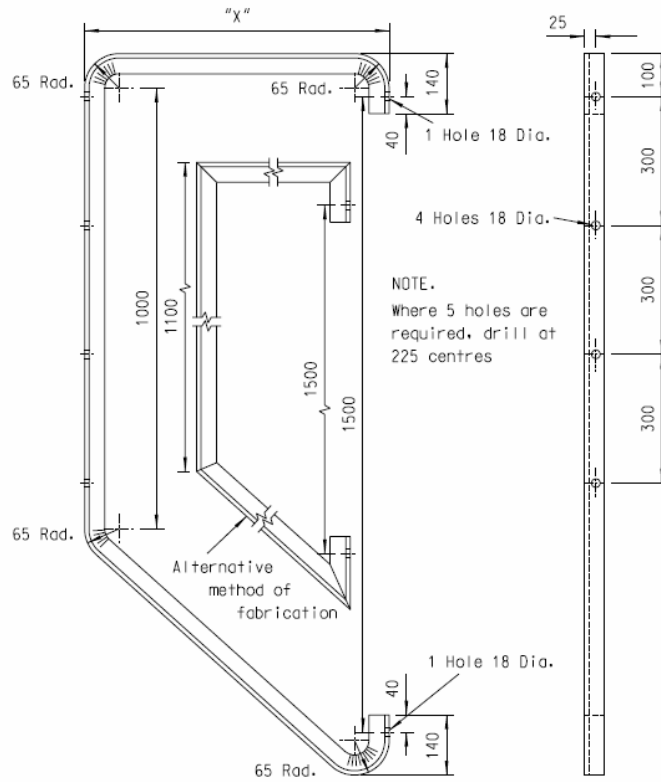
Strap - Section and terminal
(Light lines)

WPD 45 95/44
Issue 1
November 2006



All dimensions in mm

Strap - L.V. extension
(Light lines)



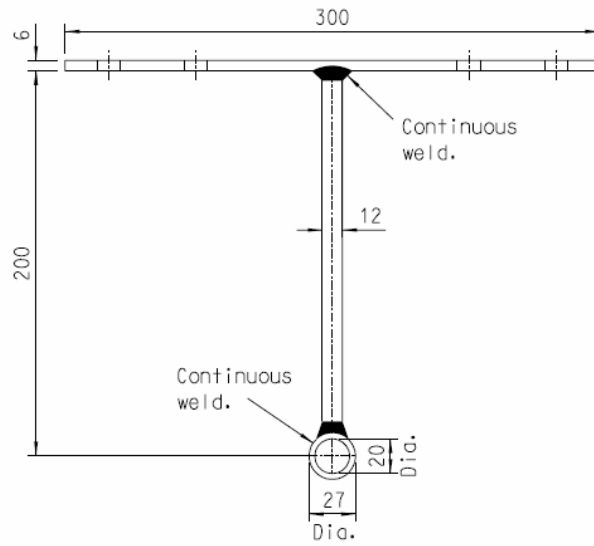
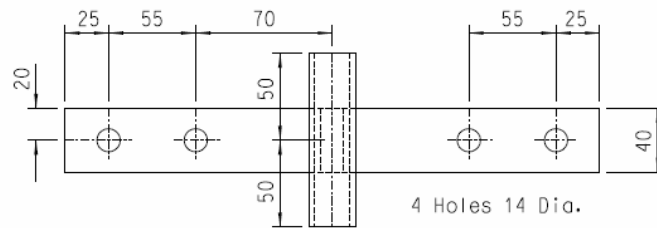
Bends to be notched & welded
or cut & welded.

45 x 45 x 6 BSEA

Type	Dimension "x"
1	500
2	750
3	1000

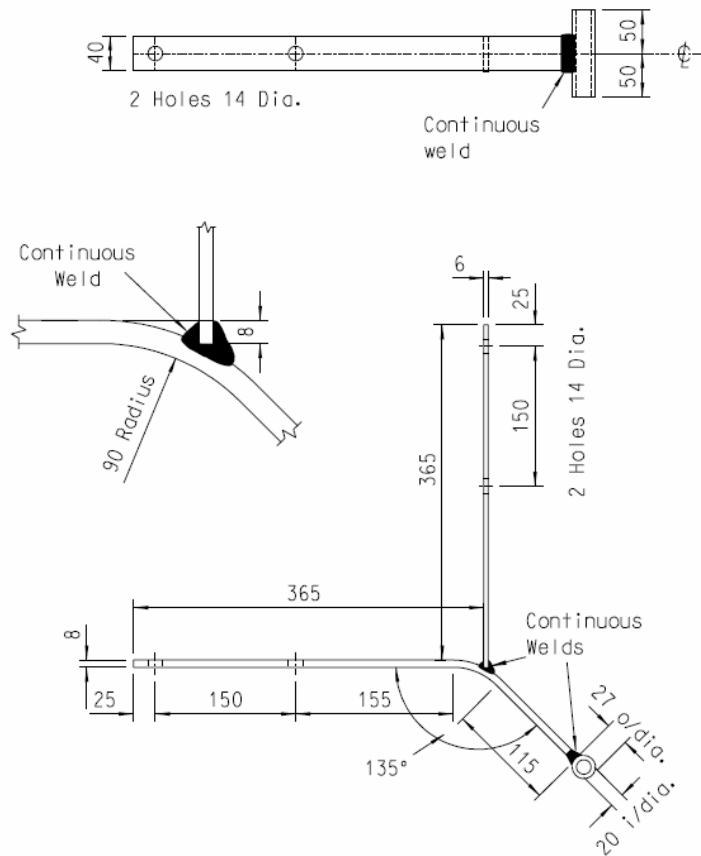
All dimensions in mm

Bracket - L.V. outrigger
(Light lines)



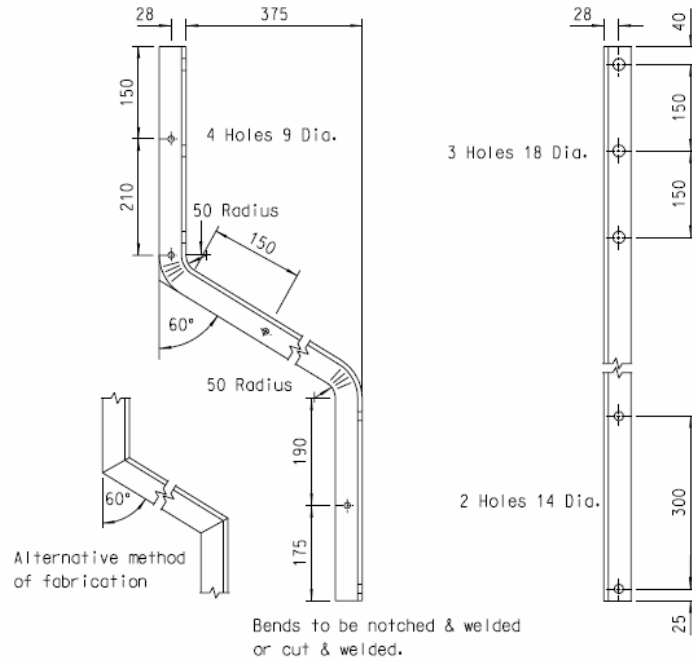
All dimensions in mm

Bracket - House service (flat)
(L.V. lines)



All dimensions in mm

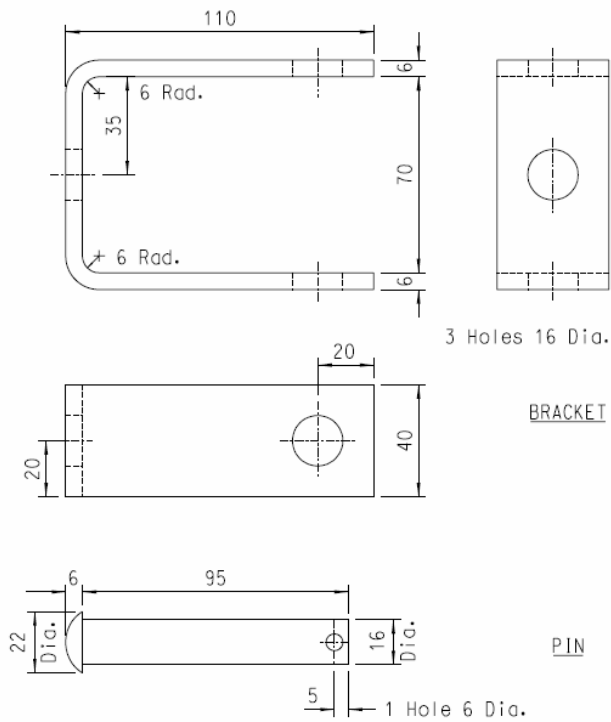
Bracket - House service (corner)
(L.V. lines)



50x50x6 BSEA

All dimensions in mm

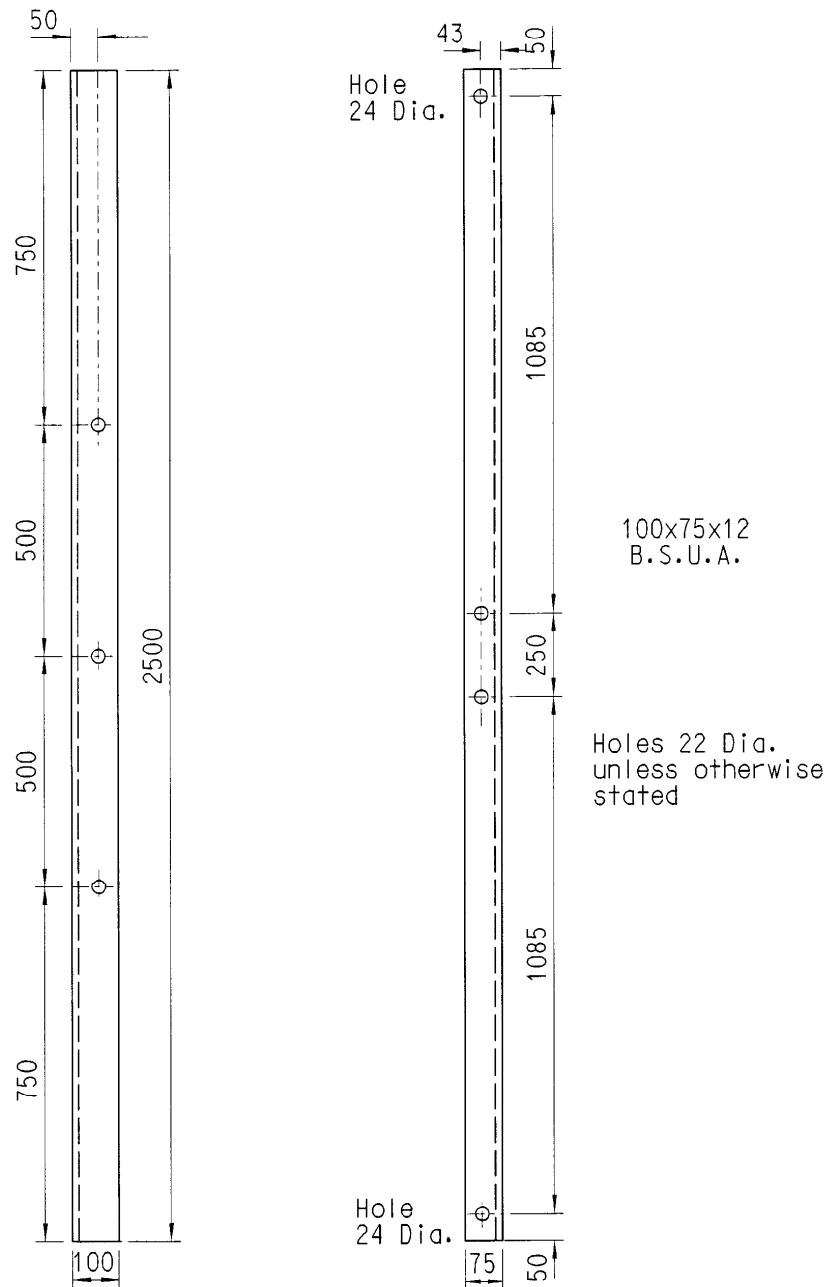
Bracket - Eaves extension
(L.V. lines)



Pin to be supplied with 5 dia. non-ferrous
or stainless steel split pin

All dimensions in mm

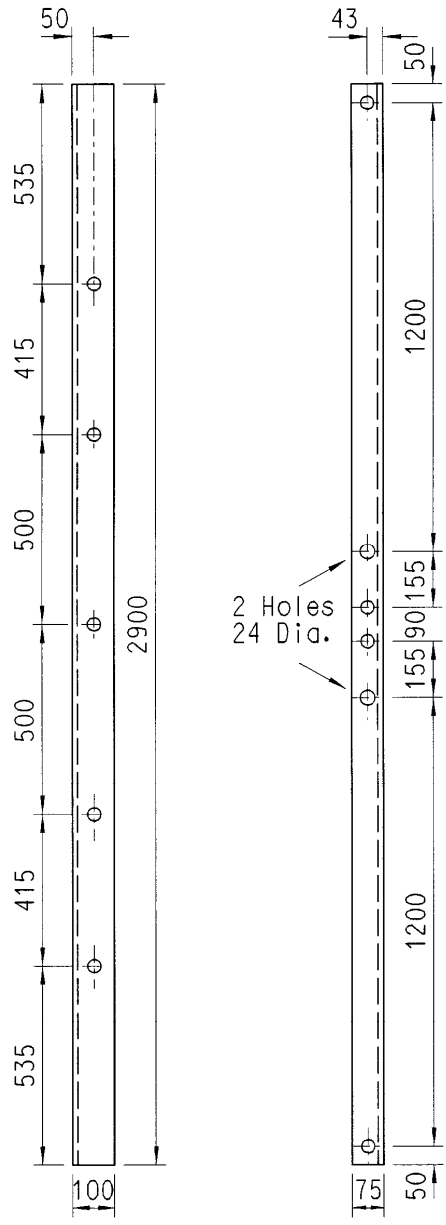
Bracket - Insulator (L.V.)
(L.V. lines)



ALL DIMENSIONS IN mm

CROSSARM MEMBER - 2.5m
(ENA TS Drawing No. 439519)
(Heavy lines to ENA TS 43-40)

Page added 27 February 2008



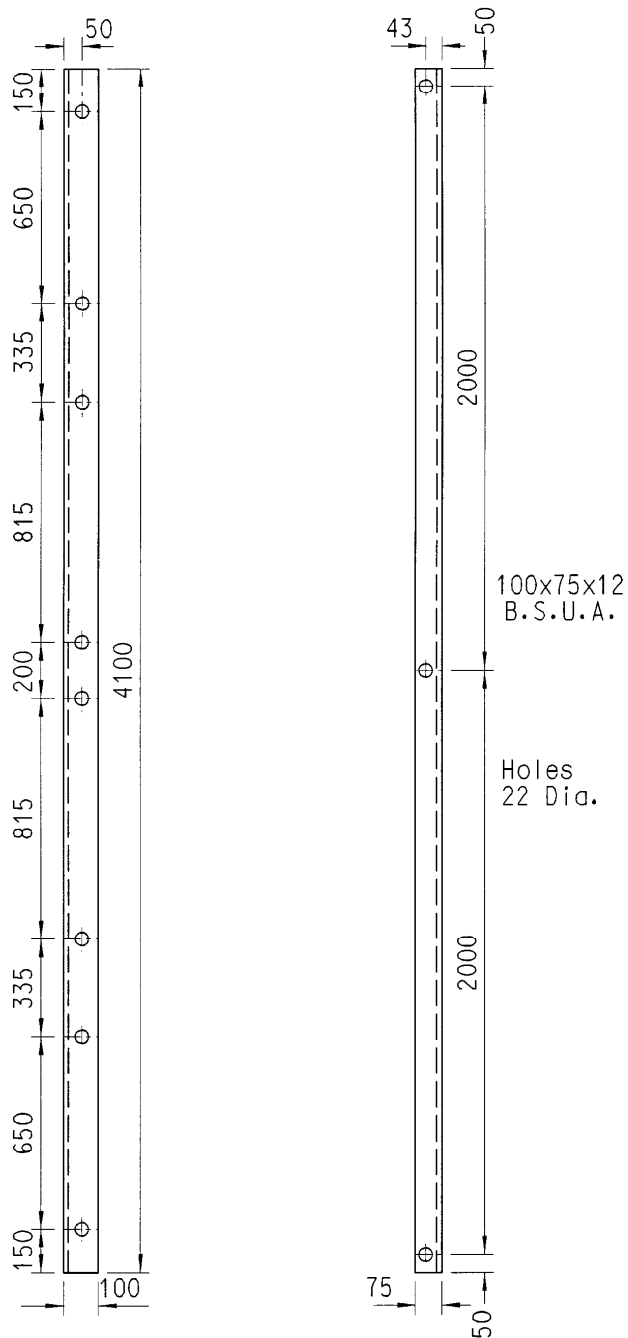
100x75x12
 B.S.U.A.

Holes 22 Dia.
 unless otherwise
 stated

ALL DIMENSIONS IN mm

CROSSARM MEMBER - 2.9m
 (ENA TS Drawing No. 439520)
 (Heavy lines to ENA TS 43-40)

Page added 27 February 2008

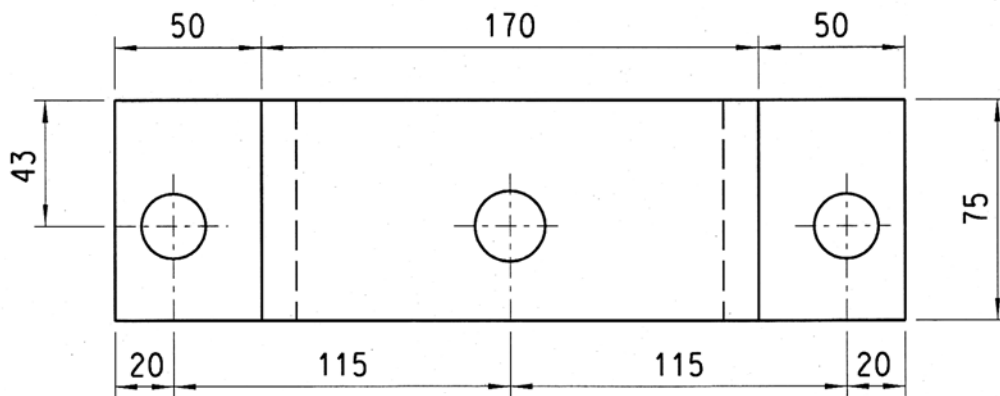
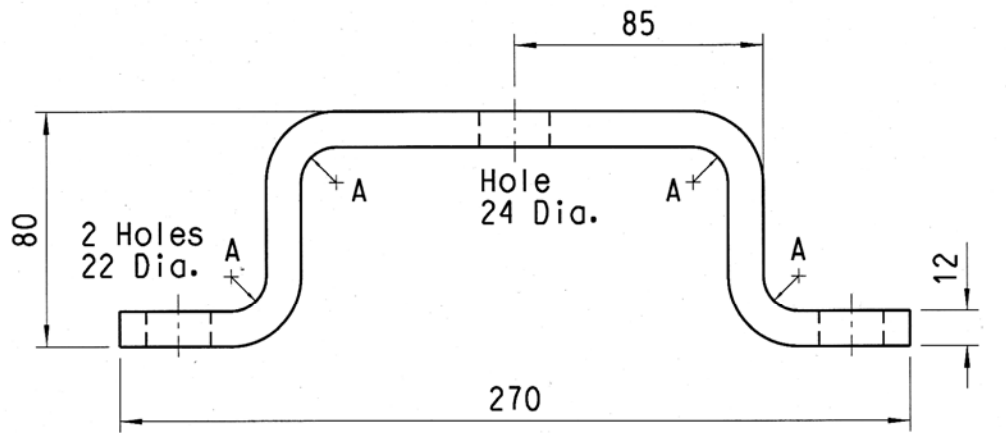


ALL DIMENSIONS IN mm

CROSSARM MEMBER - 4.1m
(ENA TS Drawing No. 439521)
(Heavy lines to ENA TS 43-40)

Page added 27 February 2008

WPD 43-95/53
Issue 1
May 2010

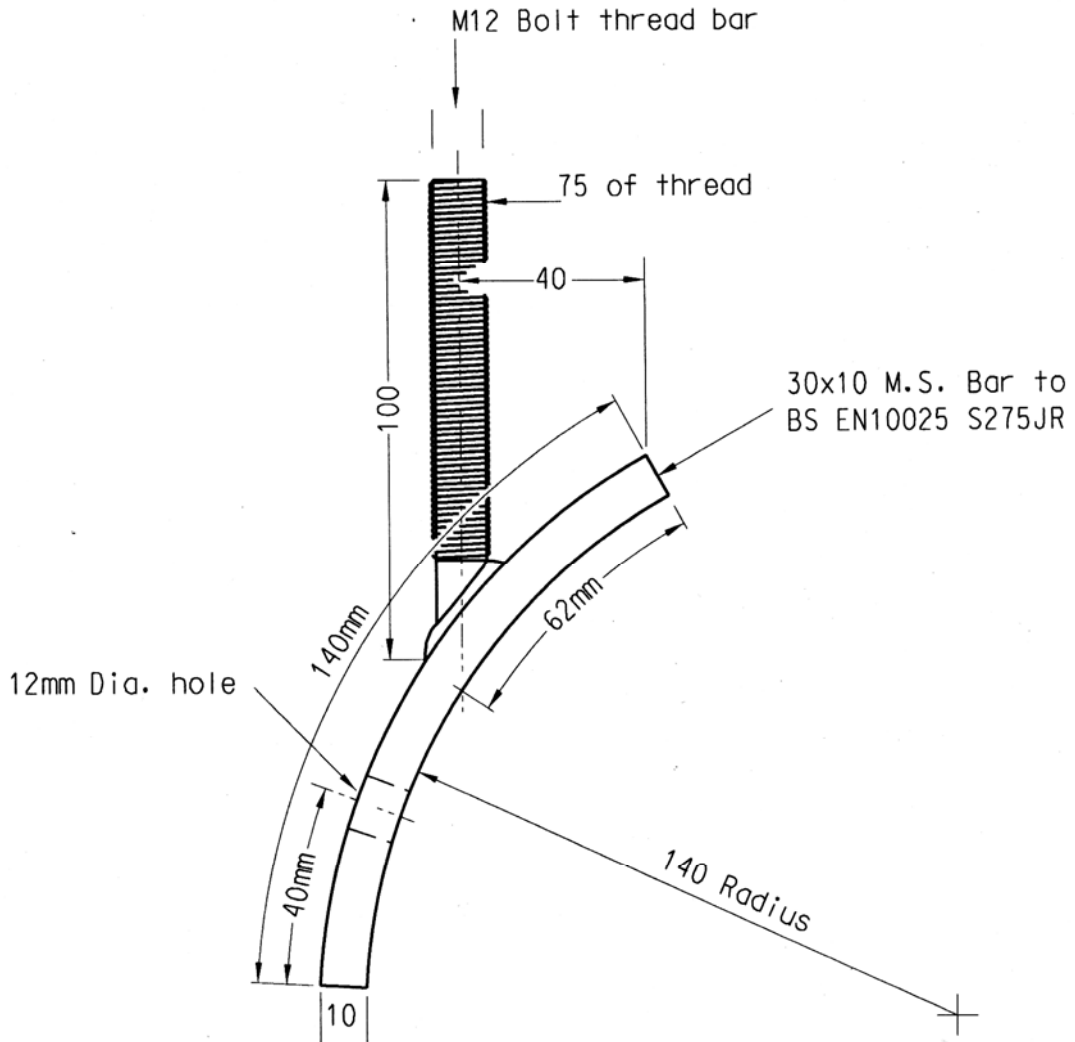


Bending Radii 'A' 12

ALL DIMENSIONS IN mm

BRACKET - INSULATOR
(ENA TS Drawing No. 439518)
(Heavy lines to ENA TS 43-40)

Page added 21 February 2011



Note:-

1. All dimensions are in millimetres.
2. Finish : To be galvanised to BS EN ISO 1461 after fabrication.

**33kV SURGE ARRESTER SUPPORT
STABILIZING BRACKET FOR SINGLE POLE**

Page added 16 February 2011

APPENDIX B

SUPERSEDED DOCUMENTATION

43-95 found in Part 2 of the Overhead Line Manual

APPENDIX C

ASSOCIATED DOCUMENTATION

None

APPENDIX D

IMPACT ON COMPANY POLICY

There is no change to company policy

APPENDIX E

IMPLEMENTATION OF POLICY

This policy shall be implemented immediately

APPENDIX F

KEY WORDS

Steelwork