

Electricity Specification 40002

Issue 3 January 2022

Overhead-Lines of Compact-Covered- Construction for 6.6, 11 & 33kV



Amendment Summary

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1 Introduction

1.1 General Information

This specification describes the design and construction of 6.6, 11 and 33 kV compact-covered-construction (CCC) overhead lines on wood poles. The design and construction of 6.6, 11 and 33 kV overhead lines of bare-wire on wood poles within Electricity North West Limited (hereinafter referred to as Electricity North West) is covered by specification ES40003. EPD473 gives guidance on which of these two specifications to use in any given set of circumstances.

1.2 Historical Perspective

Throughout Electricity North West, light duty overhead lines to the Electricity Association Technical Specification (ENATS) 43-10 and heavy-duty overhead lines to ENATS 43-20 have been used since the 1970s. These two (withdrawn) specifications have now been completely superseded by this specification (ES40002) and ES40003.

1.3 Notes on Specification Content

The philosophy and layout of this specification are designed to aid the processes of line design, component ordering and construction. This section provides a brief overview of the content of this specification.

[Sections 1 to 3, 7 and 8](#) contain background/reference information.

[Section 4](#) provides line-design guidance using this specification, by breaking down the process of line design into a series of stages and referring the reader to the appropriate section/sections within this specification at each stage.

Design information and validation data for each conductor size are introduced in [Section 5](#) and detailed in [Appendix C](#).

Construction information, including material requirements for the construction of a CCC line is summarised in [Section 6](#).

[Appendix A1](#) contains general-arrangement drawings and associated material lists, preceded by a drawing index, in drawing number order.

[Appendix A2](#) contains application drawings.

[Appendix B](#) comprises an index to materials (in alphabetical order) used in the construction of a CCC line. Each material is cross-referenced to all drawings in this specification on which it is used.

[Appendix D](#) provides instructions for compiling a material requirement for a CCC line on a pole-by-pole basis using Excel workbook 40002.xls. The data from this workbook can be used to order line materials.

2 Scope

This specification covers the design and constructional requirements for the erection of compact-covered-construction (CCC), single-circuit overhead-lines on wood pole (single and three-phase), operating in the

voltage range up to and including 33 kV, using the following sizes of aluminium-alloy conductors (of compacted construction) with an XLPE covering:

50 mm²
120 mm²
185 mm².

3 Definitions

Definitions are as given in CP420-1.

4 Line Design using the Specification

4.1 Introductory Notes

To meet the line design requirements, the engineer can select from a total of forty-seven General Arrangement drawings (GAs) and associated Materials Lists as given in [Appendix A](#). Within any GA it is often possible to use different components depending upon the size of the conductor.

It is not practical to produce GAs for every variation and therefore each GA drawing shows only one possible combination of components, but the Materials List associated with each drawing covers the variations required. Each list of materials gives a breakdown of components required to build the corresponding GA for each of the lines. (An index to all materials used in this specification is included in [Appendix B](#).)

Mechanical and electrical design data are introduced in [Section 5](#) and detailed in [Appendix C](#).

Construction information is contained in [Section 6](#).

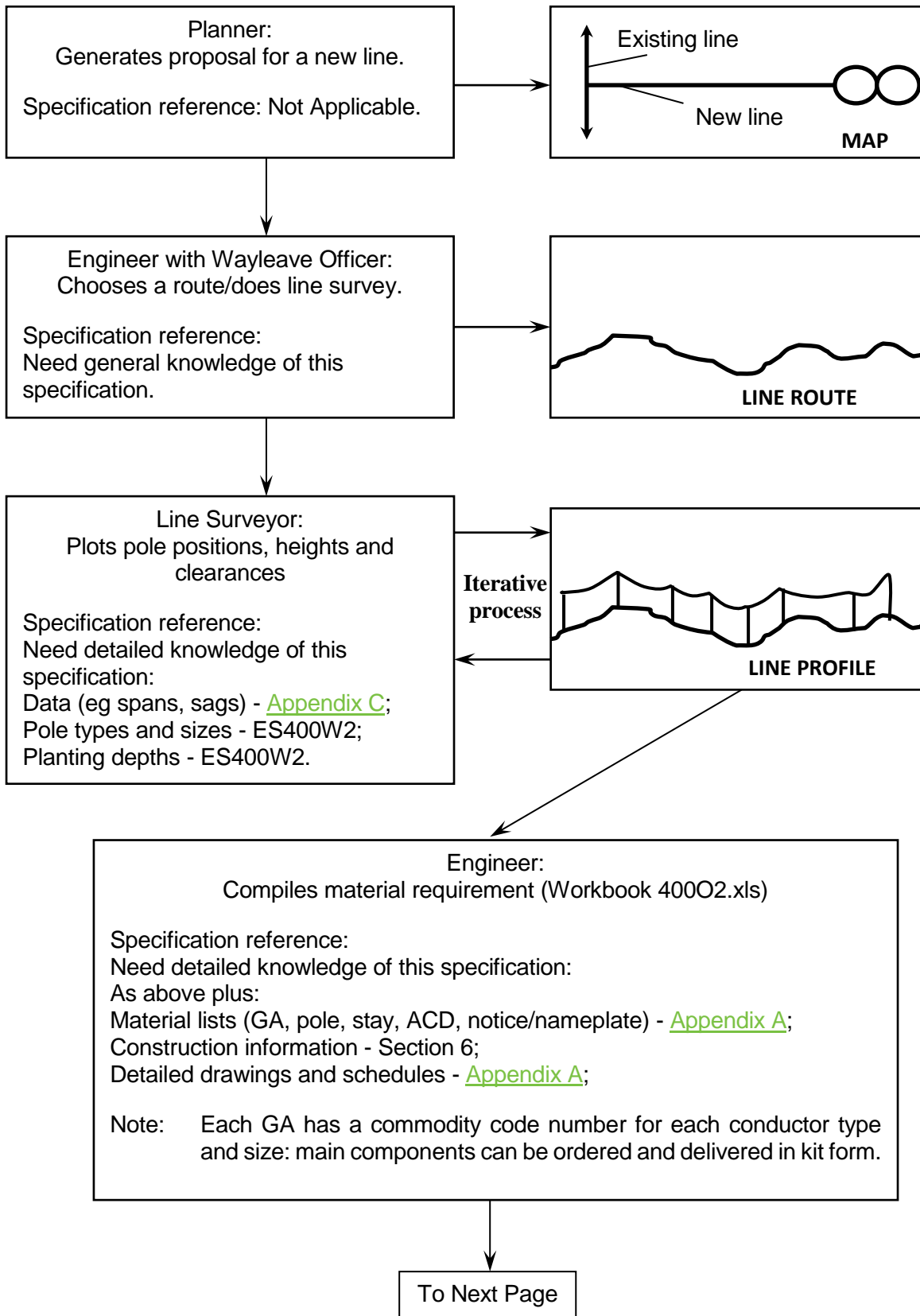
The total material requirements of a CCC line can be built up on a pole-by-pole basis using the Excel workbook 40002 (refer to [Appendix D](#)).

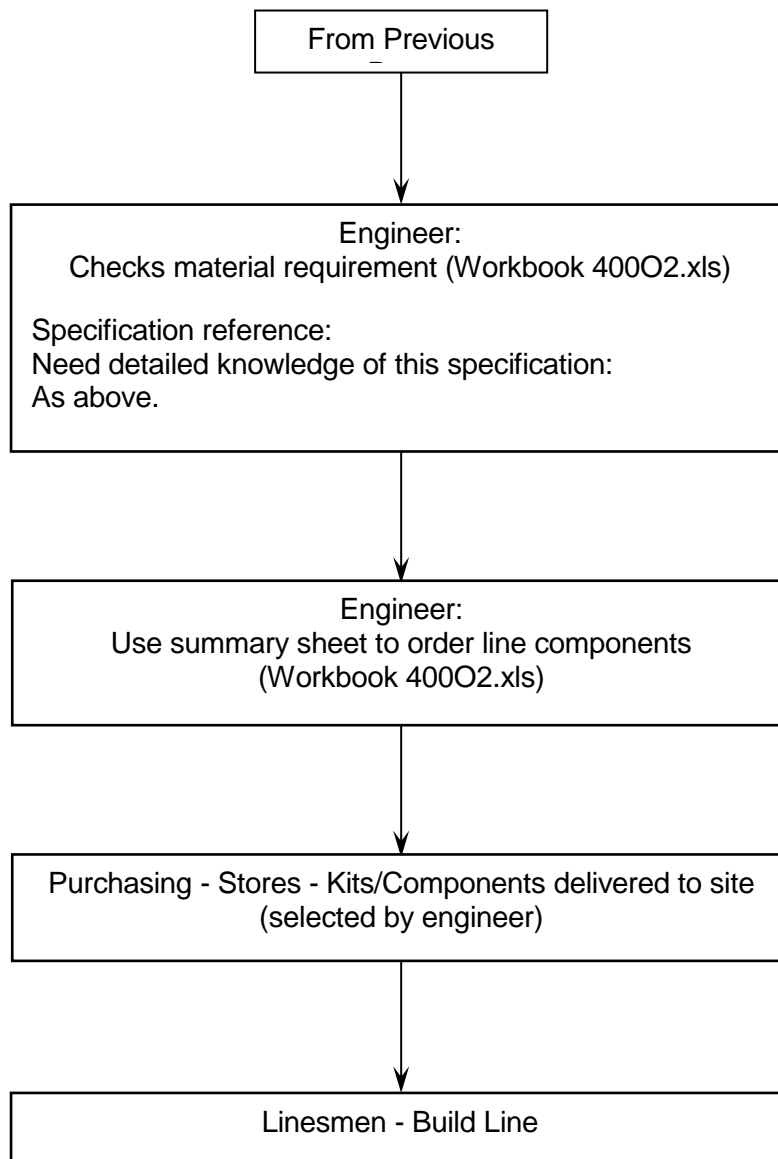
Once the GA requirements have been defined for a line, these GAs can be ordered in kit-form (each GA/conductor combination has its own commodity code kit number (CC No)). The advantages of ordering in kit-form as opposed to ordering individual components are:

- (a) Fewer items need to be identified at the ordering stage.
- (b) The kits will be supplied to site as kits (i.e. components will not need sorting out and grouping together on site).

For system earthing requirements, refer to CP332 (the construction details are given in the relevant procedures in CP430-1).

4.2 Line Design Process





5 Design Information and Validation

Three standalone sets of design data are included as [Appendix C](#):

- [Appendix C1](#): for line design using conductor, 50 mm² (50CC)
- [Appendix C2](#): for line design using conductor, 120 mm² (120CC)
- [Appendix C3](#): for line design using conductor, 185 mm² (185CC)

Each of these Appendices contains design data in the form of tables and figures. Cross-references within each appendix apply to the tables and figures in that appendix unless stated otherwise.

The original drawing references from EATS 43-121 (43121 series of drawings) in Tables 1, 2, and 3 of [Appendices C1](#), [C2](#) and [C3](#) have been retained, because they form part of the information set used to generate the figures given in [Appendices C1](#), [C2](#) and [C3](#). However, these 43121 drawings are not to be used directly with this specification. The GAs included within this specification are based on the 43121 series drawings,

hence, the appropriate GA from this specification shall be used, rather than the 43121 drawing quoted in Table 1, 2 or 3 of [Appendix C1](#), [C2](#) or [C3](#).

6 Construction Information

6.1 General

The total material requirements for any (generic) CCC line structure (including conductor) are given in [Fig. 6.1](#). Additional information, supplementary to that shown in [Fig. 6.1](#) is summarised below for reference purposes.

Unless otherwise specified, all construction practice and materials shall comply with this section, Electricity North West Code of Practice (CP) 420-1 and the appropriate Electricity North West standard.

[Table 6.1](#) provides reference information for all major materials used in the construction of a CCC line.

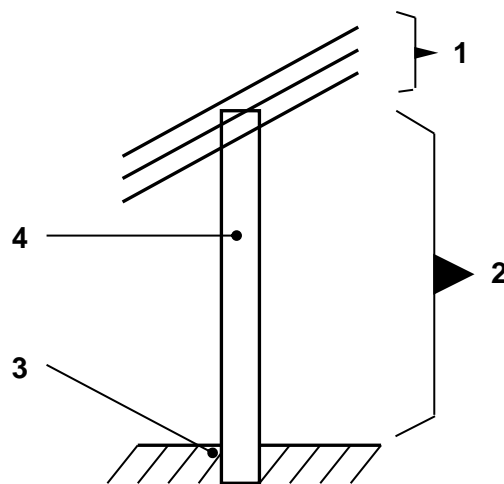


Figure 6.1: CCC Line: Total Material Requirement

FIG ITEM	DESCRIPTION	NOTES
1	Conductor: 50 mm ² (50CC); 120 mm ² (120CC); 185 mm ² (185CC) as appropriate.	Refer to ES400C3.
2	Pole general arrangement: -GA series of drawings.	(a) Refer to Appendix A of this specification for the appropriate GA. (b) Steelwork, ACD, stay, fitting details, etc are referenced from the list of materials for each GA.
3	Backfilling/Compaction material	Refer to ES400R5
4	Fabricated pole: -FAB series of drawings.	(a) Refer to ES400W2 for the appropriate fabrication drawing. (b) Planting details, etc, are included for each pole fabrication.

Table 6.1: Supplementary Construction Information for Reference

NOTE:

- (a) Specification references for the items listed in [Table 6.1](#) are included on the appropriate list of materials for the drawing as identified from [Fig. 6.1](#).
- (b) A prefix of ES or CP in the following table indicates a Electricity North West document: ES indicates specification; CP indicates Code of Practice (containing Electricity North West specific policy/practice information).
- (c) For references to detailed procedural information on erecting, maintaining and dismantling overhead lines (as included in CP430), refer to the appropriate chapter in CP420 (given in the following table).

ITEM DESCRIPTION	DOCUMENT REFERENCE
Aerial Switches	CP420-1.08. ES315.
Anti-Climbing Measures and Devices	CP420-1.10. ES400A2.
Anti-Split Bolts	CP420-1.04. ES400F1.
Augered Holes	CP420-1.03 and CP420-1.04. ES400W2
Auto-Reclosers/Auto-Sectionalisers	CP420-1.08. ES315.
Cable Terminations	CP420-1. ES400C12.
Clearances	CP420-1.15 and CP420-1.19. ES400V1.
Conductor	CP420-1. ES400C3.
Design	CP420-1. ES400O2.
Drop-Out Expulsion Fuses (DOEF) - Links and Units	CP420-1.08. ES315. ES400S11.

Earthing	CP420-1.21 and CP332. ES400E8.
Fasteners	CP420-1. ES400F1.
Fittings	CP420-1. ES400C29. ES400H2.
Flexible Jumpers	CP420-1. ES400C3.
Foundations	CP420-1.04. ES400W2. ES400S11.
Fuses	CP420-1.21 and CP332. ES315.
General Arrangements	This specification/Appendix A (-GA drawing series).
Insulators	CP420-1. ES400I4.
Lightning Protection	CP420-1. ES400C29.
Notices and Nameplates	CP420-1.09. ES400N1.
Shrouding	CP420-1. ES400S12.
Stays	CP420-1.07. ES400S13.
Steelwork	CP420-1. ES400S11.
Transformer	CP420-1.08. ES321.
Vibration Protection	CP420-1. ES400C29. ES400H2.
Wood Pole Supports	CP420-1.03 and CP420-1.04. ES400W2.

6.2 Wood Poles

6.2.1 Anti-split Bolts for Wood Poles

Two anti-split bolts shall be fitted to all poles; these will be delivered already fitted to the pole.

6.2.2 Blocks for Wood Poles

All poles shall be fitted with blocks (except when augering) in accordance with the appropriate fabrication drawing.

6.2.3 Augered Holes

When planning to use an auger for excavation, follow these rules:

- (a) Augering is to be used for intermediate poles, pin angles and straight line sections only (i.e. it is not now allowed for any other sections or terminal poles, etc).
- (b) Ensure ground is suitable for use of auger.
- (c) The pole shall be augered 0.5 metre deeper therefore it will need to be 0.5 metre longer.
- (d) After pole erection, hole shall be backfilled with approved compaction material.

6.2.4 Pole Caps

Pole caps shall be installed at every pole.

6.2.5 Backfilling/Compaction

Backfilling/Compaction materials shall be as stated in ES400R5.

6.2.6 Boron Rods

Boron rods shall be fitted to all poles. For poles less than 240mm diameter 3 rods shall be fitted equally spaced at 120° around the circumference of the pole at a depth of 150mm. For poles greater than 240mm diameter 4 rods shall be fitted equally spaced at 90° around the circumference of the pole at a depth of 170mm.

6.2.7 Stay Bonding

Poles with stays fitted shall have stay bonding to the steelwork. Should more information be required refer to CP420-1 chapter 7.

6.2.8 Stay Plates

Heavy duty stay plates can be used as an alternative to pole top make off.

6.3 Stays

Only screw-in type or standard wooden 4-tonne stay blocks shall be used.

Light duty stay plates shall not be use. Heavy duty stay plates and load lock anchors may be used, but calculations shall be done on a case-by-case basis to ensure that factor-of-safety (FOS) value of 2.5 is maintained. The maximum working load for a load lock anchor is 28kN.

6.4 Jumpers

Jumpers in excess of 2 metres shall be supported by helical side ties/polymeric pin insulators to auxiliary crossarm or outriggers.

6.5 Steelwork

When an existing line is being refurbished refer to ES400S11 for fitting steelwork.

6.6 FARAP (Fall Arrest Reliable Anchor Point)

Every pole shall be equipped with a FARAP fitted at the lower anti-split bolt position. An additional FARAP shall be installed 1.5 metre below the FARAP fitted at the lower anti-split bolt on a pole either side of a section pole.

Wherever pole mounted plant is installed (e.g. transformer) then additional FARAPs will shall fitted at 1500mm below any exposed live metal.

[Appendix A](#) contains a series of Application Drawings showing FARAP positions covering the range of general arrangements used in this specification.

6.7 Lightning Protection

An approved lightning protection device shall be fitted, on average, on every other pole. The installation is shown on drawing I-40002-APP-013 in the list of Application drawings in [Appendix A](#).

6.8 Vibration Damping

To inhibit excessive vibration on 50 mm² (50CC) lines, vibration dampers shall be fitted at each end of each span of every line.

6.9 Conductor Fittings – Compression

[Appendix A](#) contains a series of Application Drawings showing the range of uses for conductor compression fittings.

6.10 Dropper Kits

Four dropper kits have been developed as follows:

- (a) No. 1 - to be used on ABS/GVR/PMT
- (b) No. 2 - to be used on links above PMT
- (c) No. 3 - to be used on OYS/OYT
- (d) No. 4 - to be used on 11 kV cable terminal

Each dropper kit incorporates a length of 65mm² flexible copper conductor and a number of different end connectors to suit a variety of applications.

Dropper kits are installed at all transformer positions and at such other dropper positions where the size of the main line conductor does not exceed 50mm² (50CC).

Where the main line conductor is 120mm² (120CC) or 185mm² (185CC) and the tee off arrangement is required to match the main line capacity (eg aerial switch or cable) then the dropper kit will be replaced by appropriate conductors and fittings. Each GA will show one typical arrangement but the materials list associated with each GA will give details of the appropriate components for any 50/120/185mm² conductor combination.

The dropper kit GAs are in [Appendix A1](#).

6.11 Fitting Shrouds to Transformers

The middle phase of all three-phase transformers shall be fitted with a shroud over the bus bar where surge arrestors are fitted.

Single-phase transformers depending on the severity of the location shall have one or two shrouds fitted as per the above.

Line switches shall have the middle phase shrouded as per the above.

GVRs shall have all phases in and out shrouded.

Refer to CP430 Part 1 for the method of fitting shrouds.

7 Documents Referenced

DOCUMENTS REFERENCED	
ENATS 43-10 (SUPERSEDED)	11kV single circuit overhead lines of light duty construction on wood poles.
ENATS 43-20 (SUPERSEDED)	11kV and 33kV single circuit overhead lines of heavy duty construction on wood poles.
ENATS 43-40	High voltage single circuit overhead lines on wood poles.
ENATS 43-121	Specification for single circuit overhead lines of compact covered construction on wood poles for use at high voltage up to and including 33 kV.

Electricity (overhead lines) regulations 1970	
Electricity supply regulations 1988 (as amended).	
The electricity safety, quality and continuity regulations 2002”	
Electricity North West ' 40002.xls (Associated Excel workbook)	CCC line schedule - compilation of materials.
Electricity North West ' CP332	Application of protective multiple earthing.
Electricity North West ' CP420, Part 1 (referenced as 420-1 (chapter number))	Policy and practice for wood pole overhead lines.
Electricity North West ' CP430, Part 1 (referenced as 430-1)	Overhead line - linesmen’s manual - wood pole.
Electricity North West ' EPD473	Policy for Overhead Line Standards.
Electricity North West ' ES315	OHL switch equipment.
Electricity North West ' ES321	Pole mounted distribution transformers.
Electricity North West ' ES400A2	Specification for anti-climbing devices - overhead lines.
Electricity North West ' ES400C3	Specification for wood pole overhead line conductors.
Electricity North West ' ES400C12	Specification for cable terminations - overhead lines.
Electricity North West ' ES400C29	Specification for connectors and fittings for overhead line conductors.
Electricity North West ' ES400E8	Earthing.

Electricity North West ' ES400F1	Fasteners and washers for wood pole overhead lines.
Electricity North West ' ES400H2	Overhead line helical fittings.
Electricity North West ' ES400I4	Insulators for overhead lines.
Electricity North West ' ES400N1	Specification for notices and nameplates - overhead lines.
Electricity North West ' ES400O3	Specification for: Bare-Wire Overhead-Lines on Wood Poles for 6.6, 11 and 33 KV: Design and Construction.
Electricity North West ' ES400S11	Specification for overhead line steelwork.
Electricity North West ' ES400S12	Specification for shrouding - overhead lines.
Electricity North West ' ES400S13	Specification for stay arrangements - overhead lines.
Electricity North West ' ES400V1	Contract works for control of vegetation adjacent to overhead power lines.
Electricity North West ' ES400W2	Specification for the supply of wood poles.

8 Keywords

CCC; Line; Overhead.

Appendix A

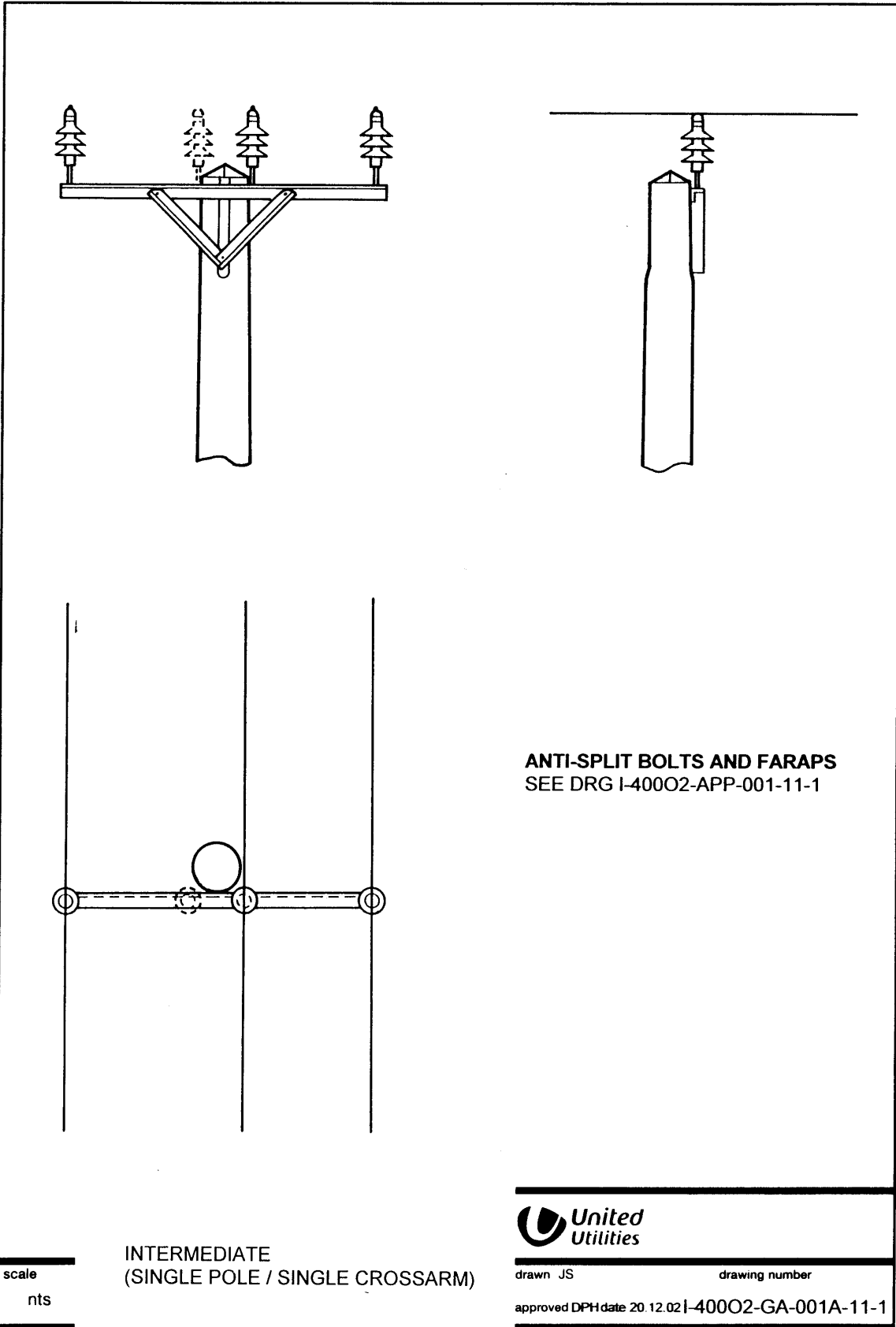
A1 General Arrangement Drawings and Material Lists (in drawing number order)

Index to Drawings

DRAWING NUMBER	TITLE
I-40002-GA-001A	Intermediate (Single Pole/Single Crossarm)
I-40002-GA-001B	Intermediate With Lightning Protection (Single Pole/Single Crossarm)
I-40002-GA-002A	Pin Angle (Single Pole/Single Crossarm)
I-40002-GA-002B	Pin Angle With Lightning Protection (Single Pole/Single Crossarm)
I-40002-GA-003	Straight Line Section/Angle Section (Single Pole/Double Crossarm) (Helical Fittings)
I-40002-GA-004	Straight Line Section/Angle Section (Single Pole/Double Crossarm) (Compression Fittings)
I-40002-GA-005	Straight Line Section/Angle Section (H-Pole) (Helical Fittings)
I-40002-GA-006	Straight Line Section/Angle Section (H-Pole) (Compression Fittings)
I-40002-GA-007	Angle Section (90°) (Single Pole/2 x Double Crossarm) (Helical Fittings)
I-40002-GA-008	Angle Section (90°) (Single Pole/2 x Double Crossarm) (Compression Fittings)
I-40002-GA-009	Angle Section (90°) (3-Pole Arrangement) (Helical Fittings)
I-40002-GA-010	Angle Section (90°) (3-Pole Arrangement) (Compression Fittings)
I-40002-GA-011	Tee Off (Single Pole/Single Crossarm With Double Crossarm Tee-Off) (Solid Connection)
I-40002-GA-012	Tee Off (Single Pole/Single Crossarm With Double Crossarm Tee-Off) (Connection Via Fuses/Links) (Tee Off Via Helical Fittings)
I-40002-GA-013	Tee Off (Single Pole/Single Crossarm With Double Crossarm Tee-Off) (Connection Via Fuses/Links) (Tee Off Via Compression Fittings)
I-40002-GA-014	Transformer (Single Intermediate Pole/Single Bolt Mounting) (Solid Connection)
I-40002-GA-015	Transformer (Single Intermediate Pole/Single Bolt Mounting) (Connection Via Fuses/Links)

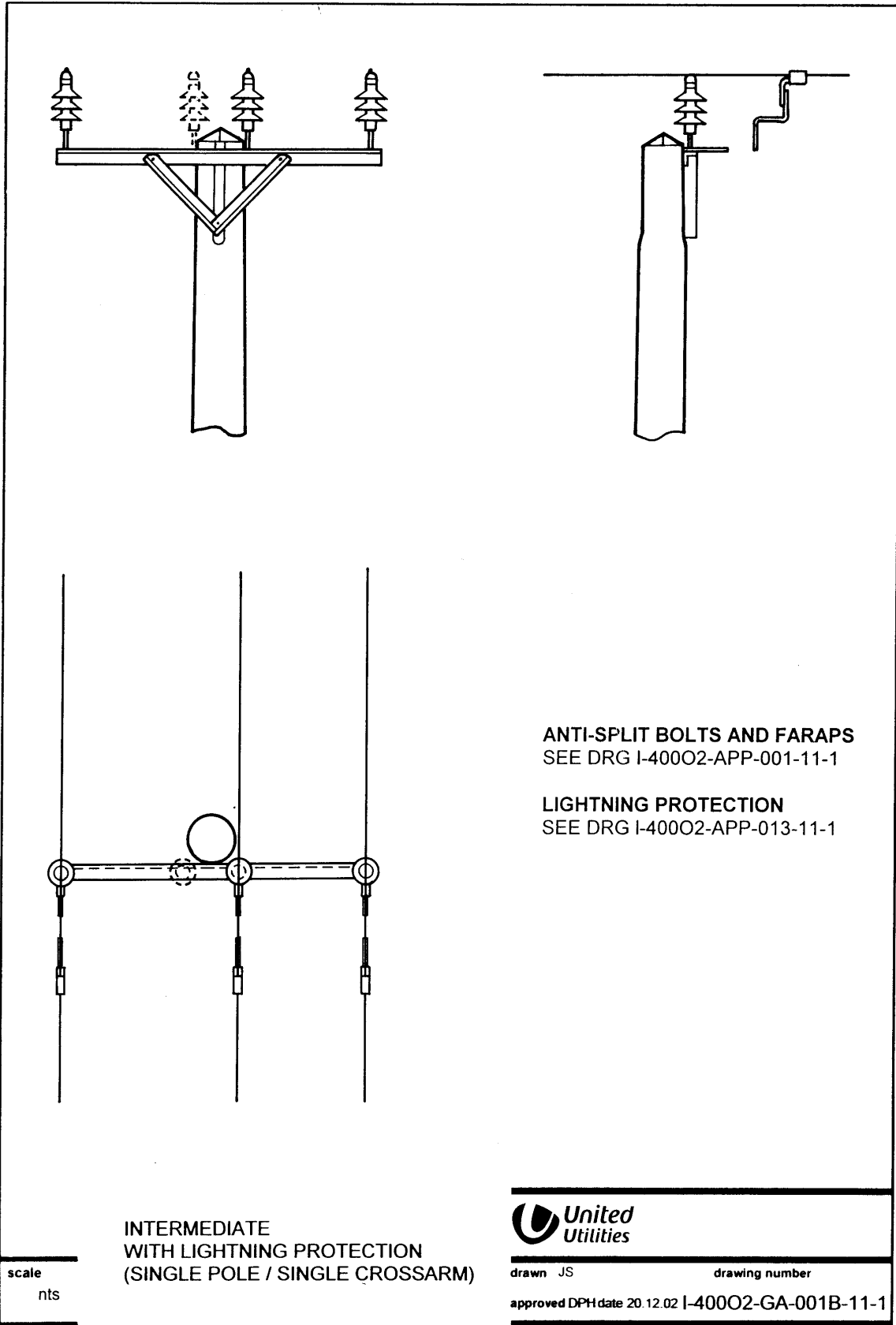
I-40002-GA-016	Transformer (Single Terminal Pole/Single Bolt Mounting) (Helical Fittings)
I-40002-GA-017	Transformer (Single Terminal Pole/Single Bolt Mounting) (Compression Fittings)
I-40002-GA-018	Transformer (Single Terminal Pole/Single Bolt Mounting) (Helical Fittings/Fuses/Links)
I-40002-GA-019	Transformer (Single Terminal Pole/Single Bolt Mounting) (Compression Fittings/Fuses/Links)
I-40002-GA-020	Transformer (Single Intermediate Pole/Platform Mounting) (Solid Connection)
I-40002-GA-021	Transformer (Single Intermediate Pole/Platform Mounting) (Connection Via Fuses/Links)
I-40002-GA-022	Transformer (Single Terminal Pole/Platform Mounting) (Helical Fittings)
I-40002-GA-023	Transformer (Single Terminal Pole/Platform Mounting) (Compression Fittings)
I-40002-GA-024	Transformer (Single Terminal Pole/Platform Mounting) (Helical Fittings/Fuses/Links)
I-40002-GA-025	Transformer (Single Terminal Pole/Platform Mounting) (Compression Fittings/Fuses/Links)
I-40002-GA-026	Transformer (H-Pole Mounting) (Helical Fittings/Fuses/Links)
I-40002-GA-027	Transformer (H-Pole Mounting) (Compression Fittings/Fuses/Links)
I-40002-GA-028	Transformer (Stub Pole Mounting) (Connection Via Fuses/Links)
I-40002-GA-029	Auto Recloser/Auto Sectionaliser (Single Pole/Flying Section) (Compression Fittings)
I-40002-GA-030	Auto Recloser/Auto Sectionaliser (Single Pole/Straight Line Section) (Compression Fittings)
I-40002-GA-031	In-line Fuses/Links (Single Pole/Straight Line Section) (Helical Fittings)
I-40002-GA-032	In-line Fuses/Links (Single Pole/Straight Line Section) (Compression Fittings)
I-40002-GA-033	Aerial Switch (Single Pole/Underslung Mounting) (Compression Fittings)
I-40002-GA-034	Aerial Switch (H-Pole/Underslung Mounting) (Helical Fittings)
I-40002-GA-035	Aerial Switch (H-Pole/Underslung Mounting) (Compression Fittings)
I-40002-GA-036	Cable Terminal (Single Terminal Pole) (Helical Fittings)

I-40002-GA-037	Cable Terminal (Single Terminal Pole) (Compression Fittings)
I-40002-GA-038	Cable Terminal (Single Terminal Pole) (Helical Fittings/Fuses/Links)
I-40002-GA-039	Cable Terminal (Single Terminal Pole) (Compression Fittings/Fuses/Links)
I-40002-GA-040	Cable Terminal (Single Intermediate Pole) (Solid Connection)
I-40002-GA-041	Cable Terminal (Single Intermediate Pole) (Connection Via Fuses/Links)
I-40002-GA-042	Cable Terminal (H-Pole) (Helical Fittings/Fuses/Links)
I-40002-GA-043	Cable Terminal (H-Pole) (Compression Fittings/Fuses/Links)
I-40002-GA-044	Cable Terminal (H-Pole) (Helical Fittings)
I-40002-GA-045	Cable Terminal (H-Pole) (Compression Fittings)
I-40002-GA-046	Single Pole Foundations
I-40002-GA-047	Steelwork And Fasteners Kit For H-Pole Foundations
I-40002-GA-048	Dropper Kit 1 (ABS, GVR, PMT)
I-40002-GA-049	Dropper Kit 2 (Links Above PMT)
I-40002-GA-050	Dropper Kit 3 (OYT, OYS)
I-40002-GA-051	Dropper Kit 4 (11kV Cable Term)
I-40002-GA-052	Cable Terminal H-Pole Pole Top Arrangement
I-40002-GA-053	Cable Terminal H-Pole Sealing End Arrangement And Earth Connections



INTERMEDIATE (SINGLE POLE/SINGLE CROSSARM)

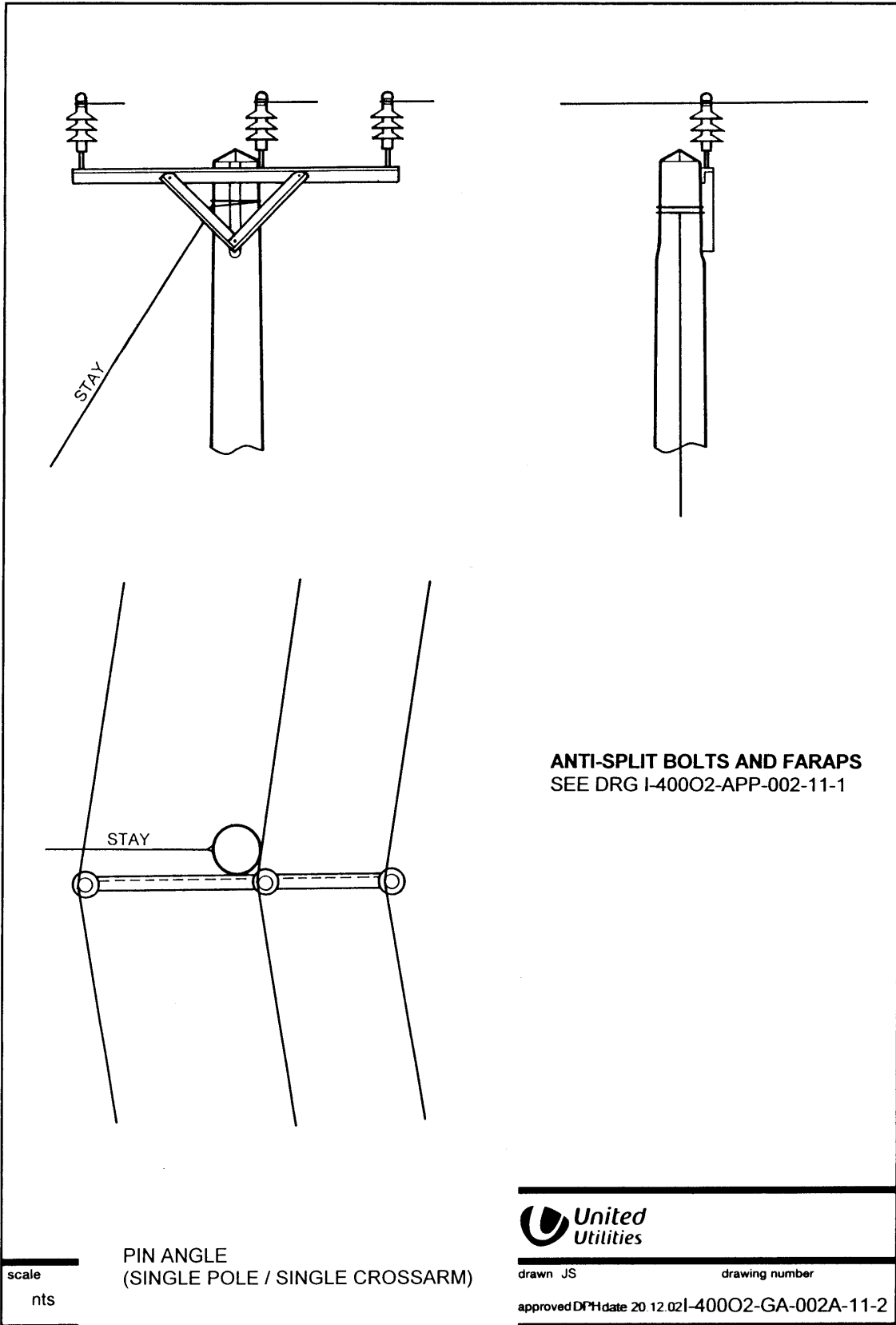
		Drawing No: I-40002-GA-001A						
Voltage/Conductor	Ref	GA Kit CC No	Comprising:					
11kV - 50mm ²	1	500000						
11kV - 120mm ²	2	500001						
11kV - 185mm ²	3	500002						
33kV - 120mm ²	4	500003						
33kV - 185mm ²	5	500004						
Item	ES Ref	Item CC No	5	4	3	2	1	
(Items Included in GA Kit Contents)								
Bolt, M20, 300mm	400F1	107735	2	2	2	2	2	
Bolt, M20, 60mm	400F1	107581	2	2	2	2	2	
Bolt, M20, 750mm	400F1	107790	2	2	2	2	2	
Coach Screw	400F1	126810	1	1	1	1	1	
Washer, Square, Curved	400F1	139203	2	2	2	2	2	
Washer, Square, Flat	400F1	139262	4	4	4	4	4	
Helical Intermediate Tie	400H2	139100	-	-	-	-	3	
Helical Intermediate Tie	400H2	139101	-	-	-	3	-	
Helical Intermediate Tie	400H2	139102	-	-	3	-	-	
Helical Intermediate Tie	400H2	139103	-	3	-	-	-	
Helical Intermediate Tie	400H2	139104	3	-	-	-	-	
Vibration Damper	400H2	139115	-	-	-	-	6	
Insulator, Pin-Mounted	400I4	175270	-	-	3	3	3	
Insulator, Pin-Mounted	400I4	175271	3	3	-	-	-	
Danger Plate	400N1	195251	2	2	2	2	2	
Gouge-mark Plate	400N1	995610	1	1	1	1	1	
Crossarm	400S11	133200	1	1	1	1	1	
Crossarm Strut	400S11	133353	2	2	2	2	2	
FARAP	400S11	260820	1	1	1	1	1	
Insulator, Pin	400S11	128252	-	-	3	3	3	
Insulator, Pin	400S11	128104	3	3	-	-	-	
(Additional Items Required for GA -But Not Included in GA Kit Contents)								
Wood Pole	400W2	Ref ES400W2	1	1	1	1	1	
Pole Cap	400W7	Ref ES400W7	1	1	1	1	1	
ACDs	400A2	Ref ES400A2	As required					
Notices	400N1	Ref ES400N1	As required					



INTERMEDIATE WITH LIGHTNING PROTECTION (SINGLE POLE/SINGLE CROSSARM)

Drawing No: I-40002-GA-001B

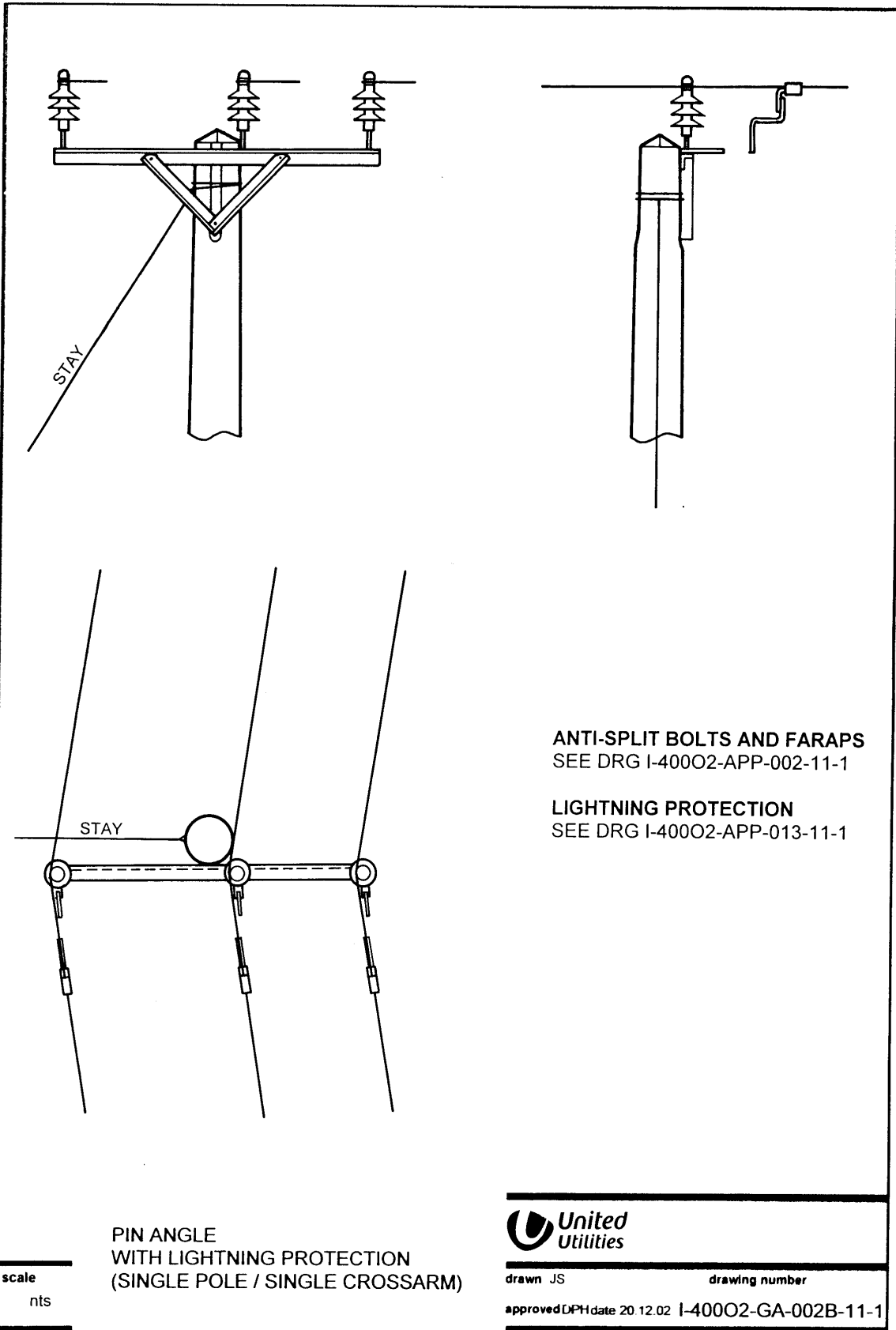
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500147					
11kV - 120mm ²	2	500148					
11kV - 185mm ²	3	500149					
33kV - 120mm ²	4	500150					
33kV - 185mm ²	5	500151					
Item	ES Ref	Item CC No	5	4	3	2	1
(Items Included in GA Kit Contents)							
Lightning Protection Device	400C29	121001	-	-	-	-	3
Lightning Protection Device	400C29	121018	-	-	-	3	-
Lightning Protection Device	400C29	121013	-	-	3	-	-
Lightning Protection Device	400C29	121014	-	3	-	-	-
Lightning Protection Device	400C29	121015	3	-	-	-	-
Bolt, M20, 300mm	400F1	107735	2	2	2	2	2
Bolt, M20, 60mm	400F1	107581	2	2	2	2	2
Bolt, M20, 750mm	400F1	107790	2	2	2	2	2
Coach Screw	400F1	126810	1	1	1	1	1
Washer, Square, Curved	400F1	139203	2	2	2	2	2
Washer, Square, Flat	400F1	139262	4	4	4	4	4
Helical Intermediate Tie	400H2	139100	-	-	-	-	3
Helical Intermediate Tie	400H2	139101	-	-	-	3	-
Helical Intermediate Tie	400H2	139102	-	-	3	-	-
Helical Intermediate Tie	400H2	139103	-	3	-	-	-
Helical Intermediate Tie	400H2	139104	3	-	-	-	-
Vibration Damper	400H2	139115	-	-	-	-	6
Insulator, Pin-Mounted	400I4	175270	-	-	3	3	3
Insulator, Pin-Mounted	400I4	175271	3	3	-	-	-
Danger Plate	400N1	195251	2	2	2	2	2
Gouge-mark Plate	400N1	995610	1	1	1	1	1
Crossarm	400S11	133200	1	1	1	1	1
Crossarm Strut	400S11	133353	2	2	2	2	2
FARAP	400S11	260820	1	1	1	1	1
Insulator, Pin	400S11	128252	-	-	3	3	3
Insulator, Pin	400S11	128104	3	3	-	-	-
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	1	1	1	1	1
Pole Cap	400W7	Ref ES400W7	1	1	1	1	1
ACDs	400A2	Ref ES400A2	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



PIN ANGLE (SINGLE POLE/SINGLE CROSSARM)

Drawing No: I-40002-GA-002A

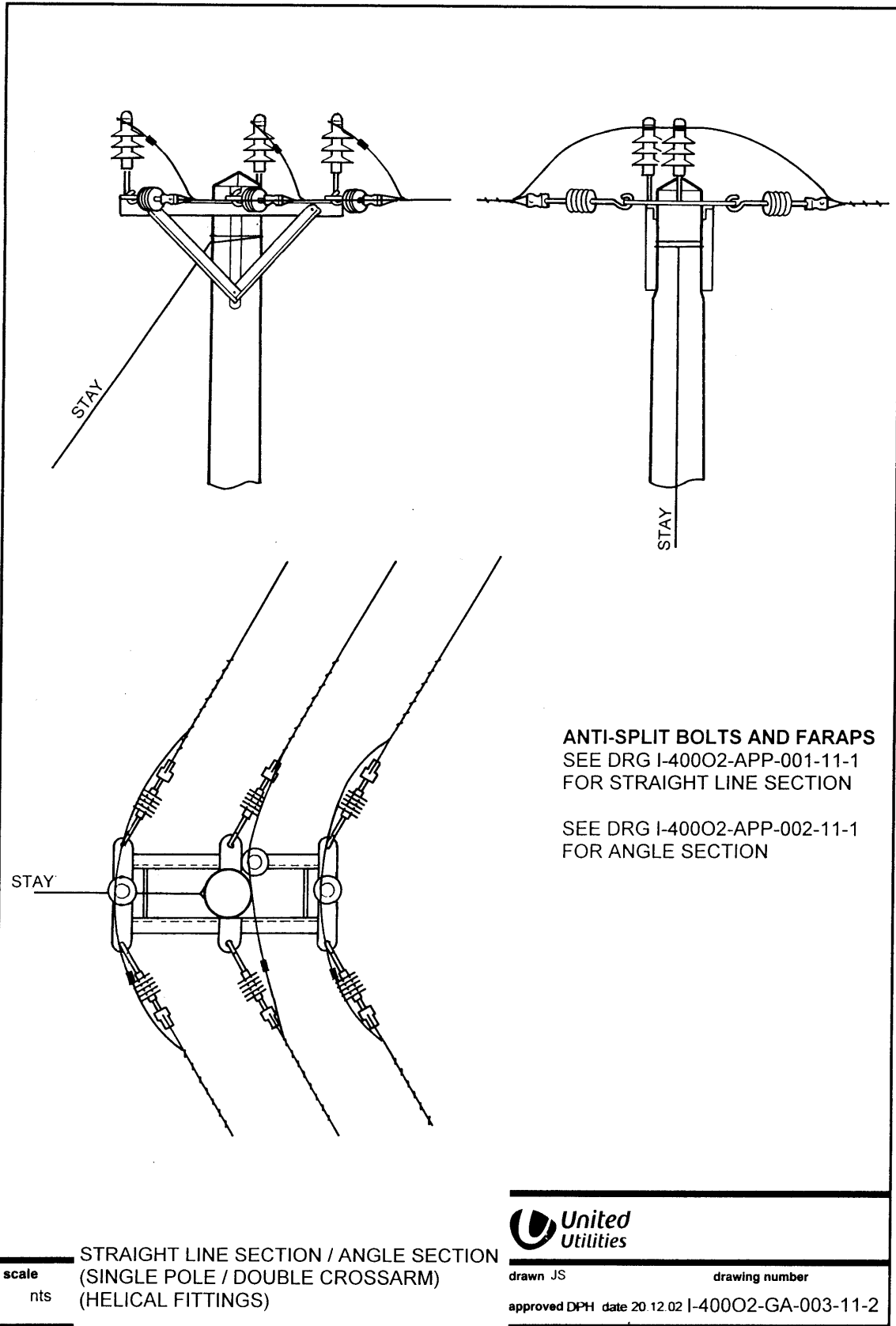
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500005					
11kV - 120mm ²	2	500006					
11kV - 185mm ²	3	500007					
33kV - 120mm ²	4	500008					
33kV - 185mm ²	5	500009					
Item	ES Ref	Item CC No	5	4	3	2	1
(Items Included in GA Kit Contents)							
Bolt, M20, 300mm	400F1	107735	2	2	2	2	2
Bolt, M20, 60mm	400F1	107581	2	2	2	2	2
Bolt, M20, 750mm	400F1	107790	2	2	2	2	2
Coach Screw	400F1	126810	1	1	1	1	1
Washer, Square, Curved	400F1	139203	2	2	2	2	2
Washer, Square, Flat	400F1	139262	4	4	4	4	4
Helical Intermediate Tie	400H2	139100	-	-	-	-	3
Helical Intermediate Tie	400H2	139101	-	-	-	3	-
Helical Intermediate Tie	400H2	139102	-	-	3	-	-
Helical Intermediate Tie	400H2	139103	-	3	-	-	-
Helical Intermediate Tie	400H2	139104	3	-	-	-	-
Vibration Damper	400H2	139115	-	-	-	-	6
Insulator, Pin-Mounted	400I4	175270	-	-	3	3	3
Insulator, Pin-Mounted	400I4	175271	3	3	-	-	-
Danger Plate	400N1	195251	2	2	2	2	2
Gouge-mark Plate	400N1	995610	1	1	1	1	1
Crossarm	400S11	133200	1	1	1	1	1
Crossarm Strut	400S11	133353	2	2	2	2	2
FARAP	400S11	260820	1	1	1	1	1
Insulator Pin	400S11	128252	-	-	3	3	3
Insulator Pin	400S11	128104	3	3	-	-	-
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	1	1	1	1	1
Pole Cap	400W7	Ref ES400W7	1	1	1	1	1
ACDs	400A2	Ref ES400A2	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



PIN ANGLE WITH LIGHTNING PROTECTION (SINGLE POLE/SINGLE CROSSARM)

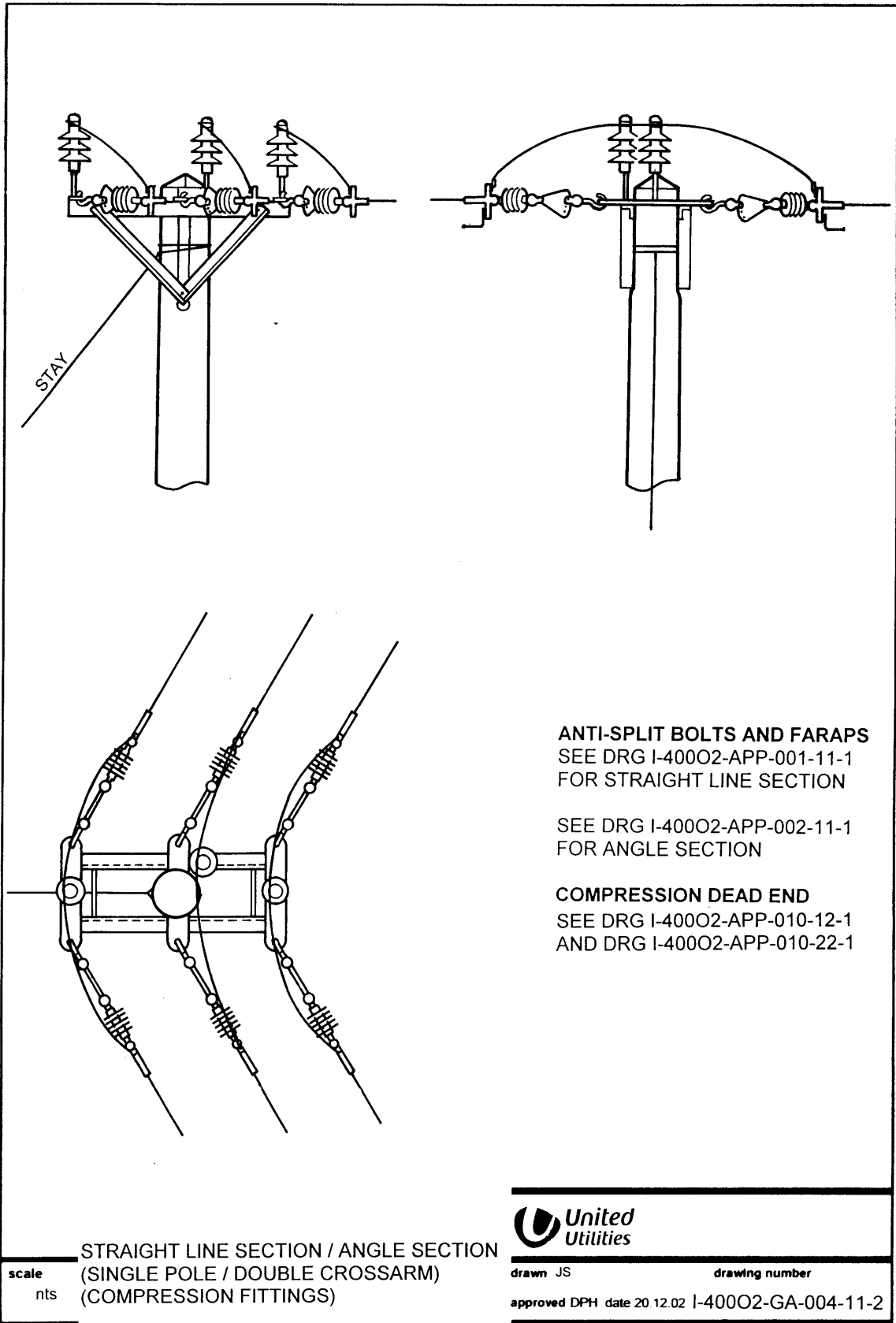
Drawing No: I-40002-GA-002B

Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500152					
11kV - 120mm ²	2	500153					
11kV - 185mm ²	3	500154					
33kV - 120mm ²	4	500155					
33kV - 185mm ²	5	500156					
Item	ES Ref	Item CC No	5	4	3	2	1
(Items Included in GA Kit Contents)							
Lightning Protection Device	400C29	121001	-	-	-	-	3
Lightning Protection Device	400C29	121018	-	-	-	3	-
Lightning Protection Device	400C29	121013	-	-	3	-	-
Lightning Protection Device	400C29	121014	-	3	-	-	-
Lightning Protection Device	400C29	121015	3	-	-	-	-
Bolt, M20, 300mm	400F1	107735	2	2	2	2	2
Bolt, M20, 60mm	400F1	107581	2	2	2	2	2
Bolt, M20, 750mm	400F1	107790	2	2	2	2	2
Coach Screw	400F1	126810	1	1	1	1	1
Washer, Square, Curved	400F1	139203	2	2	2	2	2
Washer, Square, Flat	400F1	139262	4	4	4	4	4
Helical Intermediate Tie	400H2	139100	-	-	-	-	3
Helical Intermediate Tie	400H2	139101	-	-	-	3	-
Helical Intermediate Tie	400H2	139102	-	-	3	-	-
Helical Intermediate Tie	400H2	139103	-	3	-	-	-
Helical Intermediate Tie	400H2	139104	3	-	-	-	-
Vibration Damper	400H2	139115	-	-	-	-	6
Insulator, Pin-Mounted	400I4	175270	-	-	3	3	3
Insulator, Pin-Mounted	400I4	175271	3	3	-	-	-
Danger Plate	400N1	195251	2	2	2	2	2
Gouge-mark Plate	400N1	995610	1	1	1	1	1
Crossarm	400S11	133200	1	1	1	1	1
Crossarm Strut	400S11	133353	2	2	2	2	2
FARAP	400S11	260820	1	1	1	1	1
Insulator Pin	400S11	128252	-	-	3	3	3
Insulator Pin	400S11	128104	3	3	-	-	-
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	1	1	1	1	1
Pole Cap	400W7	Ref ES400W7	1	1	1	1	1
ACDs	400A2	Ref ES400A2	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



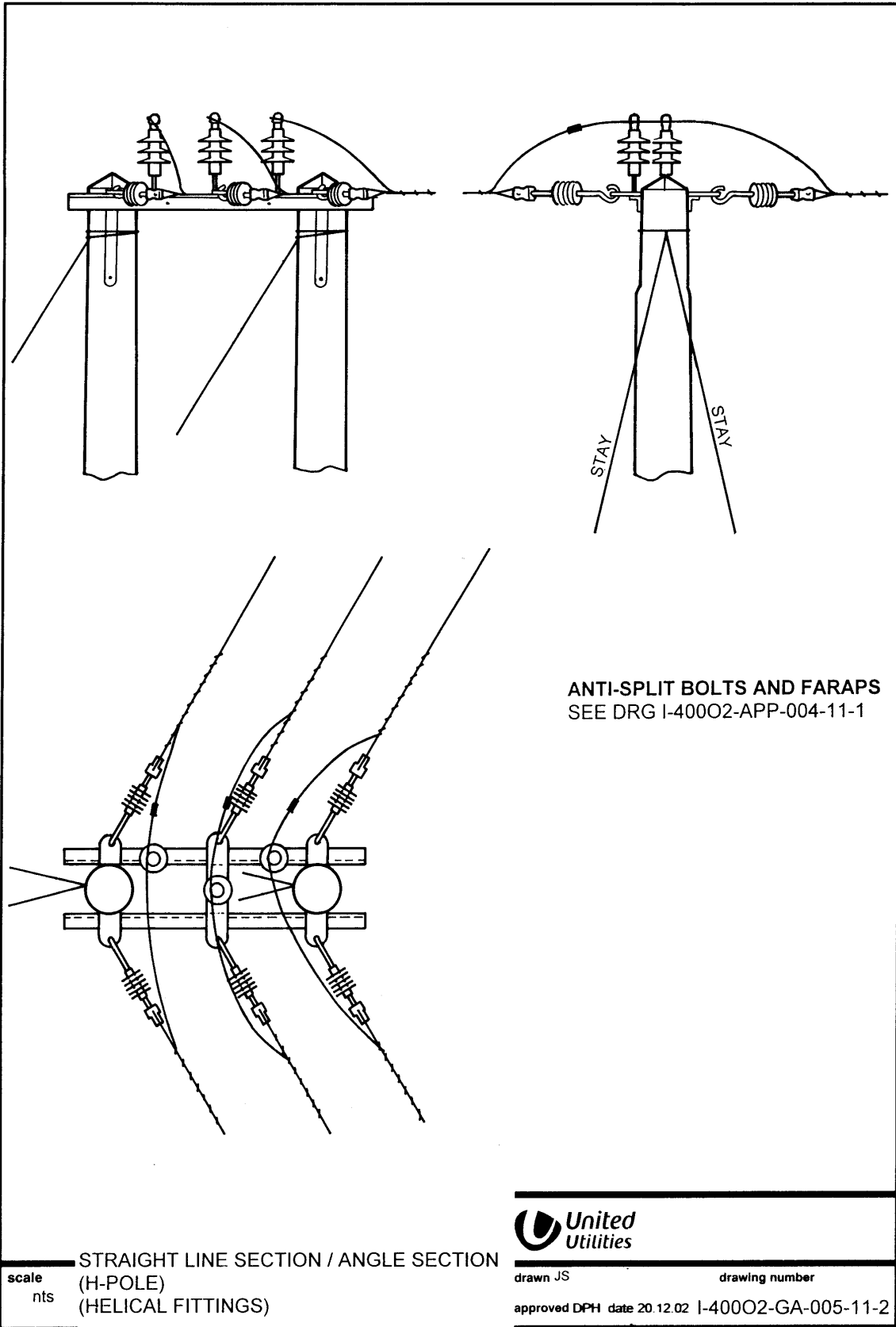
STRAIGHT LINE SECTION/ANGLE SECTION (SINGLE POLE/DOUBLE CROSSARM) - (HELICAL FITTINGS)

			Drawing No: I-40002-GA-003				
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500010					
11kV - 120mm ²	2	500011					
11kV - 185mm ²	3	500012					
33kV - 120mm ²	4	500013					
33kV - 185mm ²	5	500014					
Item	ES Ref	Item CC No	5	4	3	2	1
(Items Included in GA Kit Contents)							
Jumper Splice	400C29	127269	-	-	-	-	3
Jumper Splice	400C29	121021	-	3	-	3	-
Jumper Splice	400C29	124910	3	-	3	-	-
Bolt, M20, 300mm	400F1	107735	2	2	2	2	2
Bolt, M20, 60mm	400F1	107581	12	12	12	12	12
Bolt, M20, 750mm	400F1	107790	2	2	2	2	2
Coach Screw	400F1	126810	1	1	1	1	1
Washer, Round, Flat	400F1	993018	8	8	8	8	8
Washer, Square, Curved	400F1	139203	2	2	2	2	2
Washer, Square, Flat	400F1	139262	2	2	2	2	2
Helical Dead End	400H2	121437	-	-	-	-	6
Helical Dead End	400H2	121438	-	6	-	6	-
Helical Dead End	400H2	121439	6	-	6	-	-
Helical Intermediate Tie	400H2	139100	-	-	-	-	3
Helical Intermediate Tie	400H2	139101	-	-	-	3	-
Helical Intermediate Tie	400H2	139102	-	-	3	-	-
Helical Intermediate Tie	400H2	139103	-	3	-	-	-
Helical Intermediate Tie	400H2	139104	3	-	-	-	-
Vibration Damper	400H2	139115	-	-	-	-	6
Insulator Tension	400I4	125232	6	6	6	6	6
Insulator, Pin-Mounted	400I4	175270	-	-	3	3	3
Insulator, Pin-Mounted	400I4	175271	3	3	-	-	-
Danger Plate	400N1	195251	2	2	2	2	2
Gouge-mark Plate	400N1	995610	1	1	1	1	1
Crossarm	400S11	133200	2	2	2	2	2
Crossarm Strut	400S11	133353	4	4	4	4	4
FARAP	400S11	260820	1	1	1	1	1
Pilot Pin	400S11	128376	3	3	3	3	3
Section Strap	400S11	133345	2	2	2	2	2
Socket Thimble	400S11	132234	6	6	6	6	6
Terminal Strap	400S11	133361	2	2	2	2	2
Tie Rod	400S11	133388	2	2	2	2	2
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	1	1	1	1	1
Pole Cap	400W7	Ref ES400W7	1	1	1	1	1
ACDs	400A2	Ref ES400A2	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



STRAIGHT LINE SECTION/ANGLE SECTION (SINGLE POLE/DOUBLE CROSSARM) - (COMPRESSION FITTINGS)

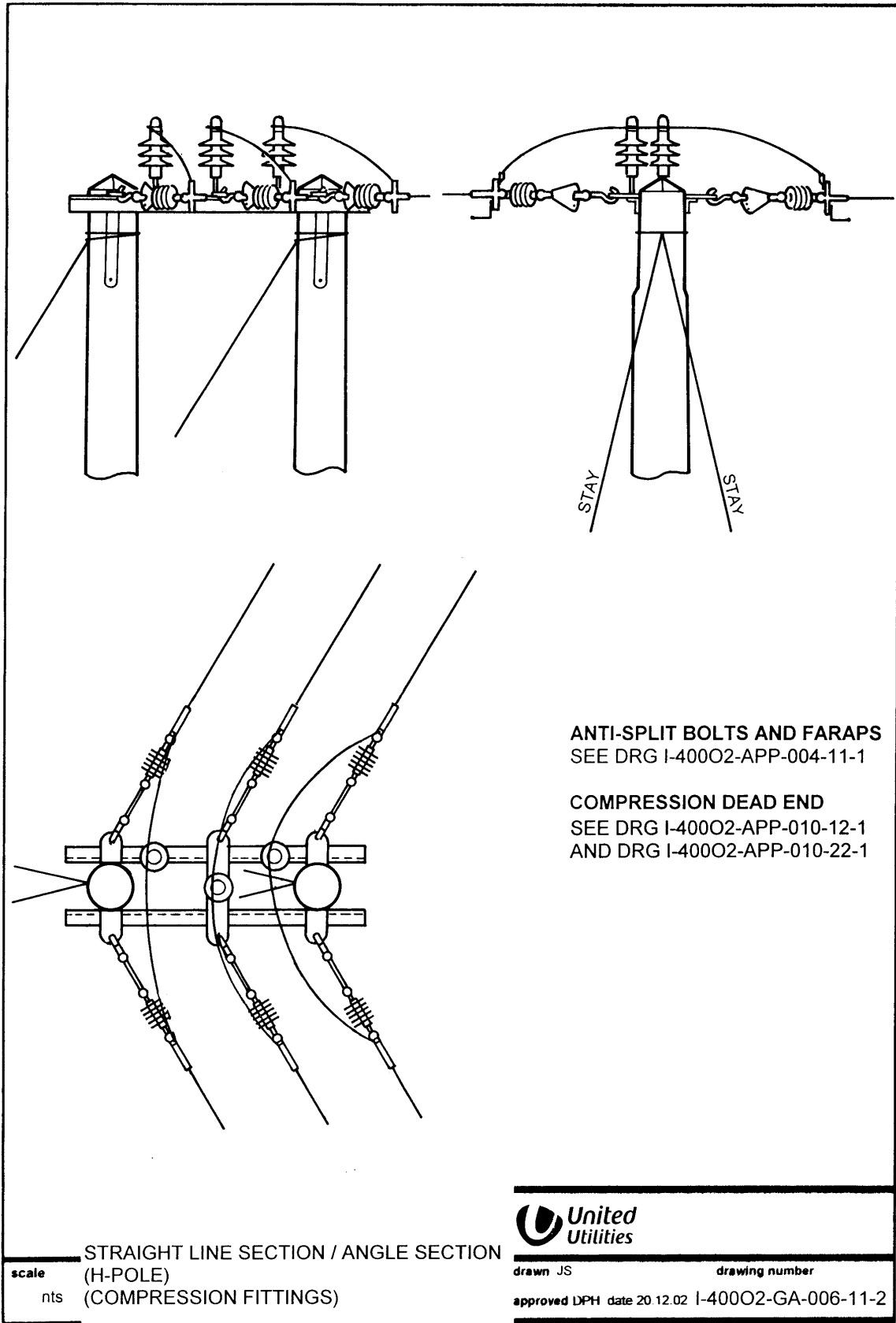
			Drawing No: I-40002-GA-004				
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500015					
11kV - 120mm ²	2	500016					
11kV - 185mm ²	3	500017					
33kV - 120mm ²	4	500018					
33kV - 185mm ²	5	500019					
Item	ES Ref	Item CC No	5	4	3	2	1
(Items Included in GA Kit Contents)							
Bimetal Arcing Horn	400C29	121004	6	6	6	6	6
Compression Dead End	400C29	121022	-	-	-	-	6
Compression Dead End	400C29	121023	-	6	-	6	-
Compression Dead End	400C29	121024	6	-	6	-	-
Backplate	400C29	121020	6	6	6	6	6
Lug, 2-hole, Straight	400C29	124886	-	-	-	-	6
Lug, 2-hole, Straight	400C29	124887	-	6	-	6	-
Lug, 2-hole, Straight	400C29	176200	6	-	6	-	-
Bolt, M20, 300mm	400F1	107735	2	2	2	2	2
Bolt, M20, 60mm	400F1	107581	12	12	12	12	12
Bolt, M20, 750mm	400F1	107790	2	2	2	2	2
Coach Screw	400F1	126810	1	1	1	1	1
Washer, Round, Flat	400F1	993018	8	8	8	8	8
Washer, Square, Curved	400F1	139203	2	2	2	2	2
Washer, Square, Flat	400F1	139262	2	2	2	2	2
Helical Intermediate Tie	400H2	139100	-	-	-	-	3
Helical Intermediate Tie	400H2	139101	-	-	-	3	-
Helical Intermediate Tie	400H2	139102	-	-	3	-	-
Helical Intermediate Tie	400H2	139103	-	3	-	-	-
Helical Intermediate Tie	400H2	139104	3	-	-	-	-
Vibration Damper	400H2	139115	-	-	-	-	6
Insulator Tension	400I4	125240	6	6	6	6	6
Insulator, Pin-Mounted	400I4	175270	-	-	3	3	3
Insulator, Pin-Mounted	400I4	175271	3	3	-	-	-
Danger Plate	400N1	195251	2	2	2	2	2
Gouge-mark Plate	400N1	995610	1	1	1	1	1
Ball End Hook	400S11	122297	6	6	6	6	6
Crossarm	400S11	133200	2	2	2	2	2
Crossarm Strut	400S11	133353	4	4	4	4	4
FARAP	400S11	260820	1	1	1	1	1
Pilot Pin	400S11	128376	3	3	3	3	3
Sag Link	400S11	144578	6	6	6	6	6
Section Strap	400S11	133345	2	2	2	2	2
Socket Clevis	400S11	122173	12	12	12	12	12
Terminal Strap	400S11	133361	2	2	2	2	2
Tie Rod	400S11	133388	2	2	2	2	2
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	1	1	1	1	1
Pole Cap	400W7	Ref ES400W7	1	1	1	1	1
ACDs	400A2	Ref ES400A2	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



STRAIGHT LINE SECTION/ANGLE SECTION (H-POLE) - (HELICAL FITTINGS)

Drawing No: I-40002-GA-005

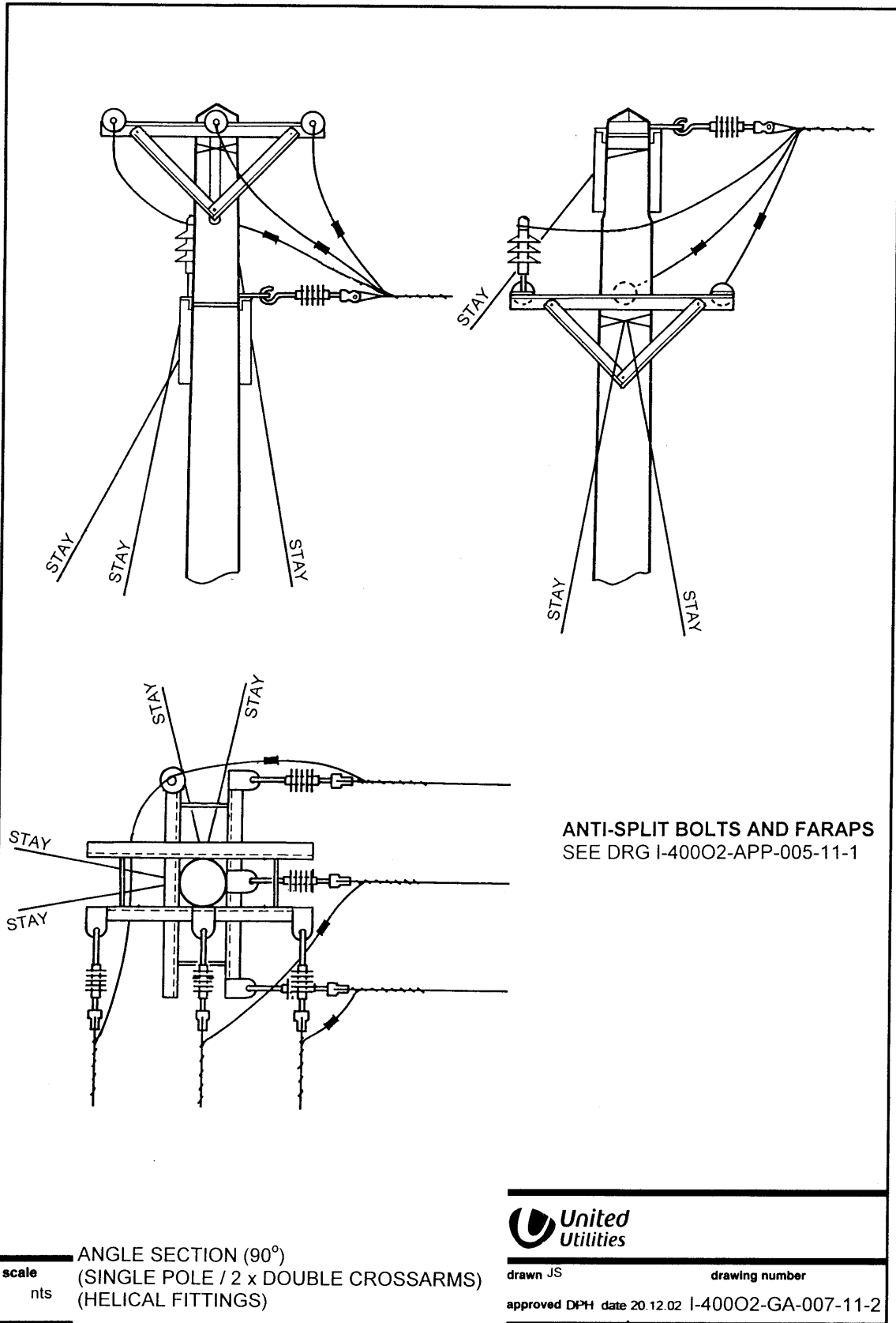
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500020					
11kV - 120mm ²	2	500021					
11kV - 185mm ²	3	500022					
33kV - 120mm ²	4	500023					
33kV - 185mm ²	5	500024					
Item	ES Ref	Item CC No	5	4	3	2	1
(Items Included in GA Kit Contents)							
Jumper Splice	400C29	127269	-	-	-	-	3
Jumper Splice	400C29	121021	-	3	-	3	-
Jumper Splice	400C29	124910	3	-	3	-	-
Bolt, M20, 300mm	400F1	107735	2	2	2	2	2
Bolt, M20, 60mm	400F1	107581	10	10	10	10	10
Coach Screw	400F1	126810	2	2	2	2	2
Washer, Round, Flat	400F1	993018	4	4	4	4	4
Helical Dead End	400H2	121437	-	-	-	-	6
Helical Dead End	400H2	121438	-	6	-	6	-
Helical Dead End	400H2	121439	6	-	6	-	-
Helical Intermediate Tie	400H2	139100	-	-	-	-	3
Helical Intermediate Tie	400H2	139101	-	-	-	3	-
Helical Intermediate Tie	400H2	139102	-	-	3	-	-
Helical Intermediate Tie	400H2	139103	-	3	-	-	-
Helical Intermediate Tie	400H2	139104	3	-	-	-	-
Vibration Damper	400H2	139115	-	-	-	-	6
Insulator Tension	400I4	125232	6	6	6	6	6
Insulator, Pin-Mounted	400I4	175270	-	-	3	3	3
Insulator, Pin-Mounted	400I4	175271	3	3	-	-	-
Danger Plate	400N1	195251	4	4	4	4	4
Gouge-mark Plate	400N1	995610	2	2	2	2	2
Foundation Fasteners Kit	400O2	133540	1	1	1	1	1
Crossarm	400S11	133202	2	2	2	2	2
FARAP	400S11	260820	2	2	2	2	2
Pilot Pin	400S11	128376	3	3	3	3	3
Section Strap	400S11	133345	1	1	1	1	1
Socket Thimble	400S11	132234	6	6	6	6	6
Terminal Strap	400S11	133361	4	4	4	4	4
Tie Rod	400S11	133388	1	1	1	1	1
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	2	2	2	2	2
Pole Cap	400W7	Ref ES400W7	2	2	2	2	2
ACDs	400A2	Ref ES400A2	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



STRAIGHT LINE SECTION/ANGLE SECTION (H-POLE) (COMPRESSION FITTINGS)

Drawing No: I-40002-GA-006

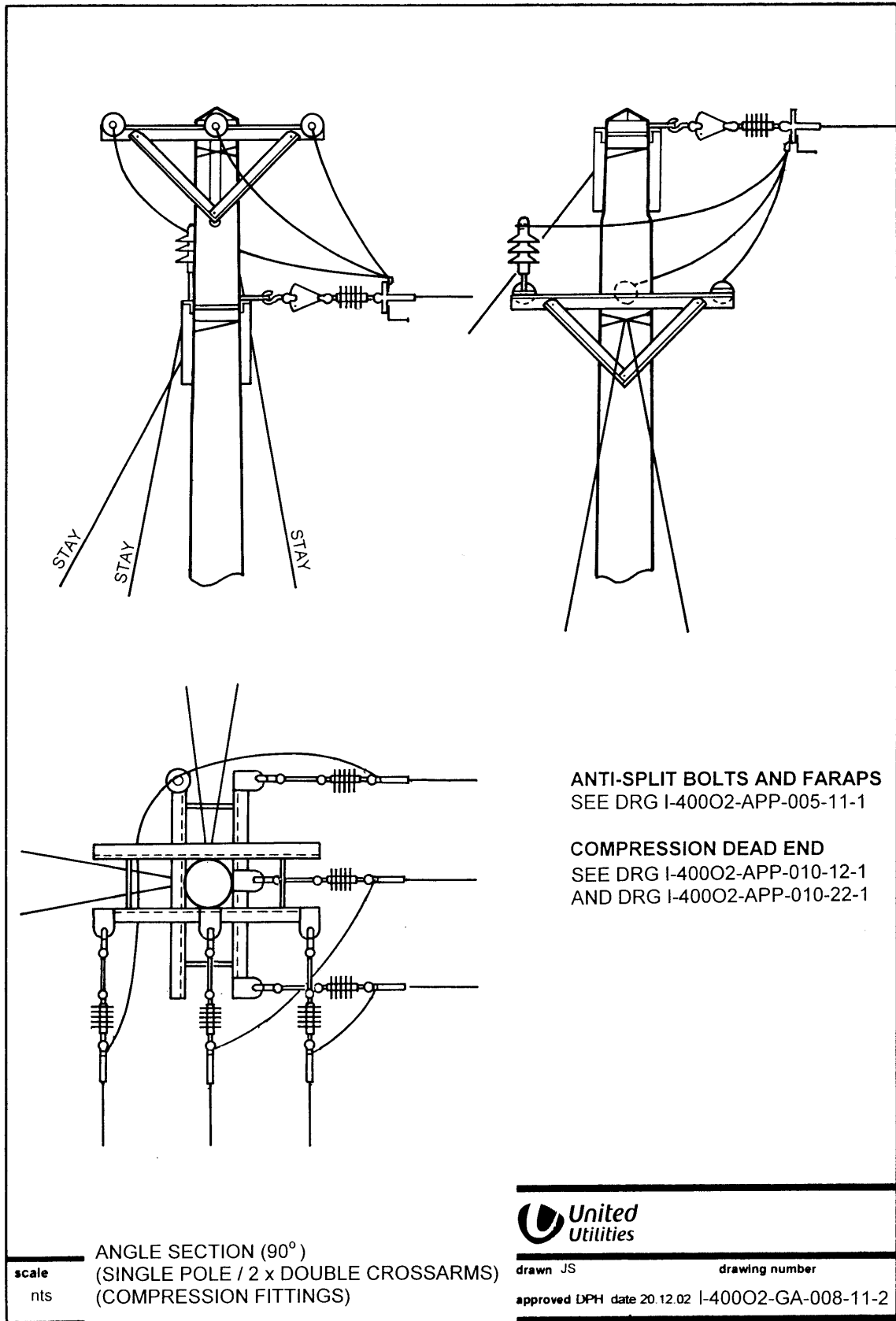
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500025					
11kV - 120mm ²	2	500026					
11kV - 185mm ²	3	500027					
33kV - 120mm ²	4	500028					
33kV - 185mm ²	5	500029					
Item	ES Ref	Item CC No	5	4	3	2	1
(Items Included in GA Kit Contents)							
Compression Dead End	400C29	121022	-	-	-	-	6
Compression Dead End	400C29	121023	-	6	-	6	-
Compression Dead End	400C29	121024	6	-	6	-	-
Lug, 2-hole, Straight	400C29	124886	-	-	-	-	6
Lug, 2-hole, Straight	400C29	124887	-	6	-	6	-
Lug, 2-hole, Straight	400C29	176200	6	-	6	-	-
Bolt, M20, 300mm	400F1	107735	2	2	2	2	2
Bolt, M20, 60mm	400F1	107581	10	10	10	10	10
Coach Screw	400F1	126810	2	2	2	2	2
Washer, Round, Flat	400F1	993018	4	4	4	4	4
Helical Intermediate Tie	400H2	139100	-	-	-	-	3
Helical Intermediate Tie	400H2	139101	-	-	-	3	-
Helical Intermediate Tie	400H2	139102	-	-	3	-	-
Helical Intermediate Tie	400H2	139103	-	3	-	-	-
Helical Intermediate Tie	400H2	139104	3	-	-	-	-
Vibration Damper	400H2	139115	-	-	-	-	6
Insulator Tension	400I4	125240	6	6	6	6	6
Insulator, Pin-Mounted	400I4	175270	-	-	3	3	3
Insulator, Pin-Mounted	400I4	175271	3	3	-	-	-
Danger Plate	400N1	195251	4	4	4	4	4
Gouge-mark Plate	400N1	995610	2	2	2	2	2
Foundation Fasteners Kit	400O2	133540	1	1	1	1	1
Ball End Hook	400S11	122297	6	6	6	6	6
Crossarm	400S11	133202	2	2	2	2	2
FARAP	400S11	260820	2	2	2	2	2
Pilot Pin	400S11	S11	3	3	3	3	3
Sag Link	400S11	144578	6	6	6	6	6
Section Strap	400S11	133345	1	1	1	1	1
Socket Clevis	400S11	122173	12	12	12	12	12
Terminal Strap	400S11	133361	4	4	4	4	4
Tie Rod	400S11	133388	1	1	1	1	1
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	2	2	2	2	2
Pole Cap	400W7	Ref ES400W7	2	2	2	2	2
ACDs	400A2	Ref ES400A2	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



ANGLE SECTION (90°) (SINGLE POLE/2 X DOUBLE CROSSARMS) - (HELICAL FITTINGS)

Drawing No: I-40002-GA-007

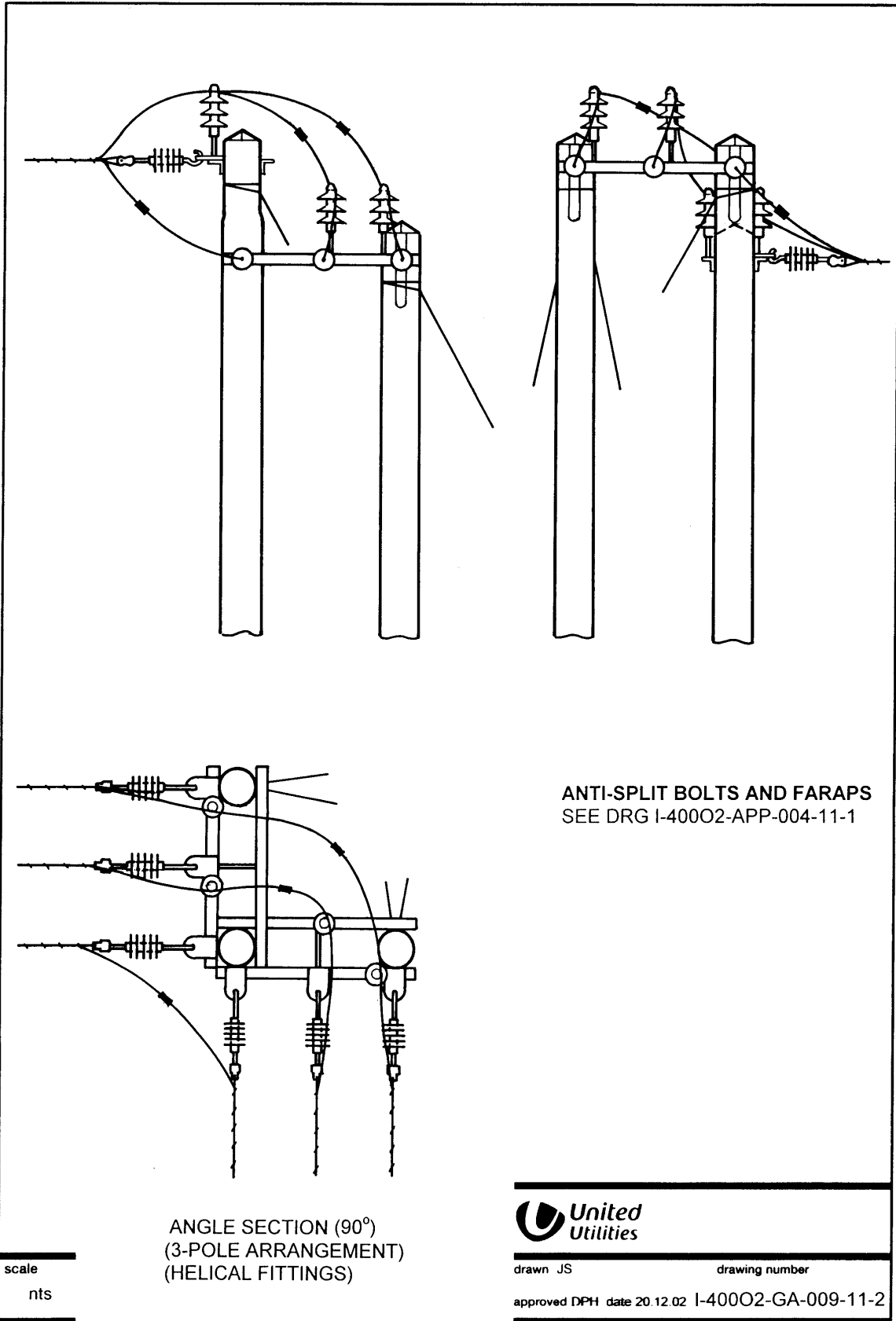
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500030					
11kV - 120mm ²	2	500031					
11kV - 185mm ²	3	-					
33kV - 120mm ²	4	-					
33kV - 185mm ²	5	-					
Item	ES Ref	Item CC No	-	-	-	2	1
(Items Included in GA Kit Contents)							
Jumper Splice	400C29	127269	-	-	-	-	3
Jumper Splice	400C29	121021	-	-	-	3	-
Bolt, M20, 300mm	400F1	107735	-	-	-	4	4
Bolt, M20, 60mm	400F1	107581	-	-	-	20	20
Bolt, M20, 750mm	400F1	107790	-	-	-	2	2
Coach Screw	400F1	126810	-	-	-	2	2
Washer, Round, Flat	400F1	993018	-	-	-	16	16
Washer, Square, Curved	400F1	139203	-	-	-	2	2
Washer, Square, Flat	400F1	139262	-	-	-	2	2
Helical Dead End	400H2	121437	-	-	-	-	6
Helical Dead End	400H2	121438	-	-	-	6	-
Helical Intermediate Tie	400H2	139100	-	-	-	-	1
Helical Intermediate Tie	400H2	139101	-	-	-	1	-
Vibration Damper	400H2	139115	-	-	-	-	6
Insulator Tension	400I4	125232	-	-	-	6	6
Insulator, Pin-Mounted	400I4	175270	-	-	-	1	1
Danger Plate	400N1	195251	-	-	-	2	2
Gouge-mark Plate	400N1	995610	1	1	1	1	1
Crossarm	400S11	133201	-	-	-	4	4
Crossarm Strut	400S11	133353	-	-	-	8	8
FARAP	400S11	260820	-	-	-	2	2
Pilot Pin	400S11	128376	-	-	-	1	1
Socket Thimble	400S11	132234	-	-	-	6	6
Terminal Strap	400S11	133361	-	-	-	6	6
Tie Rod	400S11	133388	-	-	-	4	4
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	-	-	-	1	1
Pole Cap	400W7	Ref ES400W7	-	-	-	1	1
ACDs	400A2	Ref ES400A2	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



ANGLE SECTION (90°) (SINGLE POLE/2 X DOUBLE CROSSARMS) - (COMPRESSION FITTINGS)

Drawing No: I-40002-GA-008

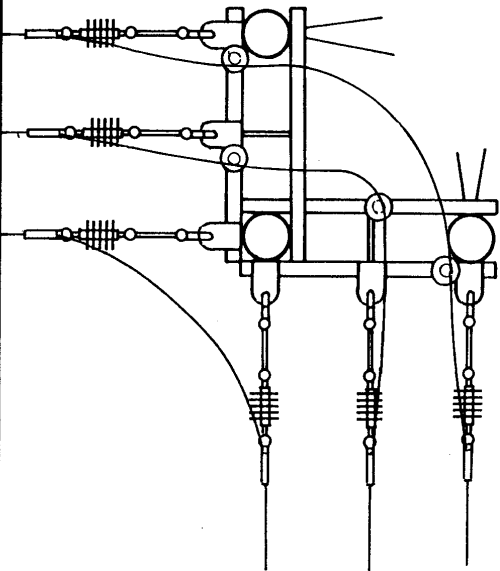
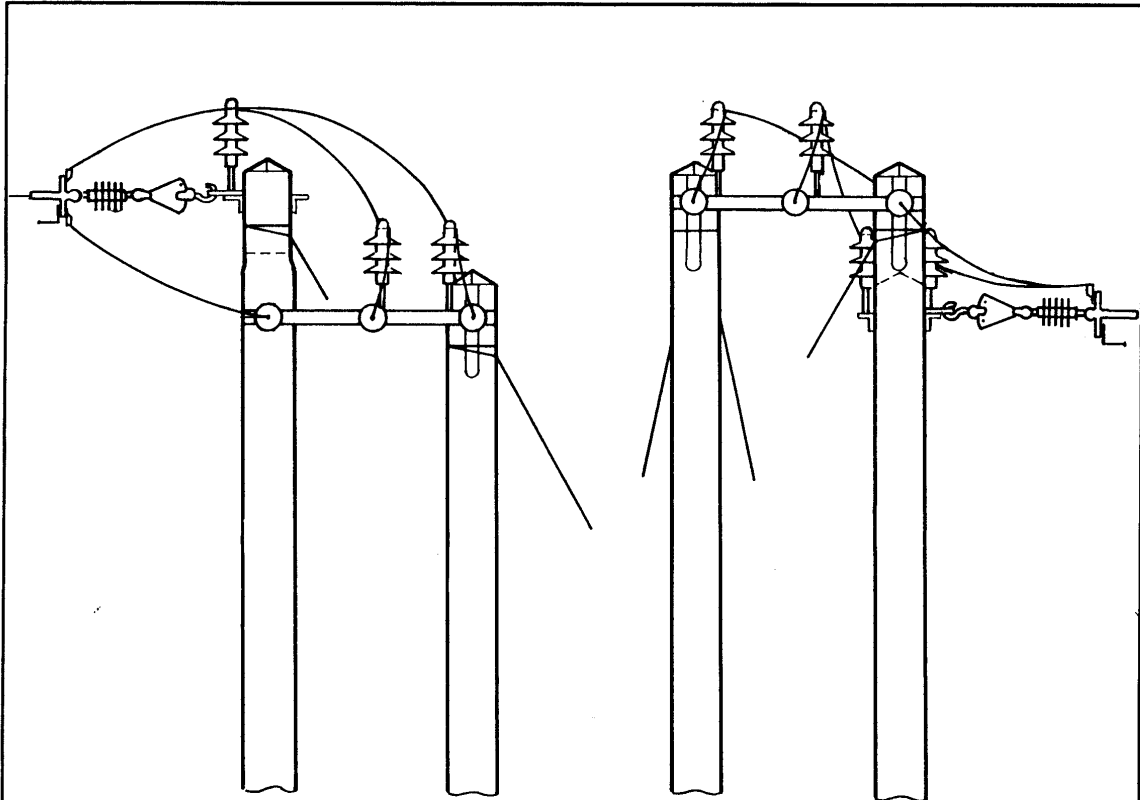
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500032					
11kV - 120mm ²	2	500033					
11kV - 185mm ²	3	-					
33kV - 120mm ²	4	-					
33kV - 185mm ²	5	-					
Item	ES Ref	Item CC No	-	-	-	2	1
(Items Included in GA Kit Contents)							
Bimetal Arcing Horn	400C29	121004	-	-	-	6	6
Compression Dead End	400C29	121022	-	-	-	-	3
Compression Dead End	400C29	121023	-	-	-	3	-
Backplate	400C29	121020	-	-	-	3	3
Lug, 2-hole, Straight	400C29	124886	-	-	-	-	6
Lug, 2-hole, Straight	400C29	124887	-	-	-	6	-
Bolt, M20, 300mm	400F1	107735	-	-	-	4	4
Bolt, M20, 60mm	400F1	107581	-	-	-	20	20
Bolt, M20, 750mm	400F1	107790	-	-	-	2	2
Coach Screw	400F1	126810	-	-	-	2	2
Washer, Round, Flat	400F1	993018	-	-	-	16	16
Washer, Square, Curved	400F1	139203	-	-	-	2	2
Washer, Square, Flat	400F1	139262	-	-	-	2	2
Helical Intermediate Tie	400H2	139100	-	-	-	-	1
Helical Intermediate Tie	400H2	139101	-	-	-	1	-
Vibration Damper	400H2	139115	-	-	-	-	6
Insulator Tension	400I4	125240	-	-	-	6	6
Insulator, Pin-Mounted	400I4	175270	-	-	-	1	1
Danger Plate	400N1	195251	-	-	-	2	2
Gouge-mark Plate	400N1	995610	1	1	1	1	1
Ball End Hook	400S11	122297	-	-	-	6	6
Crossarm	400S11	133201	-	-	-	4	4
Crossarm Strut	400S11	133353	-	-	-	8	8
FARAP	400S11	260820	-	-	-	2	2
Pilot Pin	400S11	128376	-	-	-	1	1
Sag Link	400S11	144578	-	-	-	6	6
Socket Clevis	400S11	122173	-	-	-	12	12
Terminal Strap	400S11	133361	-	-	-	6	6
Tie Rod	400S11	133388	-	-	-	4	4
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	-	-	-	1	1
Pole Cap	400W7	Ref ES400W7	-	-	-	1	1
ACDs	400A2	Ref ES400A2	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



ANGLE SECTION (90°) (3-POLE ARRANGEMENT) (HELICAL FITTINGS)

Drawing No: I-40002-GA-009

Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500034					
11kV - 120mm ²	2	500035					
11kV - 185mm ²	3	500036					
33kV - 120mm ²	4	500037					
33kV - 185mm ²	5	500038					
Item	ES Ref	Item CC No	5	4	3	2	1
(Items Included in GA Kit Contents)							
Jumper Splice	400C29	127269	-	-	-	-	3
Jumper Splice	400C29	121021	-	3	-	3	-
Jumper Splice	400C29	124910	3	-	3	-	-
Bolt, M20, 300mm	400F1	107735	7	7	7	7	7
Bolt, M20, 60mm	400F1	107581	12	12	12	12	12
Coach Screw	400F1	126810	4	4	4	4	4
Washer, Round, Flat	400F1	993018	8	8	8	8	8
Washer, Square, Curved	400F1	139203	8	8	8	8	8
Helical Dead End	400H2	121437	-	-	-	-	6
Helical Dead End	400H2	121438	-	6	-	6	-
Helical Dead End	400H2	121439	6	-	6	-	-
Helical Intermediate Tie	400H2	139100	-	-	-	-	4
Helical Intermediate Tie	400H2	139101	-	-	-	4	-
Helical Intermediate Tie	400H2	139102	-	-	4	-	-
Helical Intermediate Tie	400H2	139103	-	4	-	-	-
Helical Intermediate Tie	400H2	139104	4	-	-	-	-
Vibration Damper	400H2	139115	-	-	-	-	6
Insulator Tension	400I4	125232	6	6	6	6	6
Insulator, Pin-Mounted	400I4	175270	-	-	4	4	4
Insulator, Pin-Mounted	400I4	175271	4	4	-	-	-
Danger Plate	400N1	195251	4	4	4	4	4
Gouge-mark Plate	400N1	995610	3	3	3	3	3
Foundation Fasteners Kit	400O2	133540	2	2	2	2	2
Crossarm	400S11	133203	4	4	4	4	4
FARAP	400S11	260820	4	4	4	4	4
Pilot Pin	400S11	128376	4	4	4	4	4
Socket Thimble	400S11	132234	6	6	6	6	6
Terminal Strap	400S11	133361	6	6	6	6	6
Tie Rod	400S11	133388	2	2	2	2	2
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	3	3	3	3	3
Pole Cap	400W7	Ref ES400W7	3	3	3	3	3
ACDs	400A2	Ref ES400A2	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



ANTI-SPLIT BOLTS AND FARAPS
SEE DRG I-40002-APP-004-11-1

COMPRESSION DEAD END
SEE DRG I-40002-APP-010-12-1
AND DRG I-40002-APP-010-22-1

ANGLE SECTION (90°)
(3-POLE ARRANGEMENT)
(COMPRESSION FITTINGS)

scale
nts



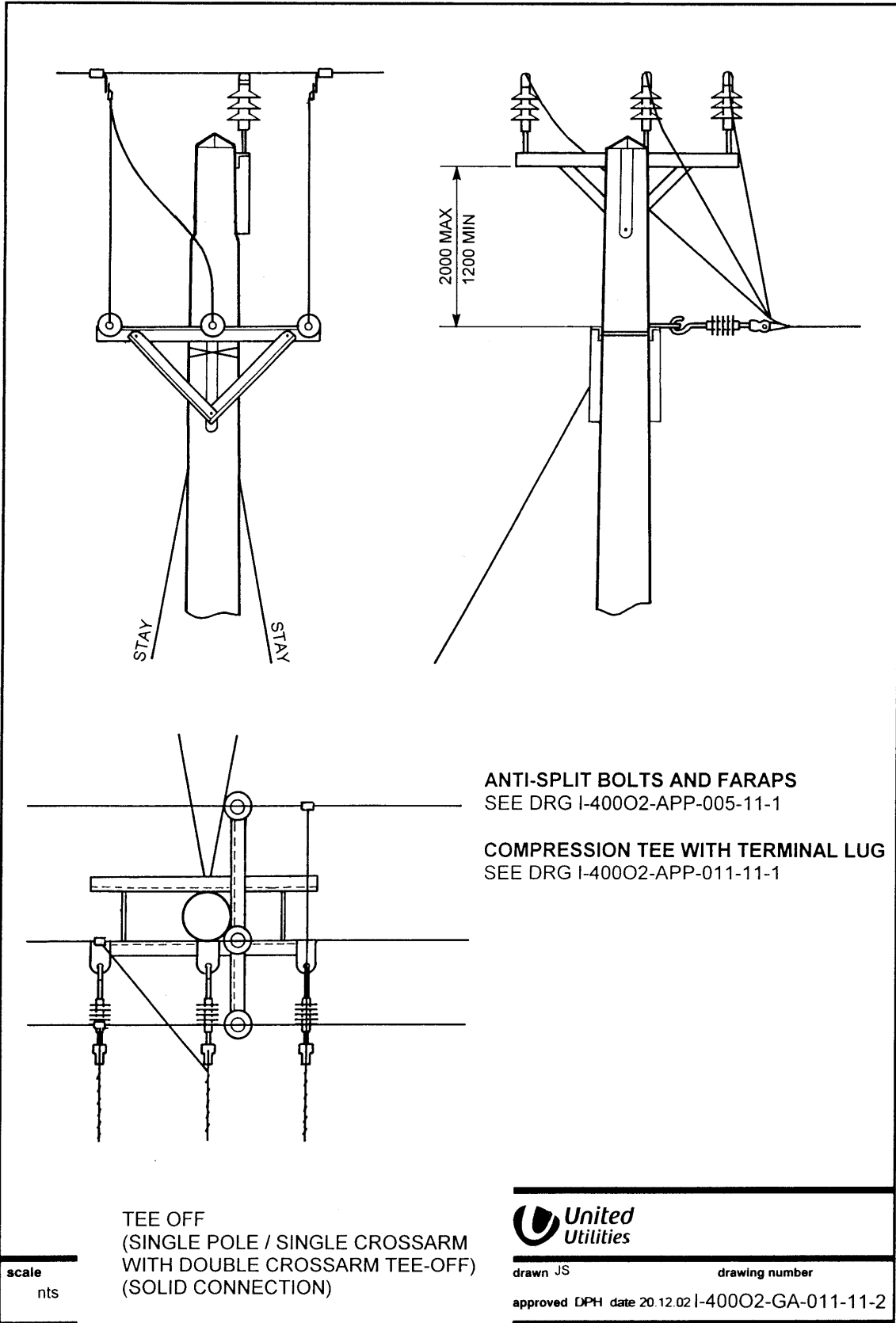
drawn JS

drawing number

approved DPH date 20.12.02 I-40002-GA-010-11-2

ANGLE SECTION (90°) (3-POLE ARRANGEMENT) (COMPRESSION FITTINGS)

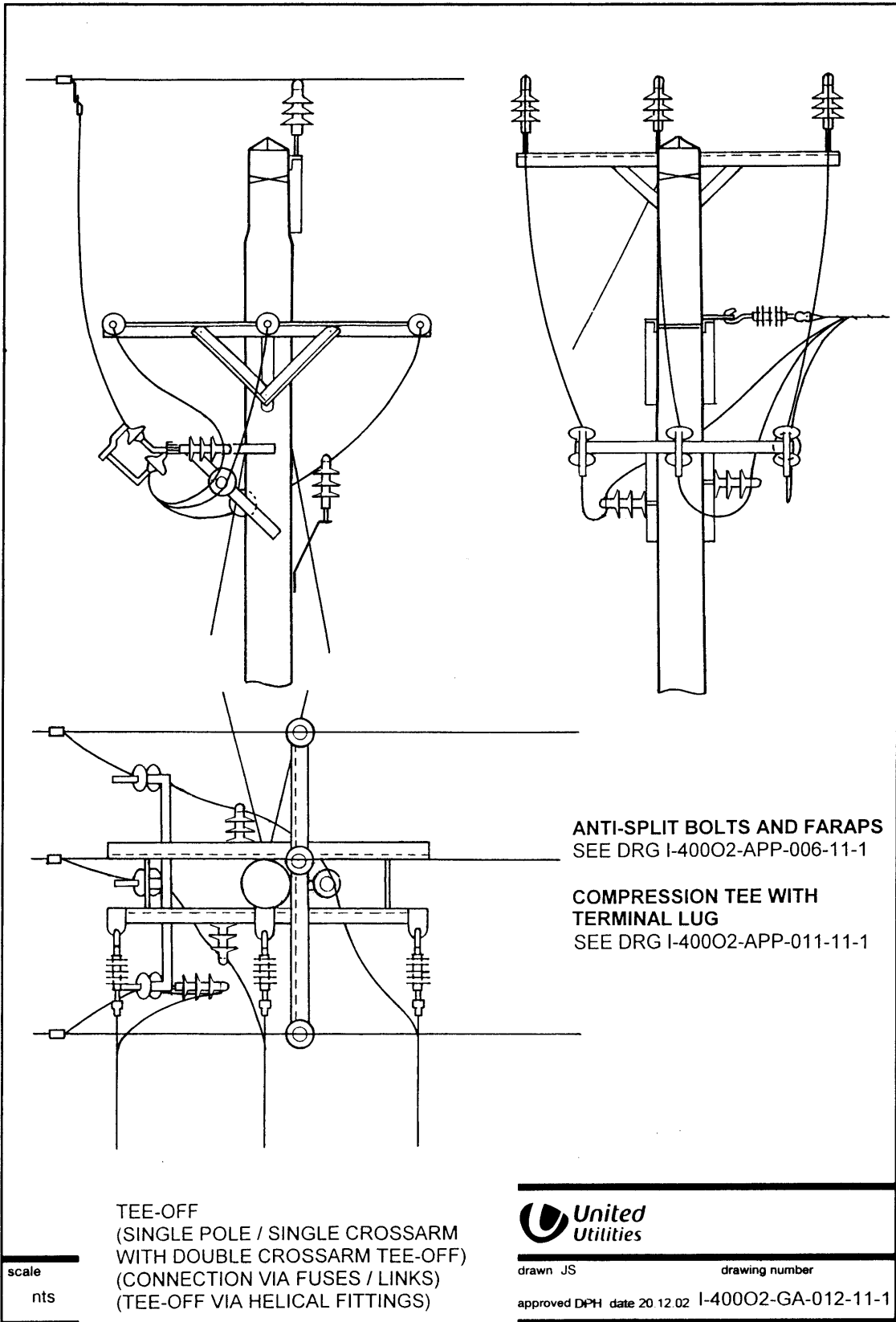
			Drawing No: I-40002-GA-010				
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500039					
11kV - 120mm ²	2	500040					
11kV - 185mm ²	3	500041					
33kV - 120mm ²	4	500042					
33kV - 185mm ²	5	500043					
Item	ES Ref	Item CC No	5	4	3	2	1
(Items Included in GA Kit Contents)							
Bimetal Arcing Horn	400C29	121004	6	6	6	6	6
Compression Dead End	400C29	121022	-	-	-	-	6
Compression Dead End	400C29	121023	-	6	-	6	-
Compression Dead End	400C29	121024	6	-	6	-	-
Backplate	400C29	121020	5	5	5	5	5
Lug, 2-hole, Straight	400C29	124886	-	-	-	-	6
Lug, 2-hole, Straight	400C29	124887	-	6	-	6	-
Lug, 2-hole, Straight	400C29	176200	6	-	6	-	-
Bolt, M20, 300mm	400F1	107735	7	7	7	7	7
Bolt, M20, 60mm	400F1	107581	12	12	12	12	12
Coach Screw	400F1	126810	4	4	4	4	4
Washer, Round, Flat	400F1	993018	8	8	8	8	8
Washer, Square, Curved	400F1	139203	8	8	8	8	8
Helical Intermediate Tie	400H2	139100	-	-	-	-	4
Helical Intermediate Tie	400H2	139101	-	-	-	4	-
Helical Intermediate Tie	400H2	139102	-	-	4	-	-
Helical Intermediate Tie	400H2	139103	-	4	-	-	-
Helical Intermediate Tie	400H2	139104	4	-	-	-	-
Vibration Damper	400H2	139115	-	-	-	-	6
Insulator Tension	400I4	125240	6	6	6	6	6
Insulator, Pin-Mounted	400I4	175270	-	-	4	4	4
Insulator, Pin-Mounted	400I4	175271	4	4	-	-	-
Danger Plate	400N1	195251	4	4	4	4	4
Gouge-mark Plate	400N1	995610	3	3	3	3	3
Foundation Fasteners Kit	400O2	133540	2	2	2	2	2
Ball End Hook	400S11	122297	6	6	6	6	6
Crossarm	400S11	133203	4	4	4	4	4
FARAP	400S11	260820	4	4	4	4	4
Pilot Pin	400S11	128376	4	4	4	4	4
Sag Link	400S11	144578	6	6	6	6	6
Socket Clevis	400S11	122173	12	12	12	12	12
Terminal Strap	400S11	133361	6	6	6	6	6
Tie Rod	400S11	133388	2	2	2	2	2
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	3	3	3	3	3
Pole Cap	400W7	Ref ES400W7	3	3	3	3	3
ACDs	400A2	Ref ES400A2	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



TEE OFF (SINGLE POLE/SINGLE CROSSARM WITH DOUBLE CROSSARM TEE OFF) (SOLID CONNECTION)

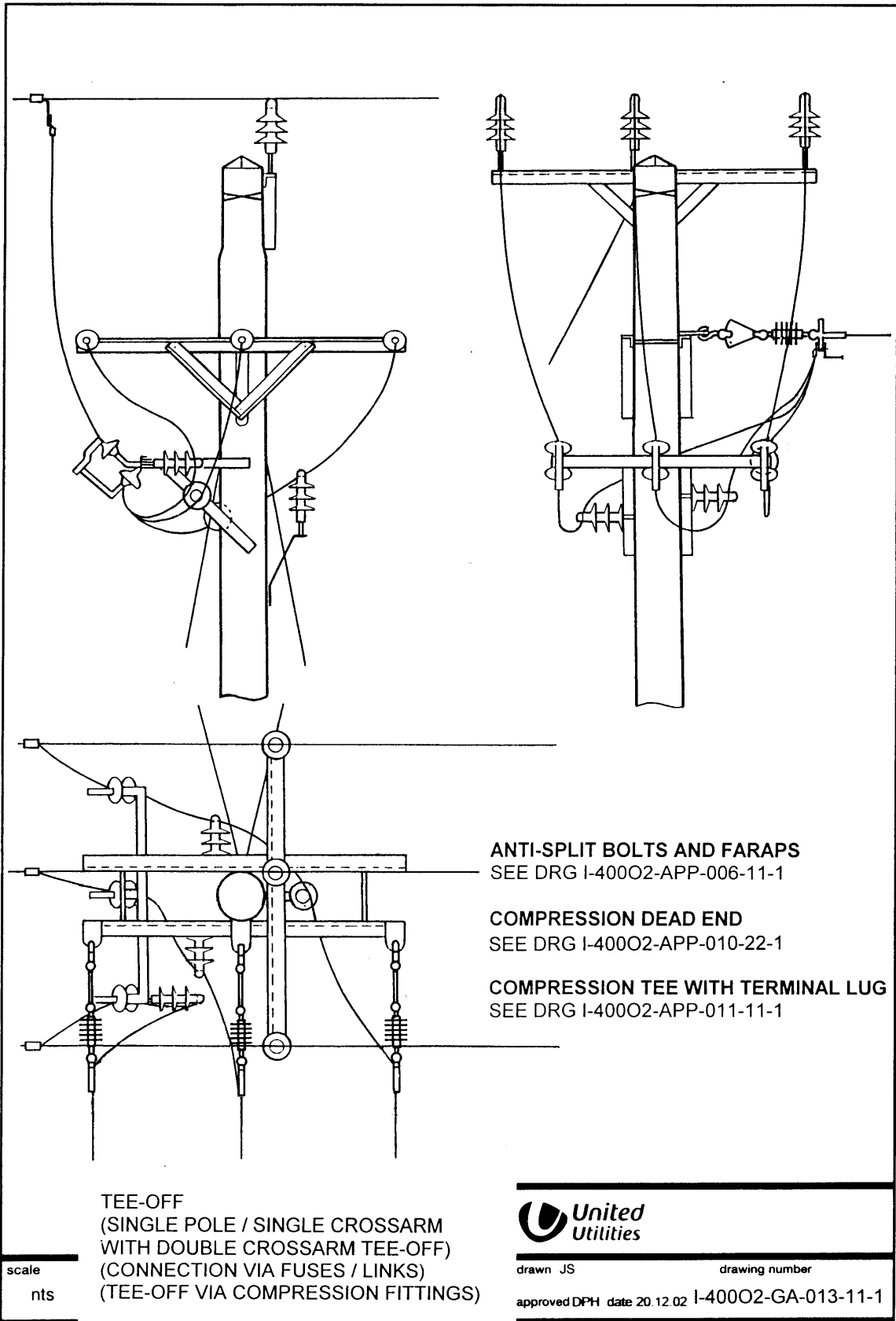
Drawing No: I-40002-GA-011

Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500044					
11kV - 120mm ²	2	500045					
11kV - 185mm ²	3	500046					
33kV - 120mm ²	4	500047					
33kV - 185mm ²	5	500048					
Item	ES Ref	Item CC No	5	4	3	2	1
(Items Included in GA Kit Contents)							
Backplate	400C29	121020	3	3	3	3	3
IPCC	400C29	121006	-	-	-	-	3
IPCC	400C29	121003	-	3	-	3	-
IPCC	400C29	121008	3	-	3	-	-
Lug 2-hole Straight	400C29	124886	-	-	-	-	3
Lug 2-hole Straight	400C29	124887	-	3	-	3	-
Lug 2-hole Straight	400C29	176200	3	-	3	-	-
Bolt, M20, 300mm	400F1	107735	5	5	5	5	5
Bolt, M20, 60mm	400F1	107581	12	12	12	12	12
Bolt, M20, 750mm	400F1	107790	2	2	2	2	2
Coach Screw	400F1	126810	2	2	2	2	2
Washer, Round, Flat	400F1	993018	8	8	8	8	8
Washer, Square, Curved	400F1	139203	4	4	4	4	4
Washer, Square, Flat	400F1	139262	2	2	2	2	2
Helical Dead End	400H2	121437	-	-	-	-	3
Helical Dead End	400H2	121438	-	3	-	3	-
Helical Dead End	400H2	121439	3	-	3	-	-
Helical Intermediate Tie	400H2	139100	-	-	-	-	3
Helical Intermediate Tie	400H2	139101	-	-	-	3	-
Helical Intermediate Tie	400H2	139102	-	-	3	-	-
Helical Intermediate Tie	400H2	139103	-	3	-	-	-
Helical Intermediate Tie	400H2	139104	3	-	-	-	-
Vibration Damper	400H2	139115	-	-	-	-	9
Insulator Tension	400I4	125232	3	3	3	3	3
Insulator, Pin-Mounted	400I4	175270	-	-	3	3	3
Insulator, Pin-Mounted	400I4	175271	3	3	-	-	-
Danger Plate	400N1	195251	2	2	2	2	2
Gouge-mark Plate	400N1	995610	1	1	1	1	1
Crossarm	400S11	133200	1	1	1	1	1
Crossarm	400S11	133201	2	2	2	2	2
Crossarm Strut	400S11	133353	6	6	6	6	6
FARAP	400S11	260820	2	2	2	2	2
Insulator Pin	400S11	128252	-	-	3	3	3
Insulator Pin	400S11	128104	3	3	-	-	-
Socket Thimble	400S11	132234	3	3	3	3	3
Terminal Strap	400S11	133361	3	3	3	3	3
Tie Rod	400S11	133388	2	2	2	2	2
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	1	1	1	1	1
Pole Cap	400W7	Ref ES400W7	1	1	1	1	1
ACDs	400A2	Ref ES400A2	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



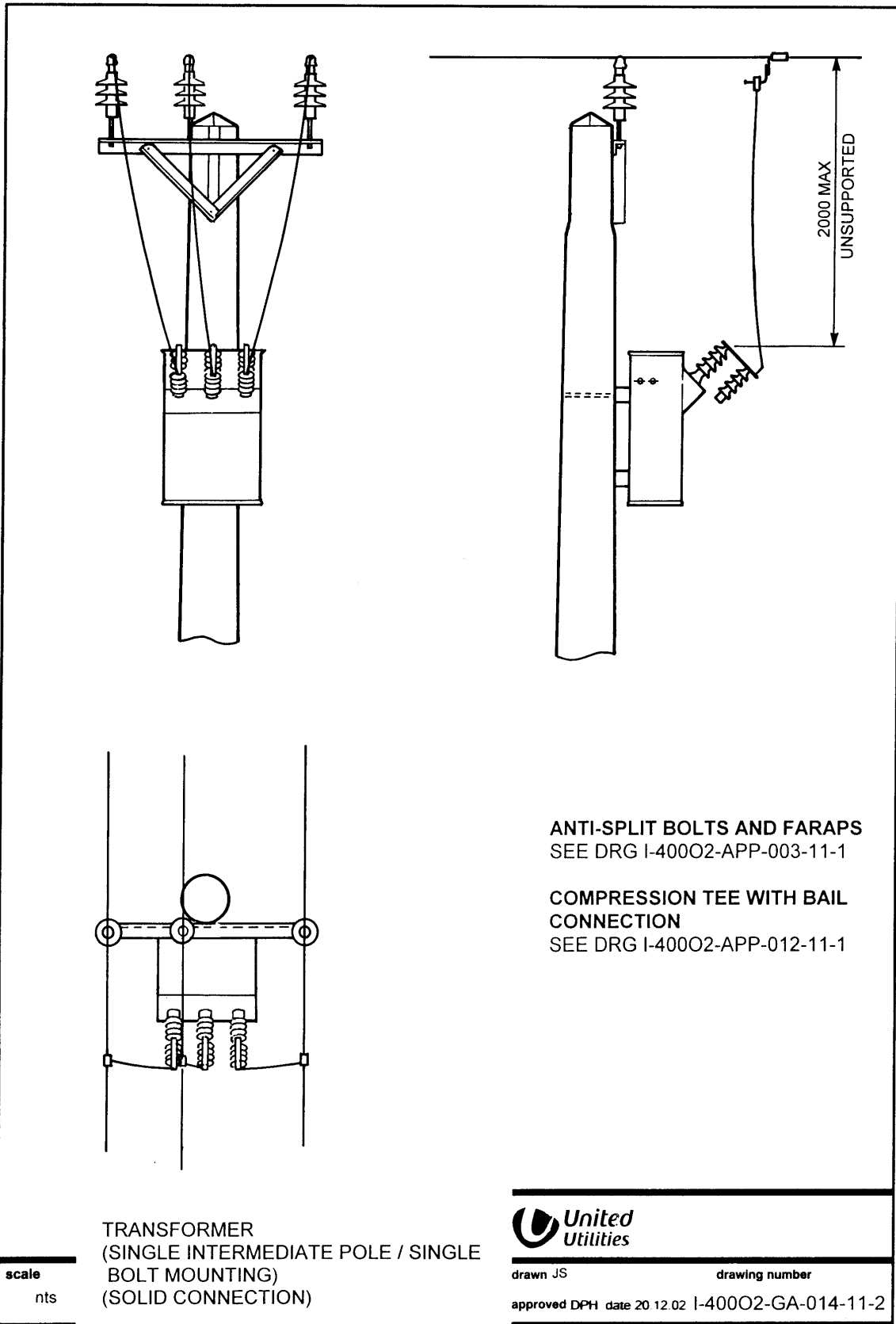
**TEE OFF (SINGLE POLE/SINGLE CROSSARM WITH DOUBLE CROSSARM TEE OFF)
(CONNECTION VIA FUSES/LINKS) (TEE OFF VIA HELICAL FITTINGS)**

			Drawing No: I-40002-GA-012				
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500049					
11kV - 120mm ²	2	500050					
11kV - 185mm ²	3	500051					
33kV - 120mm ²	4	-					
33kV - 185mm ²	5	-					
Item	ES Ref	Item CC No	-	-	3	2	1
(Items Included in GA Kit Contents)							
Backplate	400C29	121020	-	-	3	3	3
IPCC	400C29	121006	-	-	-	-	3
IPCC	400C29	121003	-	-	-	3	-
IPCC	400C29	121008	-	-	3	-	-
Lug, 2-hole, Straight	400C29	124886	-	-	-	-	6
Lug, 2-hole, Straight	400C29	124887	-	-	-	6	-
Lug, 2-hole, Straight	400C29	176200	-	-	6	-	-
Bolt, M20, 300mm	400F1	107735	-	-	7	7	7
Bolt, M20, 60mm	400F1	107581	-	-	12	12	12
Bolt, M20, 750mm	400F1	107790	-	-	2	2	2
Coach Screw	400F1	126810	-	-	2	2	2
Washer, Round, Flat	400F1	993018	-	-	8	8	8
Washer, Square, Curved	400F1	139203	-	-	4	4	4
Washer, Square, Flat	400F1	139262	-	-	4	4	4
Helical Dead End	400H2	121437	-	-	-	-	3
Helical Dead End	400H2	121438	-	-	-	3	-
Helical Dead End	400H2	121439	-	-	3	-	-
Helical Intermediate Tie	400H2	139100	-	-	-	-	4
Helical Intermediate Tie	400H2	139101	-	-	-	4	-
Helical Intermediate Tie	400H2	139102	-	-	4	-	-
Vibration Damper	400H2	139115	-	-	-	-	9
Insulator Tension	400I4	125232	-	-	3	3	3
Insulator, Pin-Mounted	400I4	175270	-	-	7	7	7
Danger Plate	400N1	195251	-	-	2	2	2
Gouge-mark Plate	400N1	995610	-	-	1	1	1
Crossarm	400S11	133200	-	-	1	1	1
Crossarm	400S11	133201	-	-	2	2	2
Crossarm Strut	400S11	133353	-	-	6	6	6
FARAP	400S11	260820	-	-	2	2	2
Insulator Pin	400S11	128252	-	-	3	3	3
Pilot Pin	400S11	128376	-	-			
Pilot Pin Bracket	400S11	111457	-	-			
Socket Thimble	400S11	132234	-	-	3	3	3
Steelwork, Links, Long	400S11	133206			1	1	1
Terminal Strap	400S11	133361	-	-	3	3	3
Tie Rod	400S11	133388	-	-	2	2	2
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	-	-	1	1	1
Pole Cap	400W7	Ref ES400W7	-	-	1	1	1
ACDs	400A2	Ref ES400A2	As required				
Fuse	400C29	Ref ES400C29	As required				
Fuse Carrier	400C29	Ref ES400C29	As required				
Fuse Unit	400C29	Ref ES400C29	As required				
Link Solid	400C29	Ref ES400C29	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



**TEE OFF (SINGLE POLE/SINGLE CROSSARM WITH DOUBLE CROSSARM TEE OFF)
(CONNECTION VIA FUSES/LINKS) (TEE OFF VIA COMPRESSION FITTINGS)**

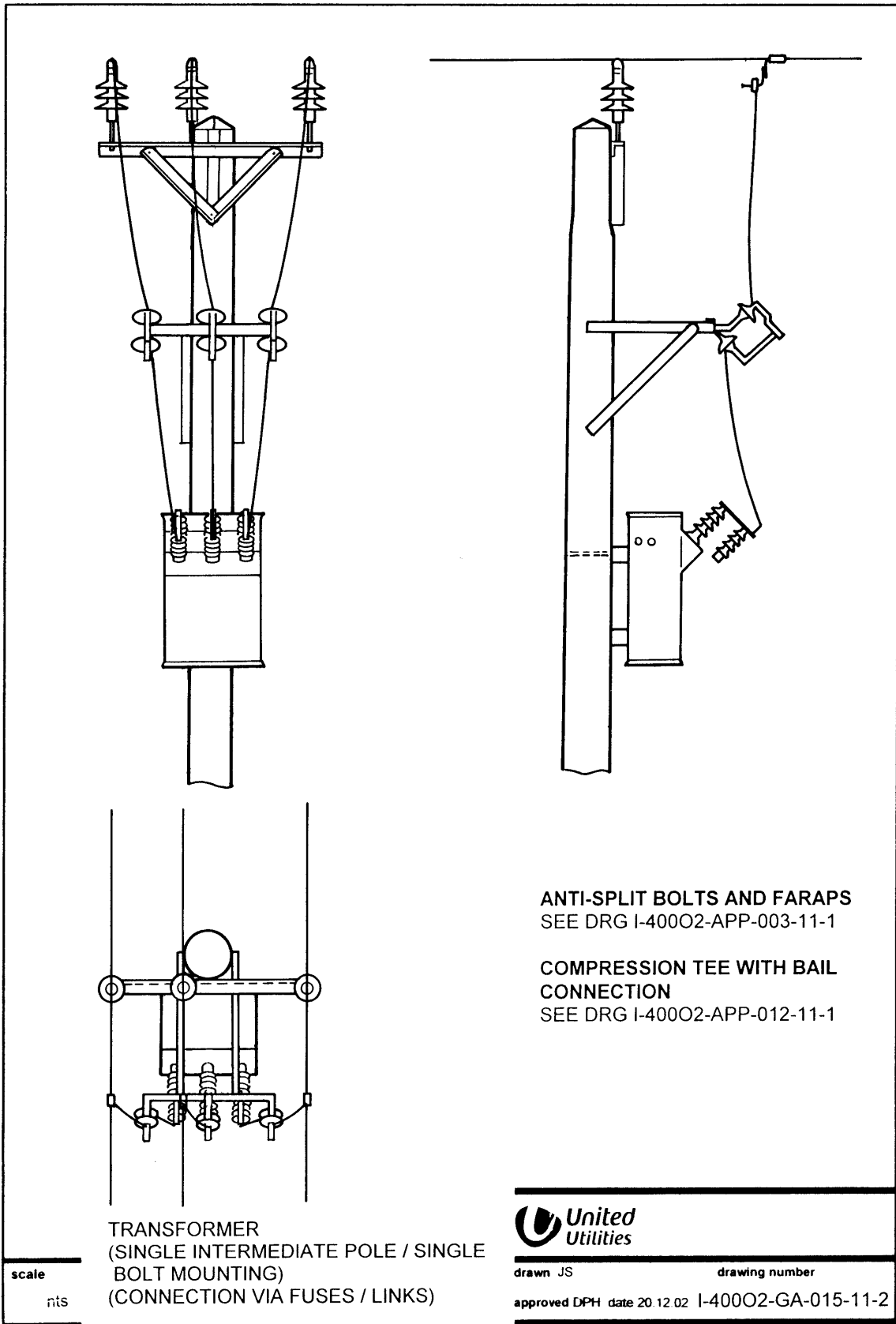
			Drawing No: I-40002-GA-013				
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500052					
11kV - 120mm ²	2	500053					
11kV - 185mm ²	3	500054					
33kV - 120mm ²	4	-					
33kV - 185mm ²	5	-					
Item	ES Ref	Item CC No	-	-	3	2	1
(Items Included in GA Kit Contents)							
Bimetal Arcing Horn	400C29	121004	-	-	3	3	3
Compression Dead End	400C29	121022	-	-	-	-	3
Compression Dead End	400C29	121023	-	-	-	3	-
Compression Dead End	400C29	121024	-	-	3	-	-
Backplate	400C29	121020	-	-	3	3	3
IPCC	400C29	121008	-	-			
IPCC	400C29	121006	-	-	-	-	3
IPCC	400C29	121003	-	-	-	3	-
Lug, 2-hole, Straight	400C29	124886	-	-	-	-	12
Lug, 2-hole, Straight	400C29	124887	-	-	-	12	-
Lug, 2-hole, Straight	400C29	176200	-	-	12	-	-
Bolt, M20, 300mm	400F1	107735	-	-	7	7	7
Bolt, M20, 60mm	400F1	107581	-	-	12	12	12
Bolt, M20, 750mm	400F1	107790	-	-	2	2	2
Coach Screw	400F1	126810	-	-	2	2	2
Washer, Round, Flat	400F1	993018	-	-	8	8	8
Washer, Square, Curved	400F1	139203	-	-	4	4	4
Washer, Square, Flat	400F1	139262	-	-	4	4	4
Vibration Damper	400H2	139115					
Insulator Tension	400I4	125232	-	-	3	3	3
Insulator, Pin-Mounted	400I4	175270	-	-	7	7	7
Danger Plate	400N1	195251	-	-	2	2	2
Gouge-mark Plate	400N1	995610	-	-	1	1	1
Ball End Hook	400S11	122297	-	-	3	3	3
Crossarm	400S11	133200	-	-	1	1	1
Crossarm	400S11	133201	-	-	2	2	2
Crossarm Strut	400S11	133353	-	-	6	6	6
FARAP	400S11	260820	-	-	2	2	2
Insulator Pin	400S11	128252	-	-	3	3	3
Pilot Pin	400S11	128376	-	-			
Pilot Pin Bracket	400S11	111457	-	-			
Sag Link	400S11	144578	-	-	3	3	3
Socket Clevis	400S11	122173	-	-	6	6	6
Steelwork, Links, Short	400S11	133206	-	-			
Terminal Strap	400S11	133361	-	-	3	3	3
Tie Rod	400S11	133388	-	-	2	2	2
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	-	-	1	1	1
Pole Cap	400W7	Ref ES400W7	-	-	1	1	1
ACDs	400A2	Ref ES400A2	As required				
Fuse	400C29	Ref ES400C29	As required				
Fuse Carrier	400C29	Ref ES400C29	As required				
Fuse Unit	400C29	Ref ES400C29	As required				
Link Solid	400C29	Ref ES400C29	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



**TRANSFORMER (SINGLE INTERMEDIATE POLE/SINGLE BOLT MOUNTING)
(SOLID CONNECTION)**

Drawing No: I-40002-GA-014

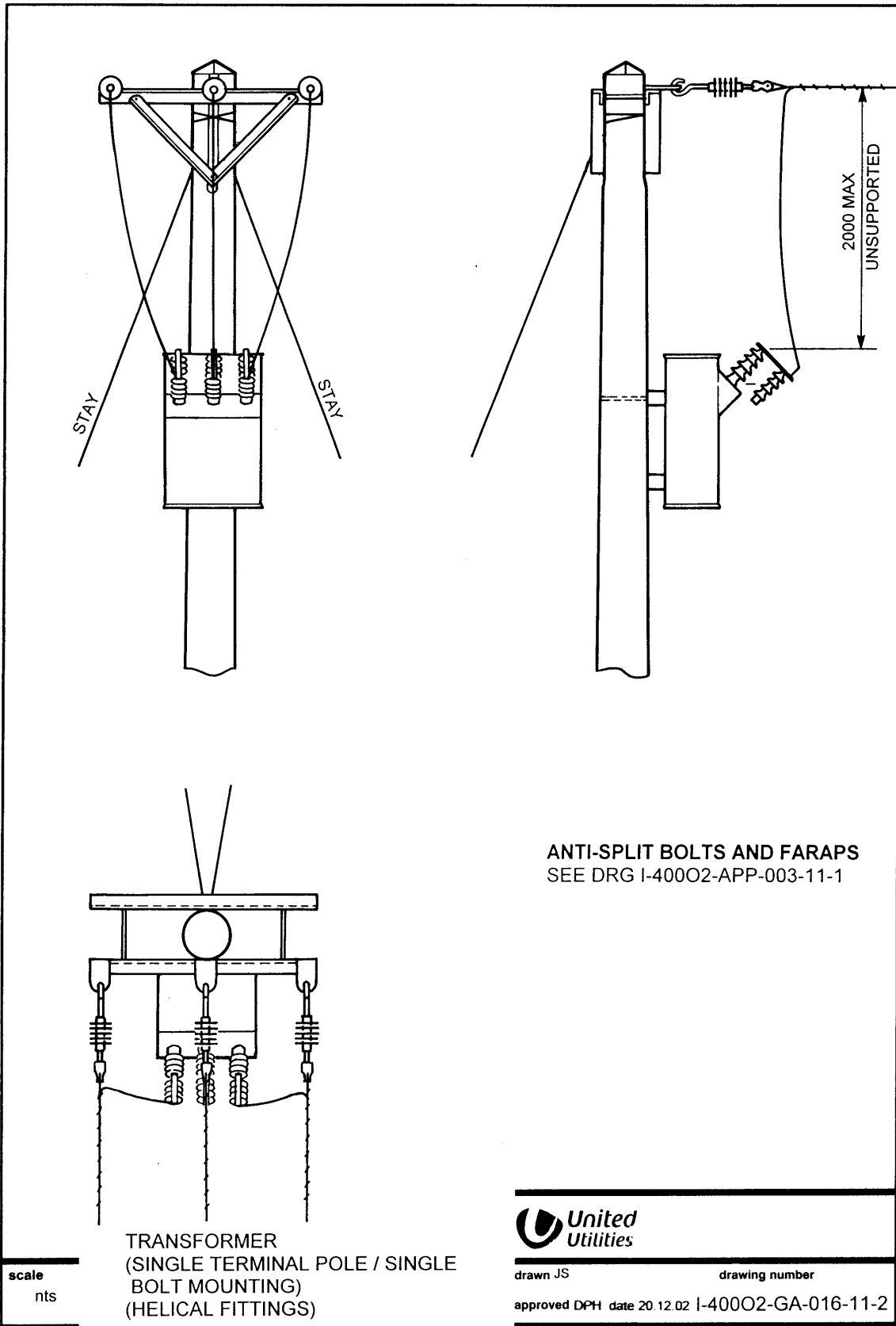
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500055					
11kV - 120mm ²	2	500056					
11kV - 185mm ²	3	500057					
33kV - 120mm ²	4	-					
33kV - 185mm ²	5	-					
Item	ES Ref	Item CC No	-	-	3	2	1
(Items Included in GA Kit Contents)							
Bimetal Arcing Horn	400C29	121004	-	-	3	3	3
Dropper Kit 1	400C29	124871	-	-	3	3	3
IPCC	400C29	121006	-	-	-	-	3
IPCC	400C29	121003	-	-	-	3	-
IPCC	400C29	121008	-	-	3	-	-
Bolt, M20, 300mm	400F1	107735	-	-	4	4	4
Bolt, M20, 60mm	400F1	107581	-	-	2	2	2
Bolt, M20, 750mm	400F1	107790	-	-	2	2	2
Coach Screw	400F1	126810	-	-	2	2	2
Washer, Square, Curved	400F1	139203	-	-	3	3	3
Washer, Square, Flat	400F1	139262	-	-	4	4	4
Helical Intermediate Tie	400H2	139100	-	-	-	-	3
Helical Intermediate Tie	400H2	139101	-	-	-	3	-
Helical Intermediate Tie	400H2	139102	-	-	3	-	-
Vibration Damper	400H2	139115	-	-	-	-	6
Insulator, Pin-Mounted	400I4	175270	-	-	3	3	3
Danger Plate	400N1	195251	-	-	2	2	2
Gouge-mark Plate	400N1	995610	-	-	1	1	1
Crossarm	400S11	133200	-	-	1	1	1
Crossarm Strut	400S11	133353	-	-	2	2	2
FARAP	400S11	260820	-	-	2	2	2
Insulator Pin	400S11	128252	-	-	3	3	3
Shroud, Insulated, PMT/GVR	400S12	160798	-	-	1	1	1
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	-	-	1	1	1
Pole Cap	400W7	Ref ES400W7	-	-	1	1	1
Transformer	321	Ref ES321	Separate order				
ACDs	400A2	Ref ES400A2	As required				
Conductor, Flexible 65mm ²	400C3	Ref ES400C3	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



**TRANSFORMER (SINGLE INTERMEDIATE POLE/SINGLE BOLT MOUNTING)
(CONNECTION VIA FUSES/LINKS)**

Drawing No: I-40002-GA-015

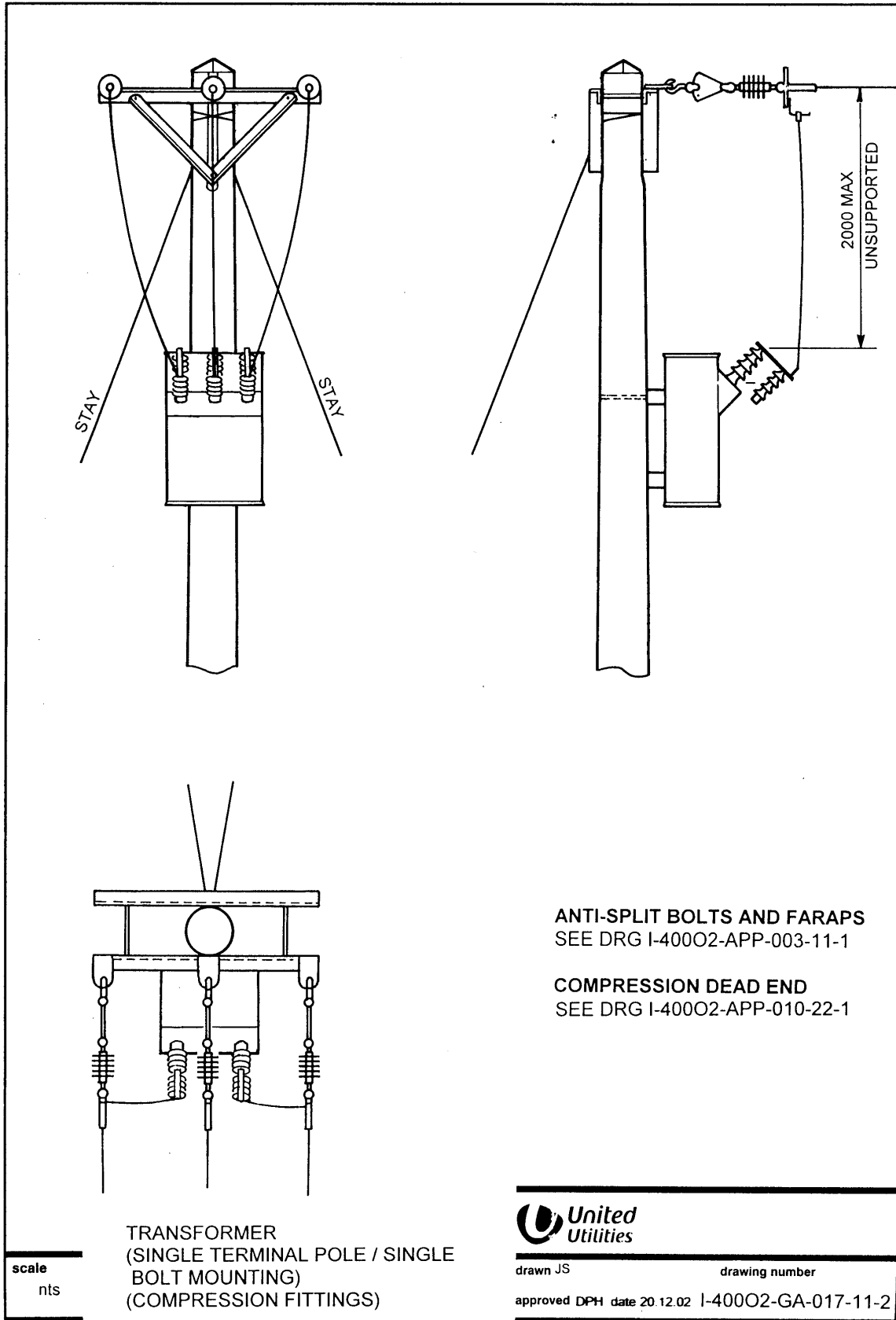
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500058					
11kV - 120mm ²	2	500059					
11kV - 185mm ²	3	500060					
33kV - 120mm ²	4	-					
33kV - 185mm ²	5	-					
Item	ES Ref	Item CC No	-	-	3	2	1
(Items Included in GA Kit Contents)							
Bimetal Arcing Horn	400C29	121004	-	-	3	3	3
Dropper Kit 2	400C29	121010	-	-	3	3	3
IPCC	400C29	121006	-	-	-	-	3
IPCC	400C29	121003	-	-	-	3	-
IPCC	400C29	121008	-	-	3	-	-
Bolt, M20, 300mm	400F1	107735	-	-	6	6	6
Bolt, M20, 60mm	400F1	107581	-	-	2	2	2
Bolt, M20, 750mm	400F1	107790	-	-	2	2	2
Coach Screw	400F1	126810	-	-	2	2	2
Washer, Square, Curved	400F1	139203	-	-	5	5	5
Washer, Square, Flat	400F1	139262	-	-	4	4	4
Helical Intermediate Tie	400H2	139100	-	-	-	-	3
Helical Intermediate Tie	400H2	139101	-	-	-	3	-
Helical Intermediate Tie	400H2	139102	-	-	3	-	-
Vibration Damper	400H2	139115	-	-	-	-	6
Insulator, Pin-Mounted	400I4	175270	-	-	3	3	3
Danger Plate	400N1	195251	-	-	2	2	2
Gouge-mark Plate	400N1	995610	-	-	1	1	1
Crossarm	400S11	133200	-	-	1	1	1
Crossarm Strut	400S11	133353	-	-	2	2	2
FARAP	400S11	260820	-	-	2	2	2
Insulator Pin	400S11	128252	-	-	3	3	3
Steelwork, Links, Short	400S11	133207	-	-	1	1	1
Shroud, Insulated, PMT/GVR	400S12	160798	-	-	1	1	1
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	-	-	1	1	1
Pole Cap	400W7	Ref ES400W7	-	-	1	1	1
Transformer	321	Ref ES321	Separate order				
ACDs	400A2	Ref ES400A2	As required				
Conductor, Flexible 65mm ²	400C3	Ref ES400C3	As required				
Fuse	400C29	Ref ES400C29	As required				
Fuse Carrier	400C29	Ref ES400C29	As required				
Fuse Unit	400C29	Ref ES400C29	As required				
Link Solid	400C29	Ref ES400C29	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



**TRANSFORMER (SINGLE TERMINAL POLE/SINGLE BOLT MOUNTING)
(HELICAL FITTING)**

Drawing No: I-40002-GA-016

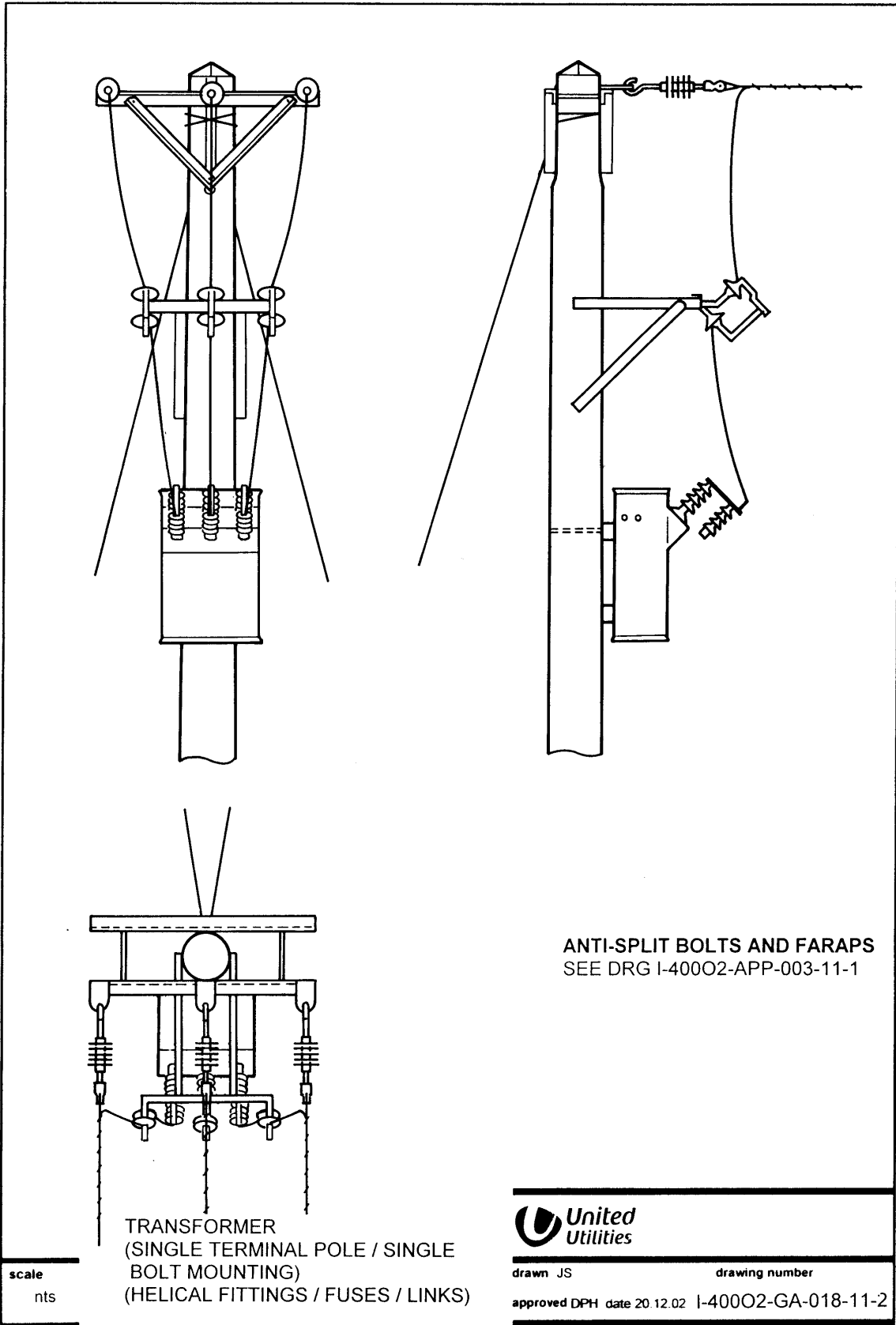
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500061					
11kV - 120mm ²	2	500062					
11kV - 185mm ²	3	500063					
33kV - 120mm ²	4	-					
33kV - 185mm ²	5	-					
Item	ES Ref	Item CC No	-	-	3	2	1
(Items Included in GA Kit Contents)							
Lug, 2-hole, Right Angle	400C29	176245	-	-	-	3	-
Lug, 2-hole, Right Angle	400C29	176250	-	-	3	-	-
Lug, 2-hole, Right Angle	400C29	176240	-	-	-	-	3
Bolt, M20, 300mm	400F1	107735	-	-	4	4	4
Bolt, M20, 60mm	400F1	107581	-	-	10	10	10
Bolt, M20, 750mm	400F1	107790	-	-	2	2	2
Coach Screw	400F1	126810	-	-	2	2	2
Washer, Round, Flat	400F1	993018	-	-	8	8	8
Washer, Square, Curved	400F1	139203	-	-	5	5	5
Washer, Square, Flat	400F1	139262	-	-	2	2	2
Helical Dead End	400H2	121437	-	-	-	-	3
Helical Dead End	400H2	121438	-	-	-	3	-
Helical Dead End	400H2	121439	-	-	3	-	-
Vibration Damper	400H2	139115	-	-	-	-	3
Insulator Tension	400I4	125232	-	-	3	3	3
Danger Plate	400N1	195251	-	-	2	2	2
Gouge-mark Plate	400N1	995610	-	-	1	1	1
Crossarm	400S11	133201	-	-	2	2	2
Crossarm Strut	400S11	133353	-	-	4	4	4
FARAP	400S11	260820	-	-	2	2	2
Socket Thimble	400S11	132234	-	-	3	3	3
Terminal Strap	400S11	133361	-	-	3	3	3
Tie Rod	400S11	133388	-	-	2	2	2
Shroud, Insulated, PMT/GVR	400S12	160798	-	-	1	1	1
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	2	2	2	2	2
Pole Cap	400W7	Ref ES400W7	2	2	2	2	2
Transformer	321	Ref ES321					
ACDs	400A2	Ref ES400A2	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



**TRANSFORMER (SINGLE TERMINAL POLE/SINGLE BOLT MOUNTING)
(COMPRESSION FITTING)**

Drawing No: I-40002-GA-017

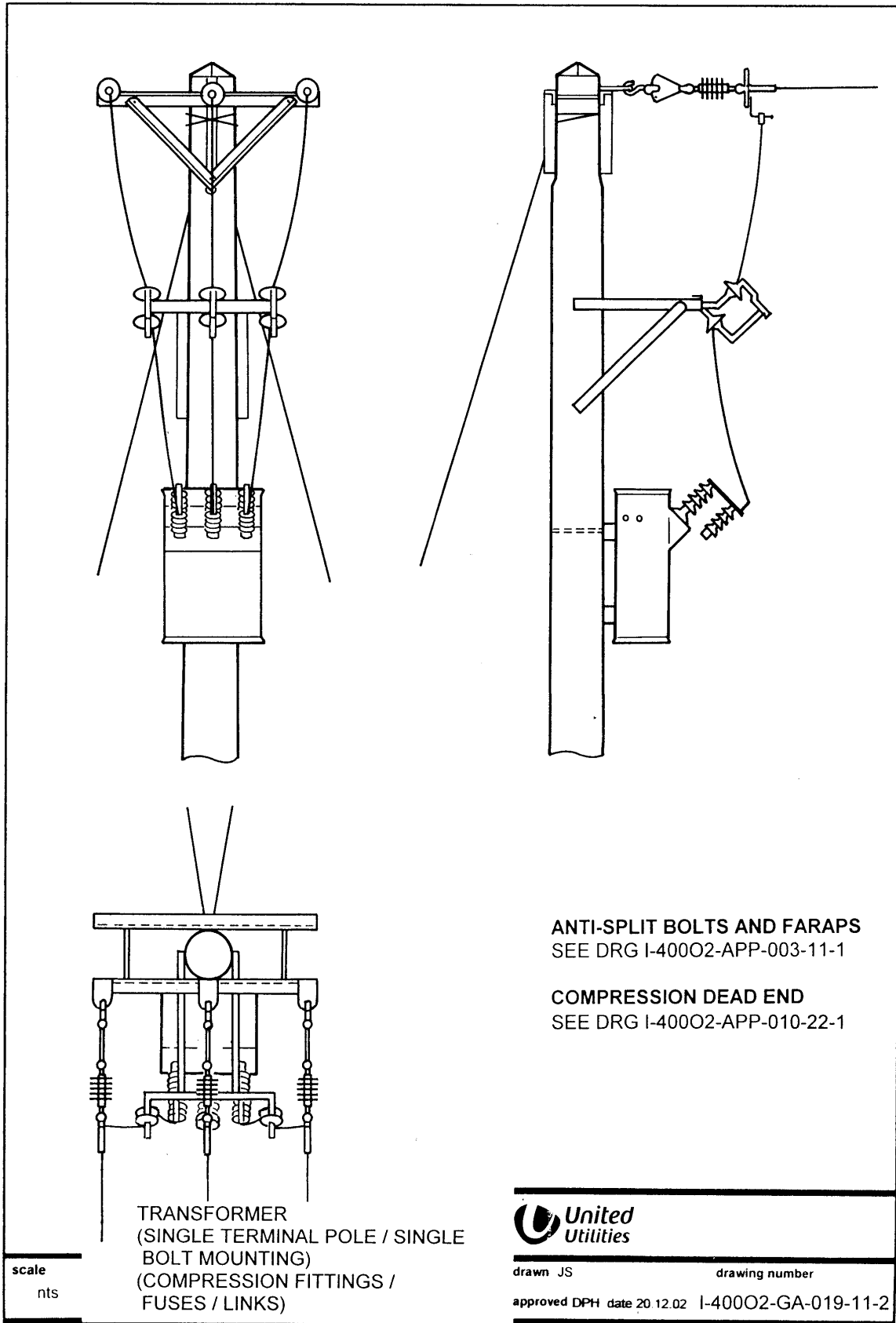
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500064					
11kV - 120mm ²	2	500065					
11kV - 185mm ²	3	500066					
33kV - 120mm ²	4	-					
33kV - 185mm ²	5	-					
Item	ES Ref	Item CC No	-	-	3	2	1
(Items Included in GA Kit Contents)							
Bimetal Arcing Horn	400C29	121004	-	-	3	3	3
Compression Dead End	400C29	121022	-	-	-	-	3
Compression Dead End	400C29	121023	-	-	-	3	-
Compression Dead End	400C29	121024	-	-	3	-	-
Dropper Kit 1	400C29	124871	-	-	3	3	3
Bolt, M20, 300mm	400F1	107735	-	-	4	4	4
Bolt, M20, 60mm	400F1	107581	-	-	10	10	10
Bolt, M20, 750mm	400F1	107790	-	-	2	2	2
Coach Screw	400F1	126810	-	-	2	2	2
Washer, Round, Flat	400F1	993018	-	-	8	8	8
Washer, Square, Curved	400F1	139203	-	-	5	5	5
Washer, Square, Flat	400F1	139262	-	-	2	2	2
Vibration Damper	400H2	139115	-	-	-	-	3
Insulator Tension	400I4	125240	-	-	3	3	3
Danger Plate	400N1	195251	-	-	2	2	2
Gouge-mark Plate	400N1	995610	-	-	1	1	1
Ball End Hook	400S11	122297	-	-	3	3	3
Crossarm	400S11	133201	-	-	2	2	2
Crossarm Strut	400S11	133353	-	-	4	4	4
FARAP	400S11	260820	-	-	2	2	2
Sag Link	400S11	144578	-	-	3	3	3
Socket Clevis	400S11	122173	-	-	6	6	6
Terminal Strap	400S11	133361	-	-	3	3	3
Tie Rod	400S11	133388	-	-	2	2	2
Shroud, Insulated, PMT/GVR	400S12	160798	-	-	1	1	1
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	-	-	1	1	1
Pole Cap	400W7	Ref ES400W7	-	-	1	1	1
Transformer	321	Ref ES321	Separate order				
ACDs	400A2	Ref ES400A2	As required				
Conductor, Flexible 65mm ²	400C3	Ref ES400C3	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



**TRANSFORMER (SINGLE TERMINAL POLE/SINGLE BOLT MOUNTING)
(HELICAL FITTINGS/FUSES/LINKS)**

Drawing No: I-40002-GA-018

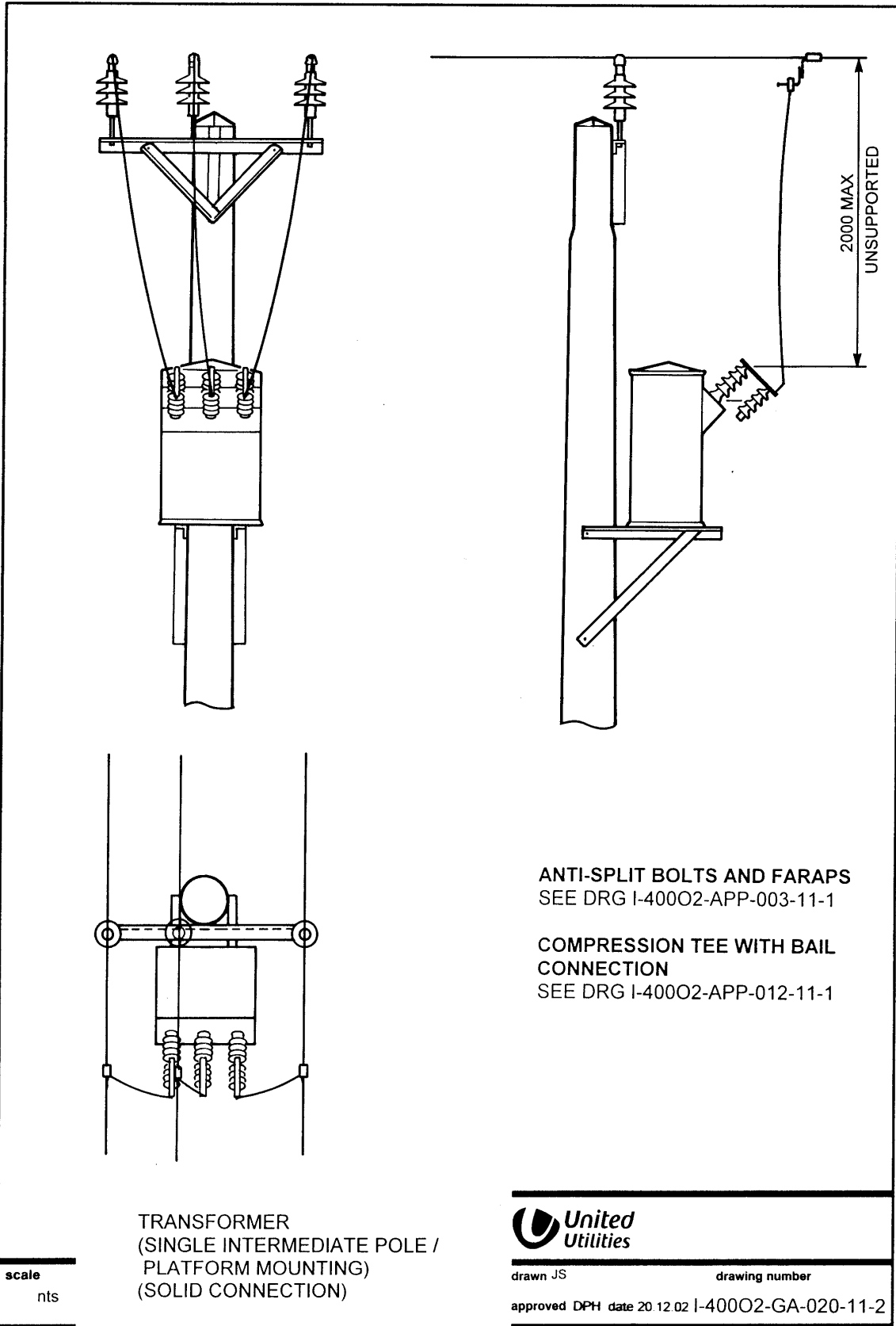
Voltage/Conductor	Ref	GA Kit CC No	Comprising:					
11kV - 50mm ²	1	500067						
11kV - 120mm ²	2	500068						
11kV - 185mm ²	3	500069						
33kV - 120mm ²	4	-						
33kV - 185mm ²	5	-						
Item	ES Ref	Item CC No	-	-	3	2	1	
(Items Included in GA Kit Contents)								
Lug, 2-hole, Right Angle, for Conductor, Flexible, 65mm ²	400C29	176255	-	-	3	3	3	
Lug, 2-hole, Straight, for Conductor, Flexible, 65mm ²	400C29	124892	-	-	3	3	3	
Lug, 2-hole, Straight, bimetal	400C29	127237	-	-	-	-	3	
Lug, 2-hole, Straight, bimetal	400C29	124894	-	-	-	3	-	
Lug, 2-hole, Straight, bimetal	400C29	124890	-	-	3	-	-	
Bolt, M20, 300mm	400F1	107735	-	-	6	6	6	
Bolt, M20, 60mm	400F1	107581	-	-	10	10	10	
Bolt, M20, 750mm	400F1	107790	-	-	2	2	2	
Coach Screw	400F1	126810	-	-	2	2	2	
Washer, Round, Flat	400F1	993018	-	-	8	8	8	
Washer, Square, Curved	400F1	139203	-	-	5	5	5	
Washer, Square, Flat	400F1	139262	-	-	2	2	2	
Helical Dead End	400H2	121437	-	-	-	-	3	
Helical Dead End	400H2	121438	-	-	-	3	-	
Helical Dead End	400H2	121439	-	-	3	-	-	
Vibration Damper	400H2	139115	-	-	-	-	3	
Insulator Tension	400I4	125232	-	-	3	3	3	
Danger Plate	400N1	195251	-	-	2	2	2	
Gouge-mark Plate	400N1	995610	-	-	1	1	1	
Crossarm	400S11	133201	-	-	2	2	2	
Crossarm Strut	400S11	133353	-	-	4	4	4	
FARAP	400S11	260820	-	-	2	2	2	
Steelwork, Links, Short	400S11	133207	-	-	1	1	1	
Socket Thimble	400S11	132234	-	-	3	3	3	
Terminal Strap	400S11	133361	-	-	3	3	3	
Tie Rod	400S11	133388	-	-	2	2	2	
Shroud, Insulated, PMT/GVR	400S12	160798	-	-	1	1	1	
(Additional Items Required for GA -But Not Included in GA Kit Contents)								
Wood Pole	400W2	Ref ES400W2	-	-	1	1	1	
Pole Cap	400W7	Ref ES400W7	-	-	1	1	1	
Transformer	321	Ref ES321	Separate order					
ACDs	400A2	Ref ES400A2	As required					
Conductor, Flexible 65mm ²	400C3	Ref ES400C3	As required					
Fuse	400C29	Ref ES400C29	As required					
Fuse Carrier	400C29	Ref ES400C29	As required					
Fuse Unit	400C29	Ref ES400C29	As required					
Link Solid	400C29	Ref ES400C29	As required					
Notices	400N1	Ref ES400N1	As required					
Stays	400S13	Ref ES400S13	As required					



**TRANSFORMER (Single TERMINAL Pole/Single BOLT MOUNTING)
(COMPRESSION FITTINGS/FUSES/LINKS)**

Drawing No: I-40002-GA-019

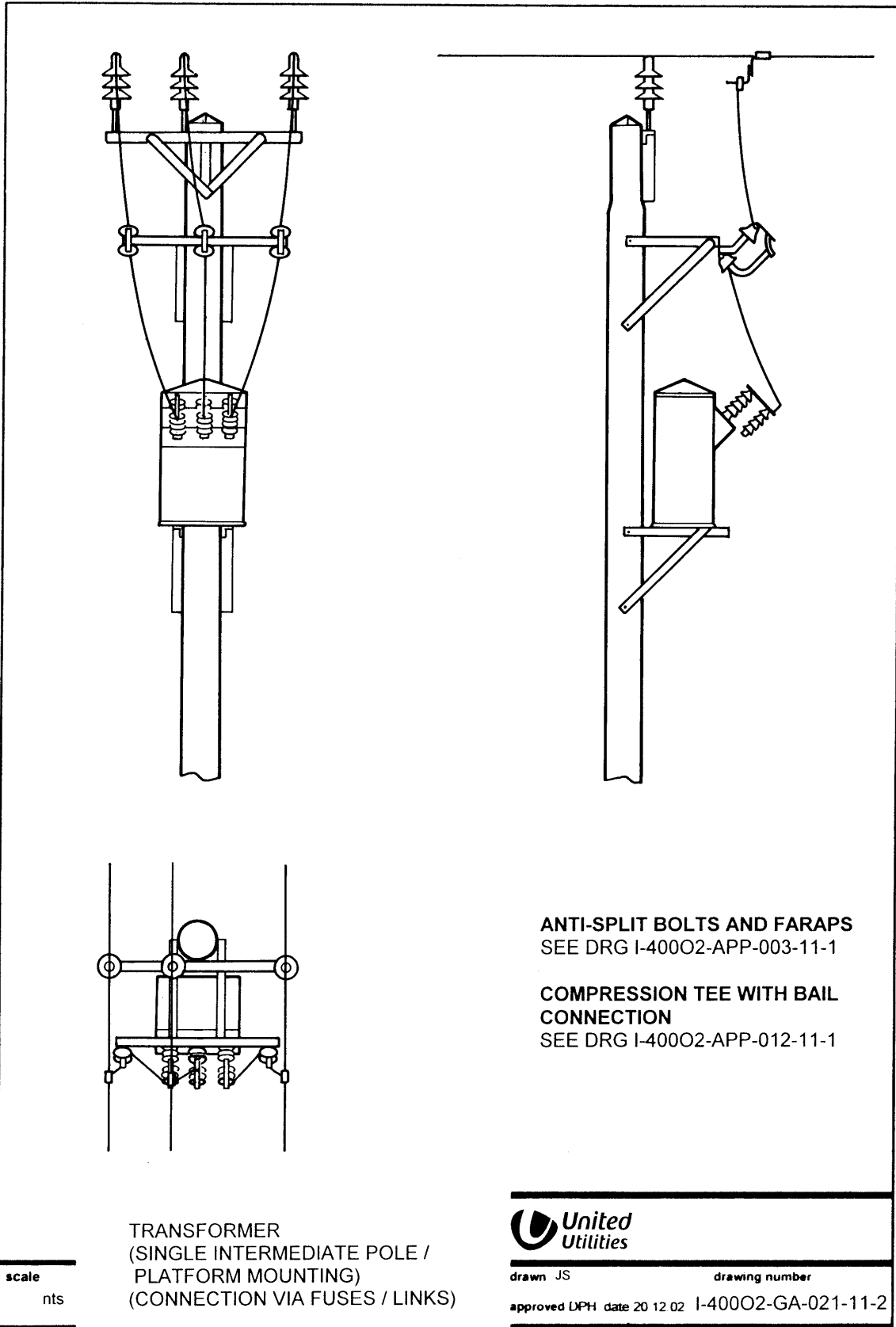
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500070					
11kV - 120mm ²	2	500071					
11kV - 185mm ²	3	500072					
33kV - 120mm ²	4	-					
33kV - 185mm ²	5	-					
Item	ES Ref	Item CC No	-	-	3	2	1
(Items Included in GA Kit Contents)							
Bimetal Arcing Horn	400C29	121004	-	-	3	3	3
Compression Dead End	400C29	121022	-	-	-	-	3
Compression Dead End	400C29	121023	-	-	-	3	-
Compression Dead End	400C29	121024	-	-	3	-	-
Dropper Kit 2	400C29	121010	-	-	3	3	3
Bolt, M20, 300mm	400F1	107735	-	-	6	6	6
Bolt, M20, 60mm	400F1	107581	-	-	10	10	10
Bolt, M20, 750mm	400F1	107790	-	-	2	2	2
Coach Screw	400F1	126810	-	-	2	2	2
Washer, Round, Flat	400F1	993018	-	-	8	8	8
Washer, Square, Curved	400F1	139203	-	-	5	5	5
Washer, Square, Flat	400F1	139262	-	-	2	2	2
Vibration Damper	400H2	139115	-	-	-	-	3
Insulator Tension	400I4	125240	-	-	3	3	3
Danger Plate	400N1	195251	-	-	2	2	2
Gouge-mark Plate	400N1	995610	-	-	1	1	1
Ball End Hook	400S11	122297	-	-	3	3	3
Crossarm	400S11	133201	-	-	2	2	2
Crossarm Strut	400S11	133353	-	-	4	4	4
FARAP	400S11	260820	-	-	2	2	2
Sag Link	400S11	144578	-	-	3	3	3
Socket Clevis	400S11	122173	-	-	3	3	3
Steelwork, Links, Short	400S11	133207	-	-	1	1	1
Terminal Strap	400S11	133361	-	-	3	3	3
Tie Rod	400S11	133388	-	-	2	2	2
Shroud, Insulated, PMT/GVR	400S12	160798	-	-	1	1	1
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	-	-	1	1	1
Pole Cap	400W7	Ref ES400W7	-	-	1	1	1
Transformer	321	Ref ES321	Separate order				
ACDs	400A2	Ref ES400A2	As required				
Conductor, Flexible 65mm ²	400C3	Ref ES400C3	As required				
Fuse	400C29	Ref ES400C29	As required				
Fuse Carrier	400C29	Ref ES400C29	As required				
Fuse Unit	400C29	Ref ES400C29	As required				
Link Solid	400C29	Ref ES400C29	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



**TRANSFORMER (SINGLE INTERMEDIATE POLE/PLATFORM MOUNTING)
(SOLID CONNECTION)**

Drawing No: I-40002-GA-020

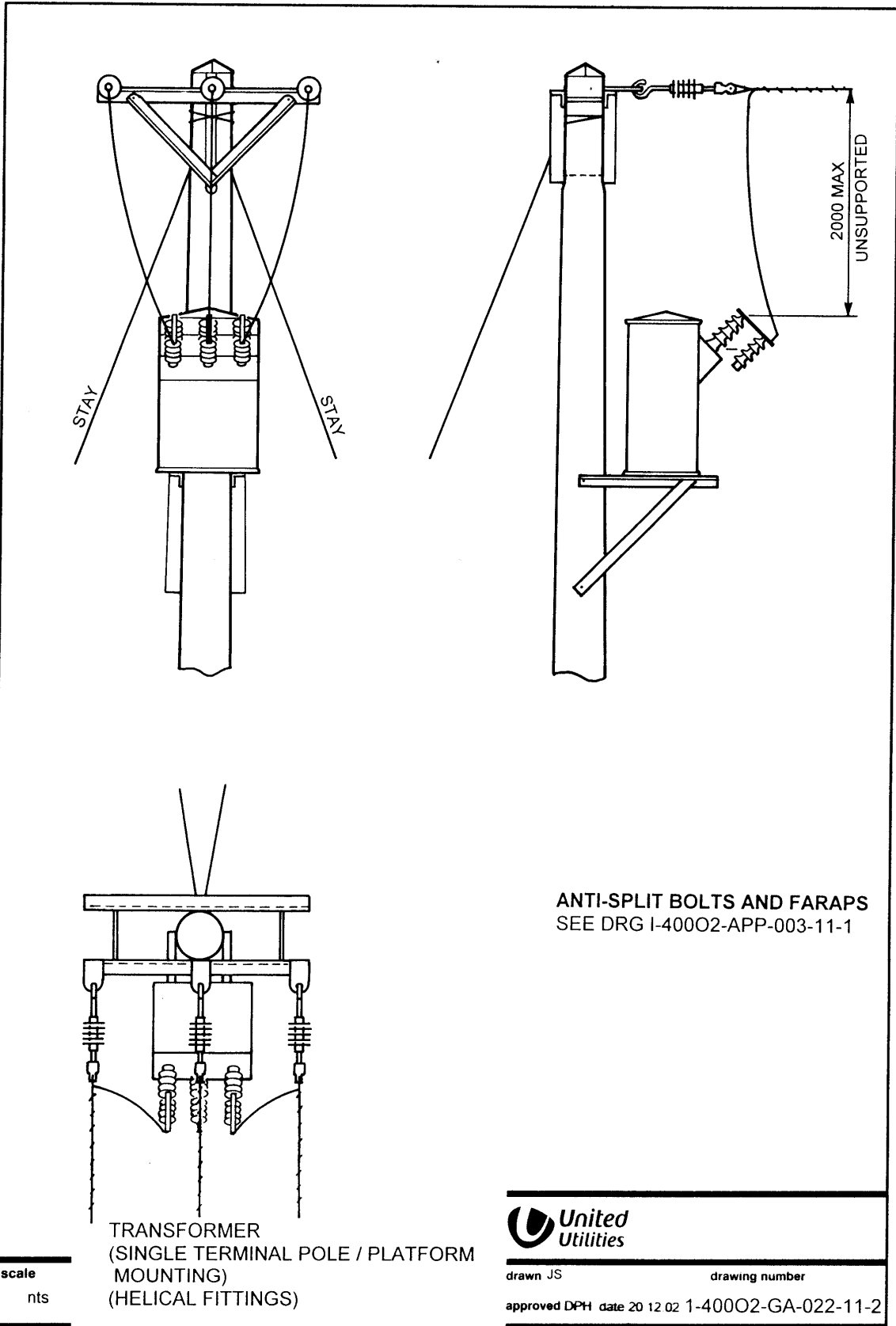
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500073					
11kV - 120mm ²	2	500074					
11kV - 185mm ²	3	500075					
33kV - 120mm ²	4	-					
33kV - 185mm ²	5	-					
Item	ES Ref	Item CC No	-	-	3	2	1
(Items Included in GA Kit Contents)							
Bimetal Arcing Horn	400C29	121004	-	-	3	3	3
Dropper Kit 1	400C29	124871	-	-	3	3	3
IPCC	400C29	121006	-	-	-	-	3
IPCC	400C29	121003	-	-	-	3	-
IPCC	400C29	121008	-	-	3	-	-
Bolt, M20, 300mm	400F1	107735	-	-	5	5	5
Bolt, M20, 60mm	400F1	107581	-	-	2	2	2
Bolt, M20, 750mm	400F1	107790			2	2	2
Coach Screw	400F1	126810	-	-	2	2	2
Washer, Square, Curved	400F1	139203	-	-	4	4	4
Washer, Square, Flat	400F1	139262	-	-	4	4	4
Helical Intermediate Tie	400H2	139100	-	-	-	-	3
Helical Intermediate Tie	400H2	139101	-	-	-	3	-
Helical Intermediate Tie	400H2	139102	-	-	3	-	-
Vibration Damper	400H2	139115	-	-	-	-	6
Insulator Pin-Mounted	400I4	175270			3	3	3
Danger Plate	400N1	195251	-	-	2	2	2
Gouge-mark Plate	400N1	995610	-	-	1	1	1
Crossarm	400S11	133200	-	-	1	1	1
Crossarm Strut	400S11	133353	-	-	2	2	2
FARAP	400S11	260820	-	-	2	2	2
Insulator Pin	400S11	128252	-	-	3	3	3
Platform Kit	400S11	133396	-	-	1	1	1
Shroud, Insulated, PMT/GVR	400S12	160798	-	-	1	1	1
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	-	-	1	1	1
Pole Cap	400W7	Ref ES400W7	-	-	1	1	1
Transformer	321	Ref ES321	Separate order				
ACDs	400A2	Ref ES400A2	As required				
Conductor, Flexible 65mm ²	400C3	Ref ES400C3	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



**TRANSFORMER (SINGLE INTERMEDIATE POLE/PLATFORM MOUNTING)
(CONNECTION VIA FUSES/LINKS)**

Drawing No: I-40002-GA-021

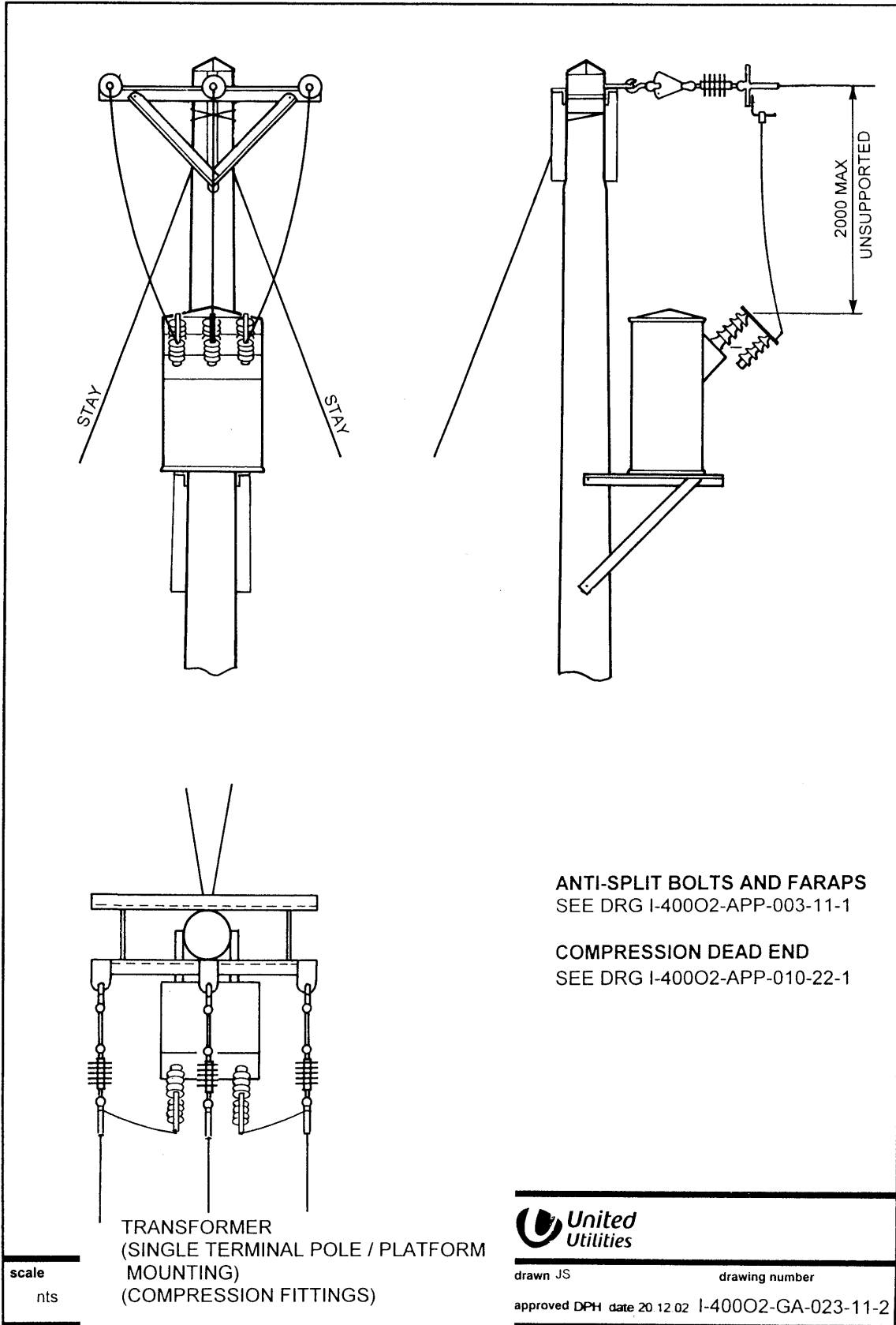
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500076					
11kV - 120mm ²	2	500077					
11kV - 185mm ²	3	500078					
33kV - 120mm ²	4	-					
33kV - 185mm ²	5	-					
Item	ES Ref	Item CC No	-	-	3	2	1
(Items Included in GA Kit Contents)							
Bimetal Arcing Horn	400C29	121004	-	-	3	3	3
Dropper Kit 2	400C29	121010	-	-	3	3	3
IPCC	400C29	121006	-	-	-	-	3
IPCC	400C29	121003	-	-	-	3	-
IPCC	400C29	121008	-	-	3	-	-
Bolt, M20, 300mm	400F1	107735	-	-	7	7	7
Bolt, M20, 60mm	400F1	107581	-	-	2	2	2
Bolt, M20, 750mm	400F1	107790	-	-	2	2	2
Coach Screw	400F1	126810	-	-	2	2	2
Washer, Square, Curved	400F1	139203	-	-	4	4	4
Washer, Square, Flat	400F1	139262	-	-	4	4	4
Helical Intermediate Tie	400H2	139100	-	-	-	-	3
Helical Intermediate Tie	400H2	139101	-	-	-	3	-
Helical Intermediate Tie	400H2	139102	-	-	3	-	-
Vibration Damper	400H2	139115	-	-	-	-	6
Insulator Pin-Mounted	400I4	175270	-	-	3	3	3
Danger Plate	400N1	195251	-	-	2	2	2
Gouge-mark Plate	400N1	995610	-	-	1	1	1
Crossarm	400S11	133200	-	-	1	1	1
Crossarm Strut	400S11	133353	-	-	2	2	2
FARAP	400S11	260820	-	-	2	2	2
Insulator Pin	400S11	128252	-	-	3	3	3
Platform Kit	400S11	133396	-	-	1	1	1
Steelwork, Links, Short	400S11	133207	-	-	1	1	1
Shroud, Insulated, PMT/GVR	400S12	160798	-	-	1	1	1
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	-	-	1	1	1
Pole Cap	400W7	Ref ES400W7	-	-	1	1	1
Transformer	321	Ref ES321	Separate order				
ACDs	400A2	Ref ES400A2	As required				
Conductor, Flexible 65mm ²	400C3	Ref ES400C3	As required				
Fuse	400C29	Ref ES400C29	As required				
Fuse Carrier	400C29	Ref ES400C29	As required				
Fuse Unit	400C29	Ref ES400C29	As required				
Link Solid	400C29	Ref ES400C29	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



**TRANSFORMER (SINGLE TERMINAL POLE/PLATFORM MOUNTING)
(HELICAL FITTINGS)**

Drawing No: I-40002-GA-022

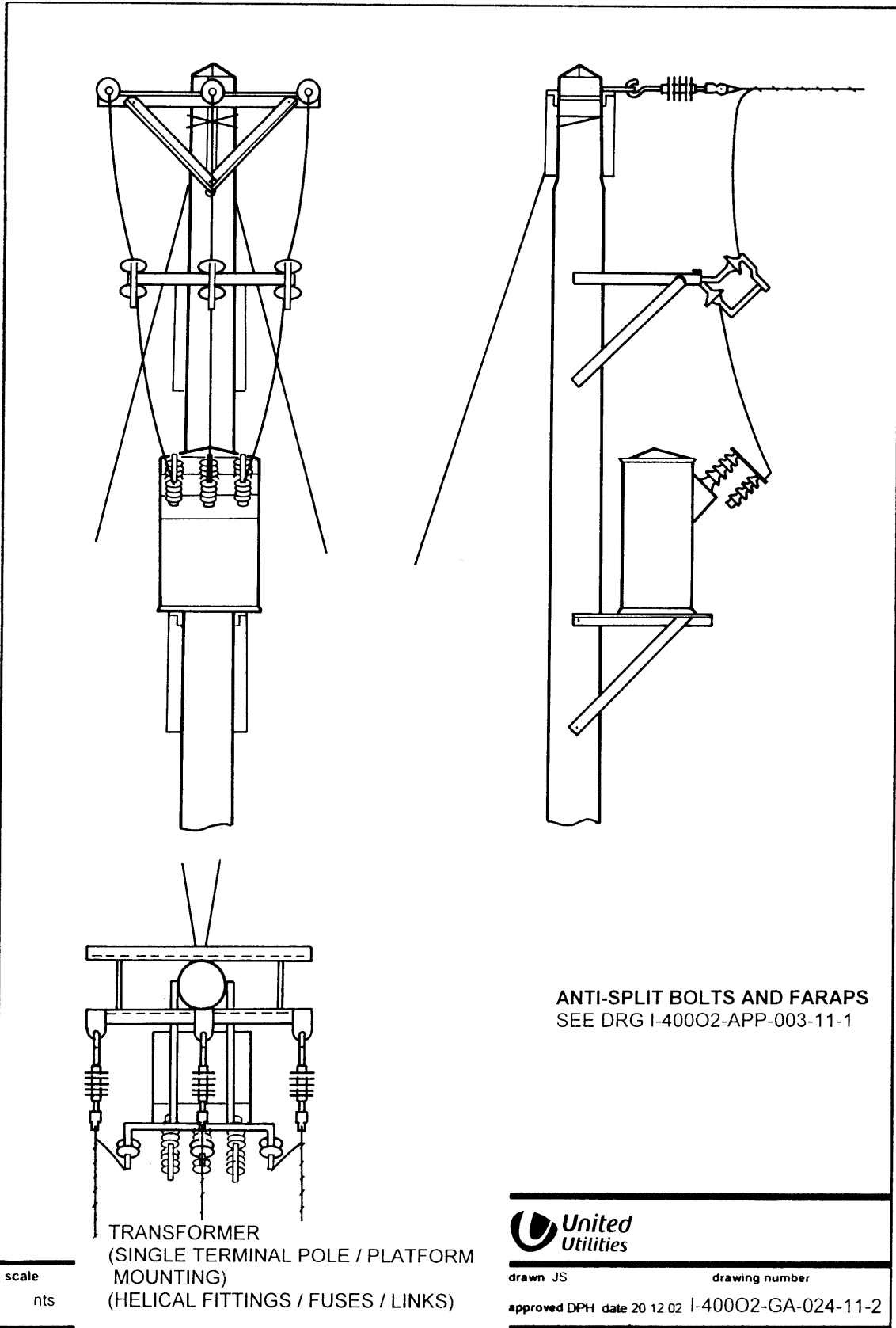
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500079					
11kV - 120mm ²	2	500080					
11kV - 185mm ²	3	500081					
33kV - 120mm ²	4	-					
33kV - 185mm ²	5	-					
Item	ES Ref	Item CC No	-	-	3	2	1
(Items Included in GA Kit Contents)							
Lug, 2-hole, Straight, bimetal	400C29	127237	-	-	-	-	3
Lug, 2-hole, Straight, bimetal	400C29	124894	-	-	-	3	-
Lug, 2-hole, Straight, bimetal	400C29	124890	-	-	3	-	-
Bolt, M20, 300mm	400F1	107735	-	-	5	5	5
Bolt, M20, 60mm	400F1	107581	-	-	10	10	10
Bolt, M20, 750mm	400F1	107790	-	-	2	2	2
Coach Screw	400F1	126810	-	-	2	2	2
Washer, Round, Flat	400F1	993018	-	-	8	8	8
Washer, Square, Curved	400F1	139203	-	-	4	4	4
Washer, Square, Flat	400F1	139262	-	-	2	2	2
Helical Dead End	400H2	121437	-	-	-	-	3
Helical Dead End	400H2	121438	-	-	-	3	-
Helical Dead End	400H2	121439	-	-	3	-	-
Vibration Damper	400H2	139115	-	-	-	-	3
Insulator Tension	400I4	125232	-	-	3	3	3
Danger Plate	400N1	195251	-	-	2	2	2
Gouge-mark Plate	400N1	995610	-	-	1	1	1
Crossarm	400S11	133201	-	-	2	2	2
Crossarm Strut	400S11	133353	-	-	4	4	4
FARAP	400S11	260820	-	-	2	2	2
Platform Kit	400S11	133396	-	-	1	1	1
Socket Thimble	400S11	132234	-	-	3	3	3
Terminal Strap	400S11	133361	-	-	3	3	3
Tie Rod	400S11	133388	-	-	2	2	2
Shroud, Insulated, PMT/GVR	400S12	160798	-	-	1	1	1
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	-	-	1	1	1
Pole Cap	400W7	Ref ES400W7	-	-	1	1	1
Transformer	321	Ref ES321	Separate order				
ACDs	400A2	Ref ES400A2	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



**TRANSFORMER (SINGLE TERMINAL POLE/PLATFORM MOUNTING)
(COMPRESSION FITTINGS)**

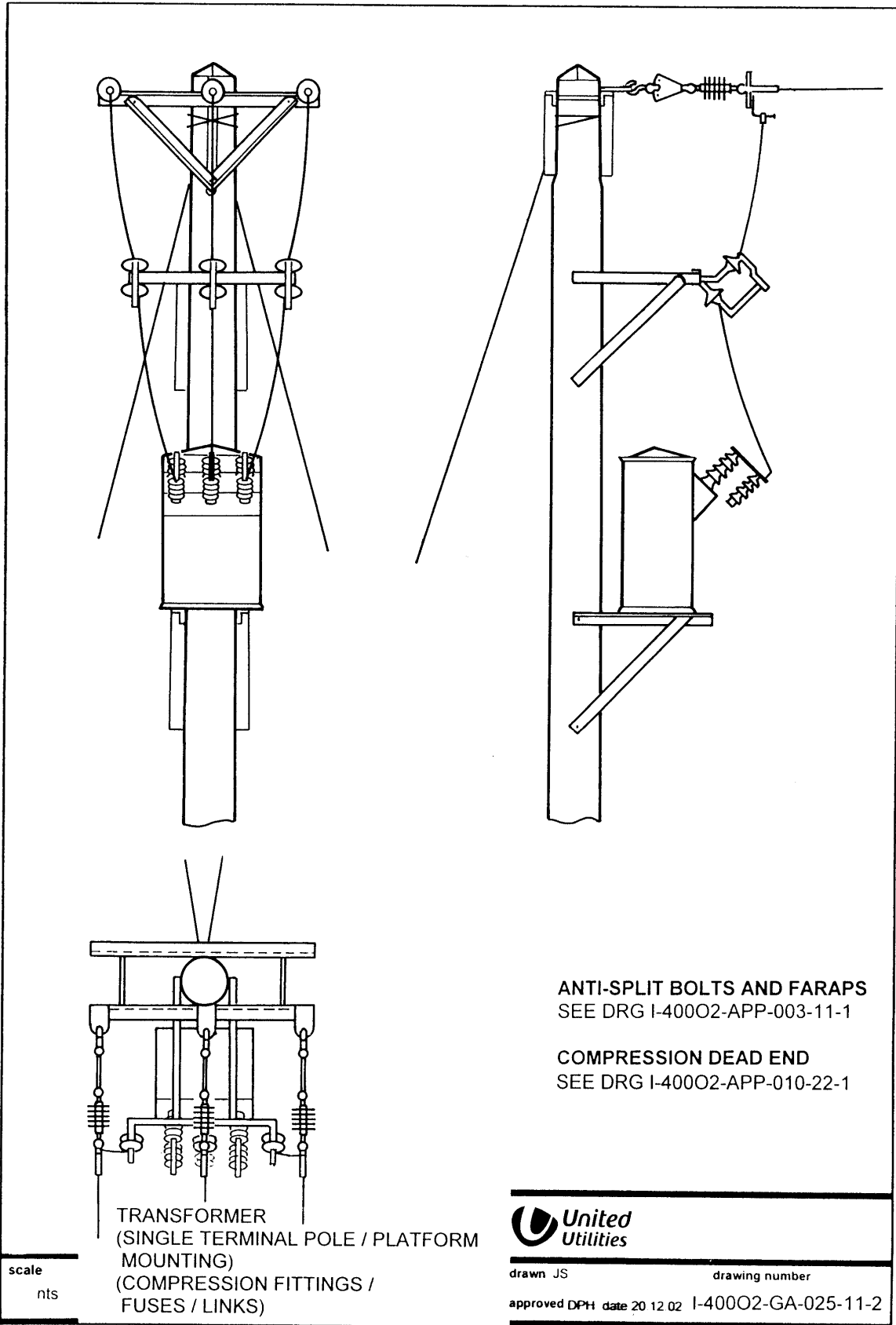
Drawing No: I-40002-GA-023

Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500082					
11kV - 120mm ²	2	500083					
11kV - 185mm ²	3	500084					
33kV - 120mm ²	4	-					
33kV - 185mm ²	5	-					
Item	ES Ref	Item CC No	-	-	3	2	1
(Items Included in GA Kit Contents)							
Bimetal Arcing Horn	400C29	121004	-	-	3	3	3
Compression Dead End	400C29	121022	-	-	-	-	3
Compression Dead End	400C29	121023	-	-	-	3	-
Compression Dead End	400C29	121024	-	-	3	-	-
Dropper Kit 1	400C29	124871	-	-	3	3	3
Bolt, M20, 300mm	400F1	107735	-	-	5	5	5
Bolt, M20, 60mm	400F1	107581	-	-	10	10	10
Bolt, M20, 750mm	400F1	107790	-	-	2	2	2
Coach Screw	400F1	126810	-	-	2	2	2
Washer, Round, Flat	400F1	993018	-	-	8	8	8
Washer, Square, Curved	400F1	139203	-	-	4	4	4
Washer, Square, Flat	400F1	139262	-	-	2	2	2
Vibration Damper	400H2	139115	-	-	-	-	3
Insulator Tension	400I4	125240	-	-	3	3	3
Danger Plate	400N1	195251	-	-	2	2	2
Gouge-mark Plate	400N1	995610	-	-	1	1	1
Ball End Hook	400S11	122297	-	-	3	3	3
Crossarm	400S11	133201	-	-	2	2	2
Crossarm Strut	400S11	133353	-	-	4	4	4
FARAP	400S11	260820	-	-	2	2	2
Platform Kit	400S11	133396	-	-	1	1	1
Sag Link	400S11	144578	-	-	3	3	3
Socket Clevis	400S11	122173	-	-	6	6	6
Terminal Strap	400S11	133361	-	-	3	3	3
Tie Rod	400S11	133388			2	2	2
Shroud, Insulated, PMT/GVR	400S12	160798	-	-	1	1	1
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	-	-	1	1	1
Pole Cap	400W7	Ref ES400W7	-	-	1	1	1
Transformer	321	Ref ES321	Separate order				
ACDs	400A2	Ref ES400A2	As required				
Conductor, Flexible 65mm ²	400C3	Ref ES400C3	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



**TRANSFORMER (SINGLE TERMINAL POLE/PLATFORM MOUNTING)
(HELICAL FITTINGS/FUSES/LINKS)**

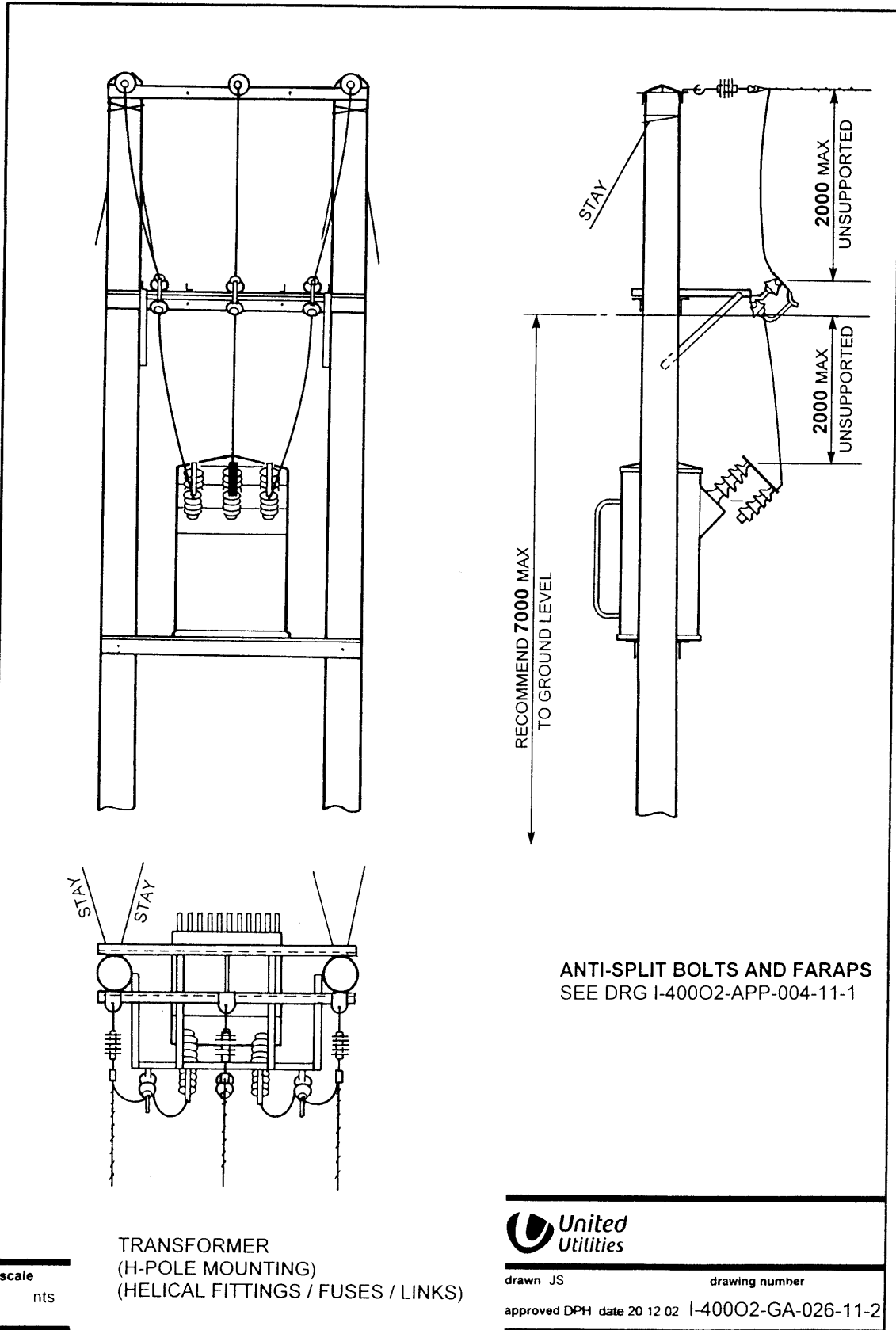
			Drawing No: I-40002-GA-024				
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500085					
11kV - 120mm ²	2	500086					
11kV - 185mm ²	3	500087					
33kV - 120mm ²	4	-					
33kV - 185mm ²	5	-					
Item	ES Ref	Item CC No	-	-	3	2	1
(Items Included in GA Kit Contents)							
Lug, 2-hole, Right Angle, for Conductor, Flexible, 65mm ²	400C29	176255	-	-	3	3	3
Lug, 2-hole, Straight, for Conductor, Flexible, 65mm ²	400C29	124892	-	-	3	3	3
Lug, 2-hole, Straight, bimetal	400C29	127237	-	-	-	-	3
Lug, 2-hole, Straight, bimetal	400C29	124894	-	-	-	3	-
Lug, 2-hole, Straight, bimetal	400C29	124890	-	-	3	-	-
Bolt, M20, 300mm	400F1	107735	-	-	7	7	7
Bolt, M20, 60mm	400F1	107581	-	-	10	10	10
Bolt, M20, 750mm	400F1	107790	-	-	2	2	2
Coach Screw	400F1	126810	-	-	2	2	2
Washer, Round, Flat	400F1	993018	-	-	8	8	8
Washer, Square, Curved	400F1	139203	-	-	4	4	4
Washer, Square, Flat	400F1	139262	-	-	2	2	2
Helical Dead End	400H2	121437	-	-	-	-	3
Helical Dead End	400H2	121438	-	-	-	3	-
Helical Dead End	400H2	121439	-	-	3	-	-
Vibration Damper	400H2	139115	-	-	-	-	3
Insulator Tension	400I4	125232	-	-	3	3	3
Danger Plate	400N1	195251	-	-	2	2	2
Gouge-mark Plate	400N1	995610	-	-	1	1	1
Crossarm	400S11	133201	-	-	2	2	2
Crossarm Strut	400S11	133353	-	-	4	4	4
FARAP	400S11	260820	-	-	2	2	2
Platform Kit	400S11	133396	-	-	1	1	1
Socket Thimble	400S11	132234	-	-	3	3	3
Steelwork, Links, Short	400S11	133207	-	-	1	1	1
Terminal Strap	400S11	133361	-	-	3	3	3
Tie Rod	400S11	133388	-	-	2	2	2
Shroud, Insulated, PMT/GVR	400S12	160798	-	-	1	1	1
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	-	-	1	1	1
Pole Cap	400W7	Ref ES400W7	-	-	1	1	1
Transformer	321	Ref ES321	Separate order				
ACDs	400A2	Ref ES400A2	As required				
Conductor, Flexible 65mm ²	400C3	Ref ES400C3	As required				
Fuse	400C29	Ref ES400C29	As required				
Fuse Carrier	400C29	Ref ES400C29	As required				
Fuse Unit	400C29	Ref ES400C29	As required				
Link Solid	400C29	Ref ES400C29	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



**TRANSFORMER (Single TERMINAL Pole/PLATFORM MOUNTING)
(COMPRESSION FITTINGS/FUSES/LINKS)**

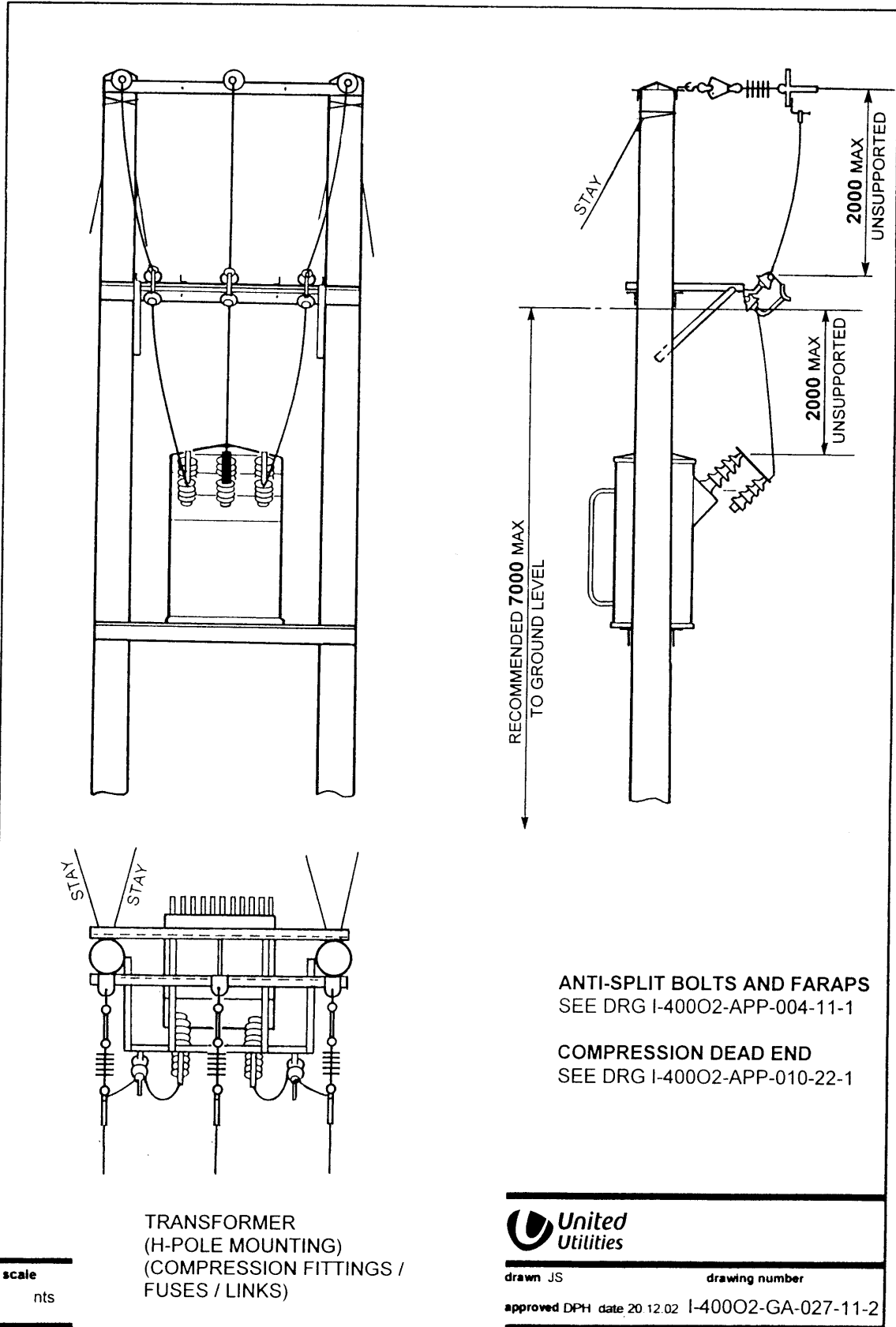
Drawing No: I-40002-GA-025

Voltage/Conductor	Ref	GA Kit CC No	Comprising:					
11kV - 50mm ²	1	500088						
11kV - 120mm ²	2	500089						
11kV - 185mm ²	3	500090						
33kV - 120mm ²	4	-						
33kV - 185mm ²	5	-						
Item	ES Ref	Item CC No	-	-	3	2	1	
(Items Included in GA Kit Contents)								
Bimetal Arcing Horn	400C29	121004	-	-	3	3	3	
Compression Dead End	400C29	121022	-	-	-	-	3	
Compression Dead End	400C29	121023	-	-	-	3	-	
Compression Dead End	400C29	121024	-	-	3	-	-	
Dropper Kit 2	400C29	121010	-	-	3	3	3	
Bolt, M20, 300mm	400F1	107735	-	-	7	7	7	
Bolt, M20, 60mm	400F1	107581	-	-	10	10	10	
Bolt, M20, 750mm	400F1	107790	-	-	2	2	2	
Coach Screw	400F1	126810	-	-	2	2	2	
Washer, Round, Flat	400F1	993018	-	-	8	8	8	
Washer, Square, Curved	400F1	139203	-	-	4	4	4	
Washer, Square, Flat	400F1	139262	-	-	2	2	2	
Vibration Damper	400H2	139115	-	-	-	-	3	
Insulator Tension	400I4	125240	-	-	3	3	3	
Danger Plate	400N1	195251	-	-	2	2	2	
Gouge-mark Plate	400N1	995610	-	-	1	1	1	
Ball End Hook	400S11	122297	-	-	3	3	3	
Crossarm	400S11	133201	-	-	2	2	2	
Crossarm Strut	400S11	133353	-	-	4	4	4	
FARAP	400S11	260820	-	-	2	2	2	
Platform Kit	400S11	133396	-	-	1	1	1	
Sag Link	400S11	144578	-	-	3	3	3	
Socket Clevis	400S11	122173	-	-	6	6	6	
Steelwork, Links, Short	400S11	133207	-	-	1	1	1	
Terminal Strap	400S11	133361	-	-	3	3	3	
Tie Rod	400S11	133388			2	2	2	
Shroud, Insulated, PMT/GVR	400S12	160798	-	-	1	1	1	
(Additional Items Required for GA -But Not Included in GA Kit Contents)								
Wood Pole	400W2	Ref ES400W2	-	-	1	1	1	
Pole Cap	400W7	Ref ES400W7	-	-	1	1	1	
Transformer	321	Ref ES321	Separate order					
ACDs	400A2	Ref ES400A2	As required					
Conductor, Flexible 65mm ²	400C3	Ref ES400C3	As required					
Fuse	400C29	Ref ES400C29	As required					
Fuse Carrier	400C29	Ref ES400C29	As required					
Fuse Unit	400C29	Ref ES400C29	As required					
Link Solid	400C29	Ref ES400C29	As required					
Notices	400N1	Ref ES400N1	As required					
Stays	400S13	Ref ES400S13	As required					



TRANSFORMER (H-POLE MOUNTING) - (HELICAL FITTINGS/FUSES/LINKS)

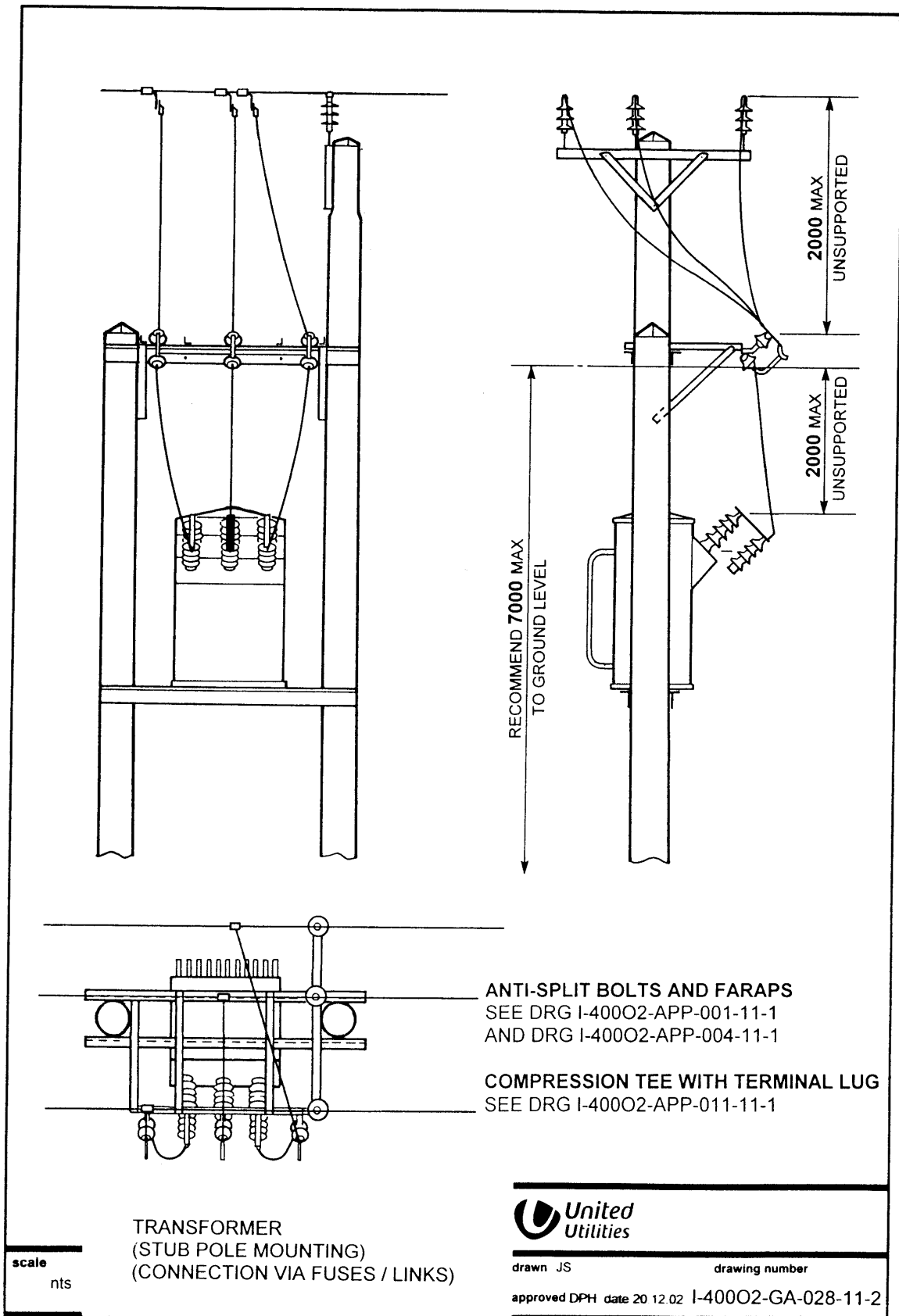
		Drawing No: I-40002-GA-026					
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500091					
11kV - 120mm ²	2	500092					
11kV - 185mm ²	3	500093					
33kV - 120mm ²	4	-					
33kV - 185mm ²	5	-					
Item	ES Ref	Item CC No	-	-	3	2	1
(Items Included in GA Kit Contents)							
Lug, 2-hole, Right Angle, for Conductor, Flexible, 65mm ²	400C29	176255	-	-	3	3	3
Lug, 2-hole, Straight, for Conductor, Flexible, 65mm ²	400C29	124892	-	-	3	3	3
Lug, 2-hole, Straight, bimetal	400C29	127237	-	-	-	-	3
Lug, 2-hole, Straight, bimetal	400C29	124894	-	-	-	3	-
Lug, 2-hole, Straight, bimetal	400C29	124890	-	-	3	-	-
Bolt, M20, 300mm	400F1	107735	-	-	10	10	10
Bolt, M20, 60mm	400F1	107581	-	-	6	6	6
Coach Screw	400F1	126810	-	-	4	4	4
Washer, Round, Flat	400F1	993018	-	-	4	4	4
Washer, Square, Curved	400F1	139203	-	-	4	4	4
Helical Dead End	400H2	121437	-	-	-	-	3
Helical Dead End	400H2	121438	-	-	-	3	-
Helical Dead End	400H2	121439	-	-	3	-	-
Vibration Damper	400H2	139115	-	-	-	-	3
Insulator Tension	400I4	125232	-	-	3	3	3
Danger Plate	400N1	195251	-	-	4	4	4
Gouge-mark Plate	400N1	995610	-	-	2	2	2
Foundation Fasteners Kit	400O2	133540	-	-	1	1	1
Crossarm	400S11	133203	-	-	2	2	2
FARAP	400S11	260820	-	-	4	4	4
Platform Kit	400S11	133213	-	-	1	1	1
Socket Thimble	400S11	132234	-	-	3	3	3
Steelwork, Links, Short	400S11	133207	-	-	1	1	1
Terminal Strap	400S11	133361	-	-	3	3	3
Tie Rod	400S11	133388	-	-	1	1	1
Shroud, Insulated, PMT/GVR	400S12	160798	-	-	1	1	1
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	-	-	2	2	2
Pole Cap	400W7	Ref ES400W7	-	-	2	2	2
Transformer	321	Ref ES321	Separate order				
ACDs	400A2	Ref ES400A2	As required				
Conductor, Flexible 65mm ²	400C3	Ref ES400C3	As required				
Fuse	400C29	Ref ES400C29	As required				
Fuse Carrier	400C29	Ref ES400C29	As required				
Fuse Unit	400C29	Ref ES400C29	As required				
Link Solid	400C29	Ref ES400C29	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



TRANSFORMER (H-POLE MOUNTING) (COMPRESSION FITTINGS/FUSES/LINKS)

Drawing No: I-40002-GA-027

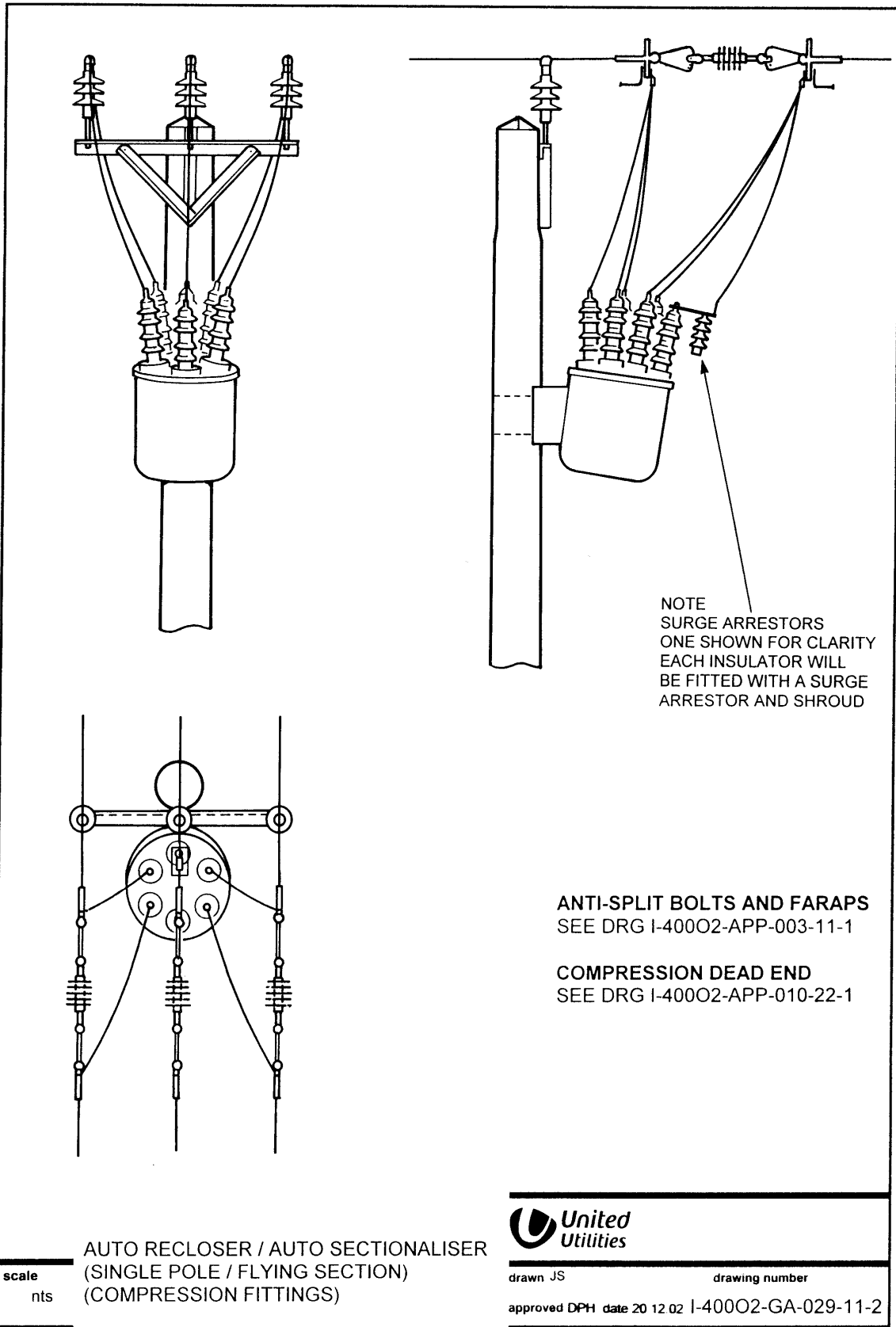
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500094					
11kV - 120mm ²	2	500095					
11kV - 185mm ²	3	500096					
33kV - 120mm ²	4	-					
33kV - 185mm ²	5	-					
Item	ES Ref	Item CC No	-	-	3	2	1
(Items Included in GA Kit Contents)							
Bimetal Arcing Horn	400C29	121004	-	-	3	3	3
Compression Dead End	400C29	121022	-	-	-	-	3
Compression Dead End	400C29	121023	-	-	-	3	-
Compression Dead End	400C29	121024	-	-	3	-	-
Dropper Kit 2	400C29	121010	-	-	3	3	3
Bolt, M20, 300mm	400F1	107735	-	-	10	10	10
Bolt, M20, 60mm	400F1	107581	-	-	6	6	6
Coach Screw	400F1	126810	-	-	4	4	4
Washer, Round, Flat	400F1	993018	-	-	4	4	4
Washer, Square, Curved	400F1	139203	-	-	4	4	4
Vibration Damper	400H2	139115	-	-	-	-	3
Insulator Tension	400I4	125240	-	-	3	3	3
Danger Plate	400N1	195251	-	-	4	4	4
Gouge-mark Plate	400N1	995610	-	-	2	2	2
Ball End Hook	400S11	122297	-	-	3	3	3
Crossarm	400S11	133203	-	-	2	2	2
FARAP	400S11	260820	-	-	4	4	4
Platform Kit	400S11	133213	-	-	1	1	1
Sag Link	400S11	144578	-	-	3	3	3
Socket Clevis	400S11	122173	-	-	6	6	6
Steelwork, Links, Short	400S11	133207	-	-	1	1	1
Terminal Strap	400S11	133361	-	-	3	3	3
Tie Rod	400S11	133388	-	-	1	1	1
Foundation Fasteners Kit	400O2	133540	-	-	1	1	1
Shroud, Insulated, PMT/GVR	400S12	160798	-	-	1	1	1
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	-	-	2	2	2
Pole Cap	400W7	Ref ES400W7	-	-	2	2	2
Transformer	321	Ref ES321	Separate order				
ACDs	400A2	Ref ES400A2	As required				
Conductor, Flexible 65mm ²	400C3	Ref ES400C3	As required				
Fuse	400C29	Ref ES400C29	As required				
Fuse Carrier	400C29	Ref ES400C29	As required				
Fuse Unit	400C29	Ref ES400C29	As required				
Link Solid	400C29	Ref ES400C29	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



TRANSFORMER (STUB POLE MOUNTING) - (CONNECTION VIA FUSES/LINKS)

Drawing No: I-40002-GA-028

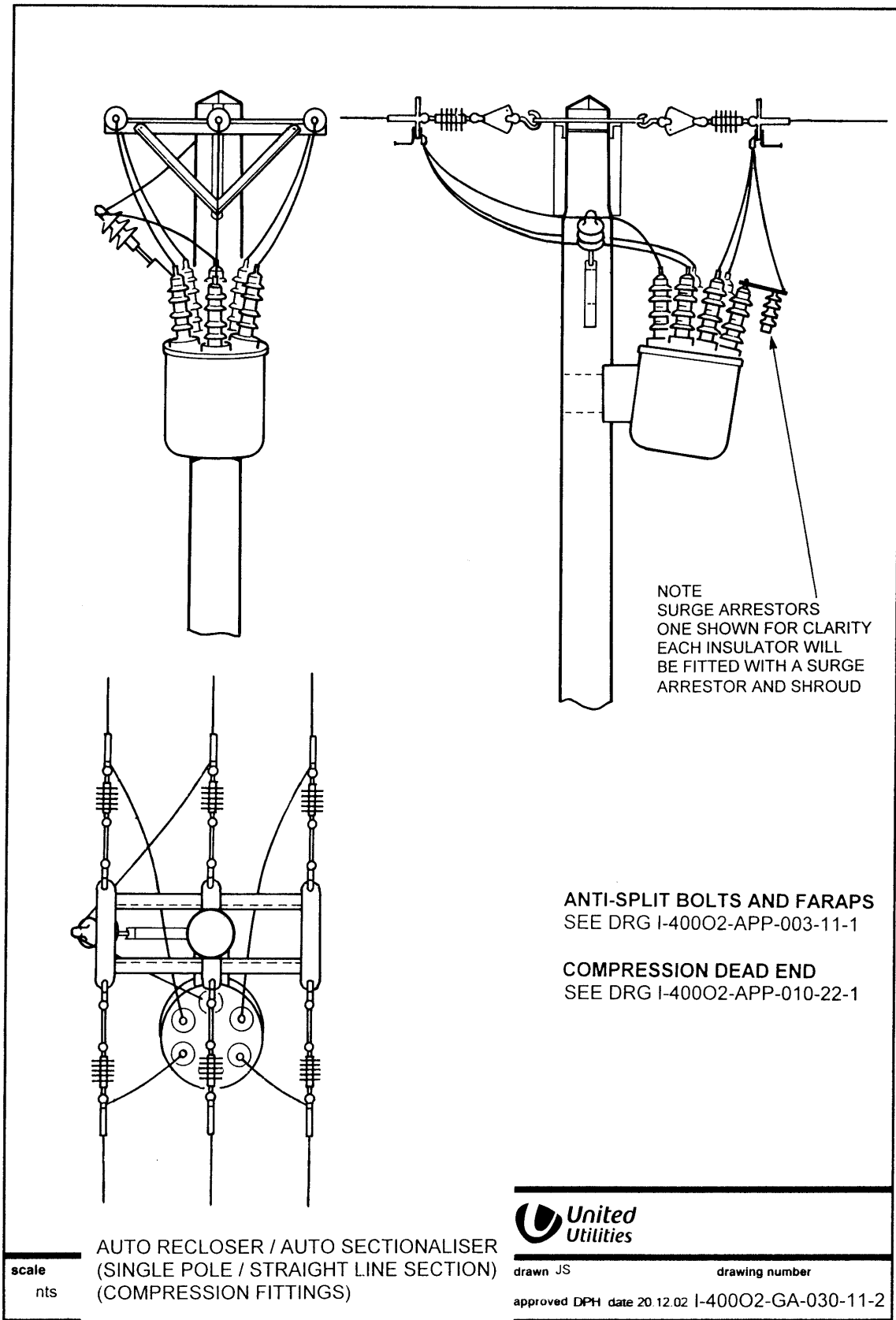
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500097					
11kV - 120mm ²	2	500098					
11kV - 185mm ²	3	500099					
33kV - 120mm ²	4	-					
33kV - 185mm ²	5	-					
Item	ES Ref	Item CC No	-	-	3	2	1
(Items Included in GA Kit Contents)							
Bimetal Arcing Horn	400C29	121004	-	-	3	3	3
Dropper Kit 2	400C29	121010	-	-	3	3	3
IPCC	400C29	121006	-	-	-	-	3
IPCC	400C29	121003	-	-	-	3	-
IPCC	400C29	121008	-	-	3	-	-
Bolt, M20, 300mm	400F1	107735	-	-	10	10	10
Bolt, M20, 60mm	400F1	107581	-	-	2	2	2
Coach Screw	400F1	126810	-	-	2	2	2
Washer, Square, Curved	400F1	139203	-	-	4	4	4
Washer, Square, Flat	400F1	139262	-	-	2	2	2
Helical Intermediate Tie	400H2	139100	-	-	-	-	3
Helical Intermediate Tie	400H2	139101	-	-	-	3	-
Helical Intermediate Tie	400H2	139102	-	-	3	-	-
Vibration Damper	400H2	139115	-	-	-	-	6
Insulator Pin-Mounted	400I4	175270	-	-	3	3	3
Danger Plate	400N1	195251	-	-	4	4	4
Gouge-mark Plate	400N1	995610	-	-	2	2	2
Foundation Fasteners Kit	400O2	133540	-	-	1	1	1
Crossarm	400S11	133200	-	-	1	1	1
Crossarm Strut	400S11	133353	-	-	2	2	2
FARAP	400S11	260820	-	-	2	2	2
Insulator Pin	400S11	128252	-	-	3	3	3
Platform Kit	400S11	133213	-	-	1	1	1
Steelwork, Links, Short	400S11	133207	-	-	1	1	1
Shroud, Insulated, PMT/GVR	400S12	160798	-	-	1	1	1
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	-	-	2	2	2
Pole Cap	400W7	Ref ES400W7	-	-	2	2	2
Transformer	321	Ref ES321	Separate order				
ACDs	400A2	Ref ES400A2	As required				
Conductor, Flexible 65mm ²	400C3	Ref ES400C3	As required				
Fuse	400C29	Ref ES400C29	As required				
Fuse Carrier	400C29	Ref ES400C29	As required				
Fuse Unit	400C29	Ref ES400C29	As required				
Link Solid	400C29	Ref ES400C29	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



AUTO RECLOSER/AUTO SECTIONALISER (SINGLE POLE/FLYING SECTION) - (COMPRESSION FITTINGS)

Drawing No: I-40002-GA-029

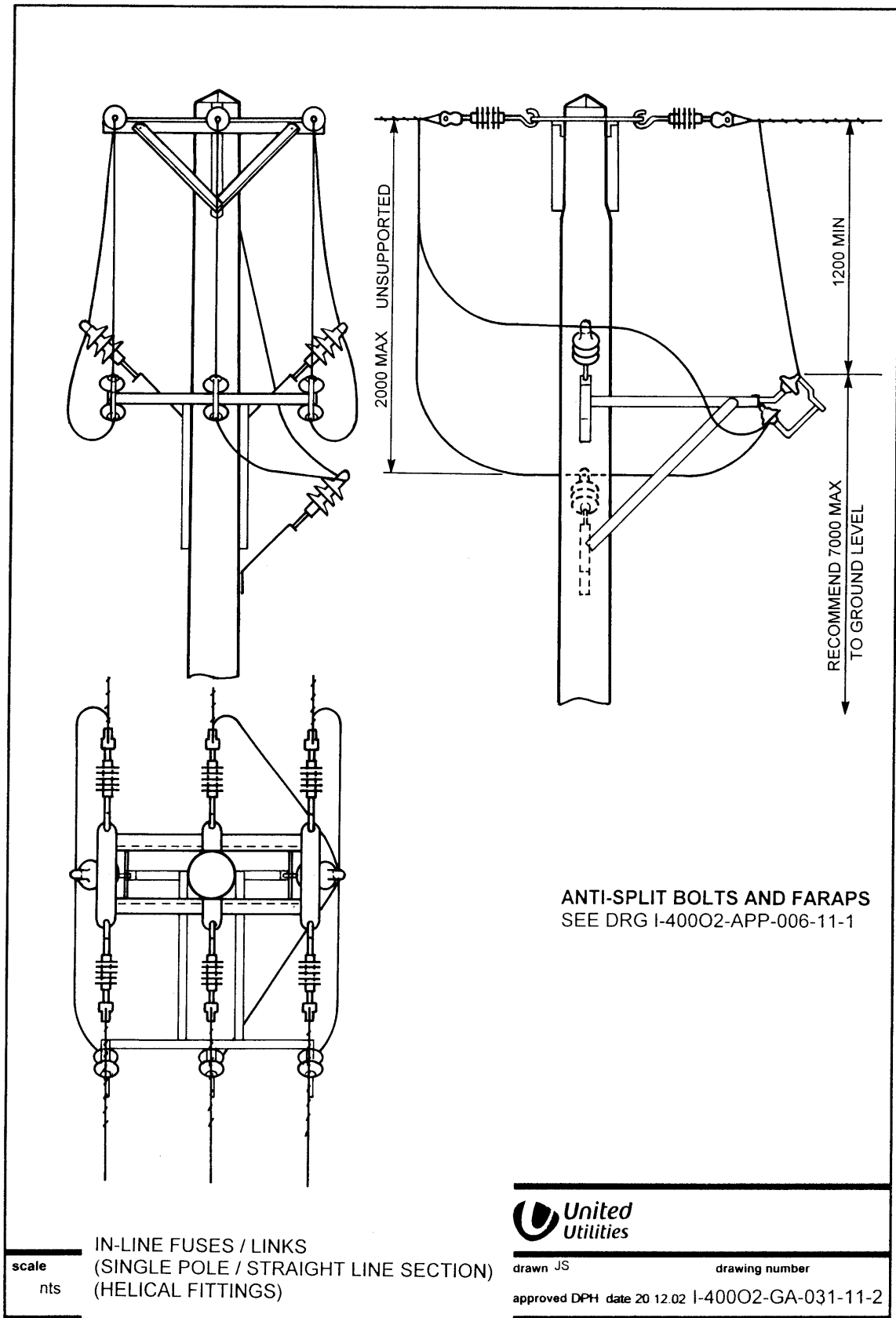
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500100					
11kV - 120mm ²	2	500101					
11kV - 185mm ²	3	500102					
33kV - 120mm ²	4	-					
33kV - 185mm ²	5	-					
Item	ES Ref	Item CC No	-	-	3	2	1
(Items Included in GA Kit Contents)							
Bimetal Arcing Horn	400C29	121004	-	-	6	6	6
Compression Dead End	400C29	121022	-	-	-	-	6
Compression Dead End	400C29	121023	-	-	-	6	-
Compression Dead End	400C29	121024	-	-	6	-	-
Dropper Kit 3	400C29	124880	-	-	-	-	6
Lug, 2-hole, Straight	400C29	124887	-	-	-	6	-
Lug, 2-hole, Straight	400C29	176200	-	-	6	-	-
Lug, 2-hole, Straight, bimetal	400C29	124894	-	-	-	3	-
Lug, 2-hole, Straight, bimetal	400C29	124890	-	-	3	-	-
Bolt, M20, 300mm	400F1	107735	-	-	5	5	5
Bolt, M20, 60mm	400F1	107581	-	-	2	2	2
Bolt, M20, 750mm	400F1	107790	-	-	2	2	2
Coach Screw	400F1	126810	-	-	2	2	2
Washer, Square, Curved	400F1	139203	-	-	6	6	6
Washer, Square, Flat	400F1	139262	-	-	4	4	4
Helical Intermediate Tie	400H2	139100	-	-	-	-	3
Helical Intermediate Tie	400H2	139101	-	-	-	3	-
Helical Intermediate Tie	400H2	139102	-	-	3	-	-
Vibration Damper	400H2	139115	-	-	-	-	6
Insulator Tension	400I4	125240	-	-	3	3	3
Insulator, Pin-Mounted	400I4	175270	-	-	3	3	3
Danger Plate	400N1	195251	-	-	2	2	2
Gouge-mark Plate	400N1	995610	-	-	1	1	1
Crossarm	400S11	133200	-	-	1	1	1
Crossarm Strut	400S11	133353	-	-	2	2	2
FARAP	400S11	260820	-	-	2	2	2
Insulator Pin	400S11	128252	-	-	3	3	3
Sag Link	400S11	144578	-	-	6	6	6
Socket Clevis	400S11	122173	-	-	12	12	12
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	-	-	1	1	1
Pole Cap	400W7	Ref ES400W7	-	-	1	1	1
Auto recloser/auto sectionaliser	315	Ref ES315	Separate order				
ACDs	400A2	Ref ES400A2	As required				
Conductor, Flexible 65mm ²	400C3	Ref ES400C3	As required				
Conductor, CC 120mm ²	400C3	Ref ES400C3	As required				
Conductor, CC 185mm ²	400C3	Ref ES400C3	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				
Surge Arrestor	TBA	Ref ES TBA	Separate order				



**AUTO RECLOSER/AUTO SECTIONALISER (SINGLE POLE/STRAIGHT LINE SECTION)
(COMPRESSION FITTINGS)**

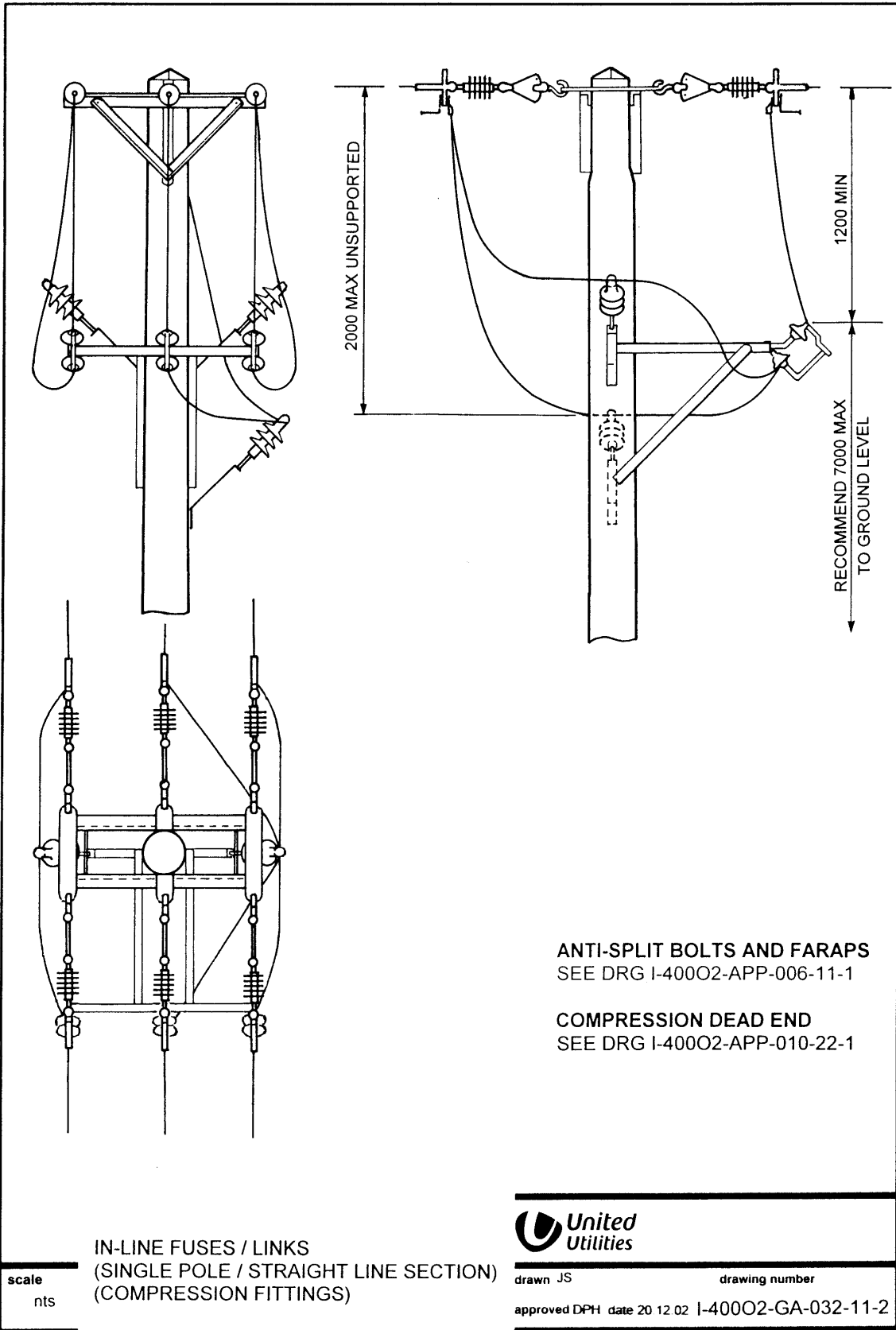
Drawing No: I-40002-GA-030

Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500103					
11kV - 120mm ²	2	500104					
11kV - 185mm ²	3	500105					
33kV - 120mm ²	4	-					
33kV - 185mm ²	5	-					
Item	ES Ref	Item CC No	-	-	3	2	1
(Items Included in GA Kit Contents)							
Bimetal Arcing Horn	400C29	121004	-	-	6	6	6
Compression Dead End	400C29	121022	-	-	-	-	6
Compression Dead End	400C29	121023	-	-	-	6	-
Compression Dead End	400C29	121024	-	-	6	-	-
Dropper Kit 3	400C29	124880	-	-	-	-	6
Lug, 2-hole, Straight	400C29	124887	-	6	-	6	-
Lug, 2-hole, Straight	400C29	176200	6	-	6	-	-
Lug, 2-hole, Straight, bimetal	400C29	124894	-	-	-	3	-
Lug, 2-hole, Straight, bimetal	400C29	124890	-	-	3	-	-
Bolt, M20, 300mm	400F1	107735	-	-	5	5	5
Bolt, M20, 60mm	400F1	107581	-	-	12	12	12
Bolt, M20, 750mm	400F1	107790	-	-	2	2	2
Coach Screw	400F1	126810	-	-	4	4	4
Washer, Round, Flat	400F1	993018	-	-	8	8	8
Washer, Square, Curved	400F1	139203	-	-	6	6	6
Washer, Square, Flat	400F1	139262	-	-	2	2	2
Helical Intermediate Tie	400H2	139100	-	-	-	-	1
Helical Intermediate Tie	400H2	139101	-	-	-	1	-
Helical Intermediate Tie	400H2	139102	-	-	1	-	-
Vibration Damper	400H2	139115	-	-	-	-	6
Insulator Tension	400I4	125240	-	-	6	6	6
Insulator, Pin-Mounted	400I4	175270	-	-	3	3	3
Danger Plate	400N1	195251	-	-	2	2	2
Gouge-mark Plate	400N1	995610	-	-	1	1	1
Ball End Hook	400S11	122297	-	-	6	6	6
Crossarm	400S11	133200	-	-	2	2	2
Crossarm Strut	400S11	133353	-	-	4	4	4
FARAP	400S11	260820	-	-	2	2	2
Pilot Pin	400S11	128376	-	-	1	1	1
Pilot Pin Bracket	400S11	111457	-	-	1	1	1
Sag Link	400S11	144578	-	-	6	6	6
Section Strap	400S11	133345	-	-	2	2	2
Socket Clevis	400S11	122173	-	-	12	12	12
Terminal Strap	400S11	133361	-	-	2	2	2
Tie Rod	400S11	133388	-	-	2	2	2
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	-	-	1	1	1
Pole Cap	400W7	Ref ES400W7	-	-	1	1	1
Auto recloser/auto sectionaliser	315	Ref ES315	Separate order				
ACDs	400A2	Ref ES400A2	As required				
Conductor, Flexible 65mm ²	400C3	Ref ES400C3	As required				
Conductor, CC 120mm ²	400C3	Ref ES400C3	As required				
Conductor, CC 185mm ²	400C3	Ref ES400C3	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				
Surge Arrestor	TBA	Ref ES TBA	Separate order				



IN-LINE FUSES/LINKS (SINGLE POLE/STRAIGHT LINE SECTION) - (HELICAL FITTINGS)

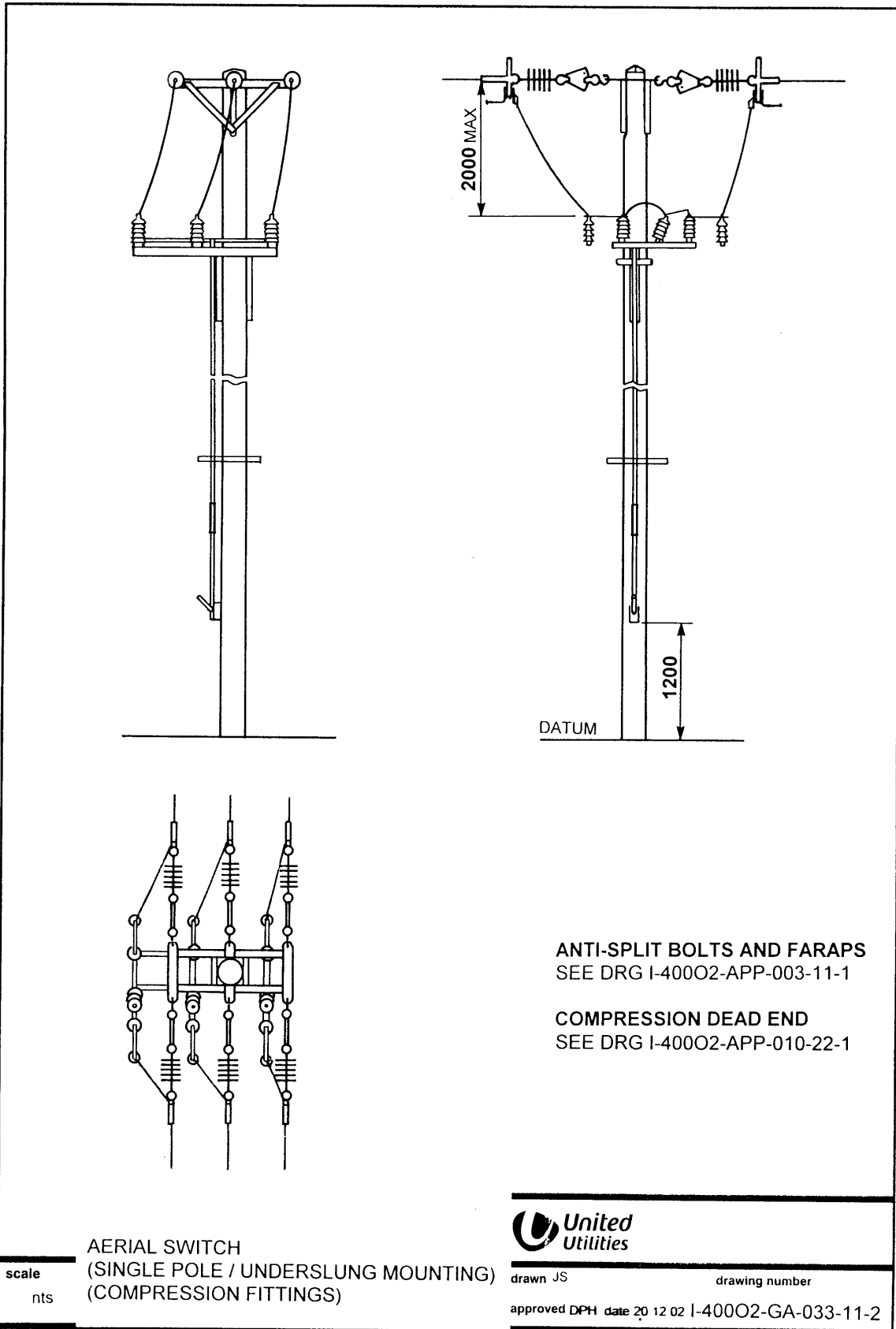
			Drawing No: I-40002-GA-031					
Voltage/Conductor	Ref	GA Kit CC No	Comprising:					
11kV - 50mm ²	1	500106						
11kV - 120mm ²	2	500107						
11kV - 185mm ²	3	500108						
33kV - 120mm ²	4	-						
33kV - 185mm ²	5	-						
Item	ES Ref	Item CC No	-	-	3	2	1	
(Items Included in GA Kit Contents)								
Lug, 2-hole, Straight, bimetal	400C29	127237	-	-	-	-	3	
Lug, 2-hole, Straight, bimetal	400C29	124894	-	-	-	3	-	
Lug, 2-hole, Straight, bimetal	400C29	124890	-	-	3	-	-	
Bolt, M20, 300mm	400F1	107735	-	-	5	5	5	
Bolt, M20, 60mm	400F1	107581			12	12	12	
Bolt, M20, 750mm	400F1	107790	-	-	2	2	2	
Coach Screw	400F1	126810	-	-	8	8	8	
Washer, Round, Flat	400F1	993018	-	-	8	8	8	
Washer, Square, Curved	400F1	139203	-	-	4	4	4	
Washer, Square, Flat	400F1	139262	-	-	2	2	2	
Helical Dead End	400H2	121437	-	-	-	-	6	
Helical Dead End	400H2	121438	-	-	-	6	-	
Helical Dead End	400H2	121439	-	-	6	-	-	
Helical Intermediate Tie	400H2	139100	-	-	-	-	3	
Helical Intermediate Tie	400H2	139101	-	-	-	3	-	
Helical Intermediate Tie	400H2	139102	-	-	3	-	-	
Vibration Damper	400H2	139115	-	-	-	-	6	
Insulator Tension	400I4	125232	-	-	6	6	6	
Insulator, Pin-Mounted	400I4	175270	-	-	3	3	3	
Danger Plate	400N1	195251	-	-	2	2	2	
Gouge-mark Plate	400N1	995610	-	-	1	1	1	
Crossarm	400S11	133200	-	-	2	2	2	
Crossarm Strut	400S11	133353	-	-	4	4	4	
FARAP	400S11	260820	-	-	2	2	2	
Pilot Pin	400S11	128376	-	-	3	3	3	
Pilot Pin Bracket	400S11	111457	-	-	3	3	3	
Section Strap	400S11	133345	-	-	2	2	2	
Socket Thimble	400S11	132234	-	-	6	6	6	
Steelwork, Links, Long	400S11	133206	-	-	1	1	1	
Terminal Strap	400S11	133361	-	-	2	2	2	
Tie Rod	400S11	133388	-	-	2	2	2	
(Additional Items Required for GA -But Not Included in GA Kit Contents)								
Wood Pole	400W2	Ref ES400W2	-	-	1	1	1	
Pole Cap	400W7	Ref ES400W7	-	-	1	1	1	
ACDs	400A2	Ref ES400A2	As required					
Fuse	400C29	Ref ES400C29	As required					
Fuse Carrier	400C29	Ref ES400C29	As required					
Fuse Unit	400C29	Ref ES400C29	As required					
Link Solid	400C29	Ref ES400C29	As required					
Notices	400N1	Ref ES400N1	As required					
Stays	400S13	Ref ES400S13	As required					



IN-LINE FUSES/LINKS (SINGLE POLE/STRAIGHT LINE SECTION) - (COMPRESSION FITTINGS)

Voltage/Conductor		Ref	GA Kit CC No	Comprising:			
11kV - 50mm ²		1	500109				
11kV - 120mm ²		2	500110				
11kV - 185mm ²		3	500111				
33kV - 120mm ²		4	-				
33kV - 185mm ²		5	-				
Item	ES Ref	Item CC No	-	-	3	2	1
(Items Included in GA Kit Contents)							
Bimetal Arcing Horn	400C29	121004	-	-	6	6	6
Compression Dead End	400C29	121022	-	-	-	-	6
Compression Dead End	400C29	121023	-	-	-	6	-
Compression Dead End	400C29	121024	-	-	6	-	-
Dropper Kit 3	400C29	124880	-	-	-	-	6
Lug, 2-hole, Straight	400C29	124887	-	-	-	6	-
Lug, 2-hole, Straight	400C29	176200	-	-	6	-	-
Lug, 2-hole, Straight, bimetal	400C29	124894	-	-	-	3	-
Lug, 2-hole, Straight, bimetal	400C29	124890	-	-	3	-	-
Bolt, M20, 300mm	400F1	107735	-	-	5	5	5
Bolt, M20, 60mm	400F1	107581	-	-	12	12	12
Bolt, M20, 750mm	400F1	107790	-	-	2	2	2
Coach Screw	400F1	126810	-	-	8	8	8
Washer, Round, Flat	400F1	993018	-	-	8	8	8
Washer, Square, Curved	400F1	139203	-	-	4	4	4
Washer, Square, Flat	400F1	139262	-	-	2	2	2
Helical Intermediate Tie	400H2	139100	-	-	-	-	3
Helical Intermediate Tie	400H2	139101	-	-	-	3	-
Helical Intermediate Tie	400H2	139102	-	-	3	-	-
Vibration Damper	400H2	139115	-	-	-	-	6
Insulator Tension	400I4	125240	-	-	6	6	6
Insulator, Pin-Mounted	400I4	175270	-	-	3	3	3
Danger Plate	400N1	195251	-	-	2	2	2
Gouge-mark Plate	400N1	995610	-	-	1	1	1
Ball End Hook	400S11	122297	-	-	6	6	6
Crossarm	400S11	133200	-	-	2	2	2
Crossarm Strut	400S11	133353	-	-	4	4	4
FARAP	400S11	260820	-	-	2	2	2
Pilot Pin	400S11	128376	-	-	3	3	3
Pilot Pin Bracket	400S11	111457	-	-	3	3	3
Sag Link	400S11	144578	-	-	6	6	6
Section Strap	400S11	133345	-	-	2	2	2
Socket Clevis	400S11	122173	-	-	12	12	12
Steelwork, Links, Long	400S11	133206	-	-	1	1	1
Terminal Strap	400S11	133361	-	-	2	2	2
Tie Rod	400S11	133388	-	-	2	2	2
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	-	-	1	1	1
Pole Cap	400W7	Ref ES400W7	-	-	1	1	1
ACDs	400A2	Ref ES400A2	As required				
Conductor, Flexible 65mm ²	400C3	Ref ES400C3	As required				
Conductor, CC 120mm ²	400C3	Ref ES400C3	As required				
Conductor, CC 185mm ²	400C3	Ref ES400C3	As required				
Fuse	400C29	Ref ES400C29	As required				
Fuse Carrier	400C29	Ref ES400C29	As required				
Fuse Unit	400C29	Ref ES400C29	As required				
Link Solid	400C29	Ref ES400C29	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				

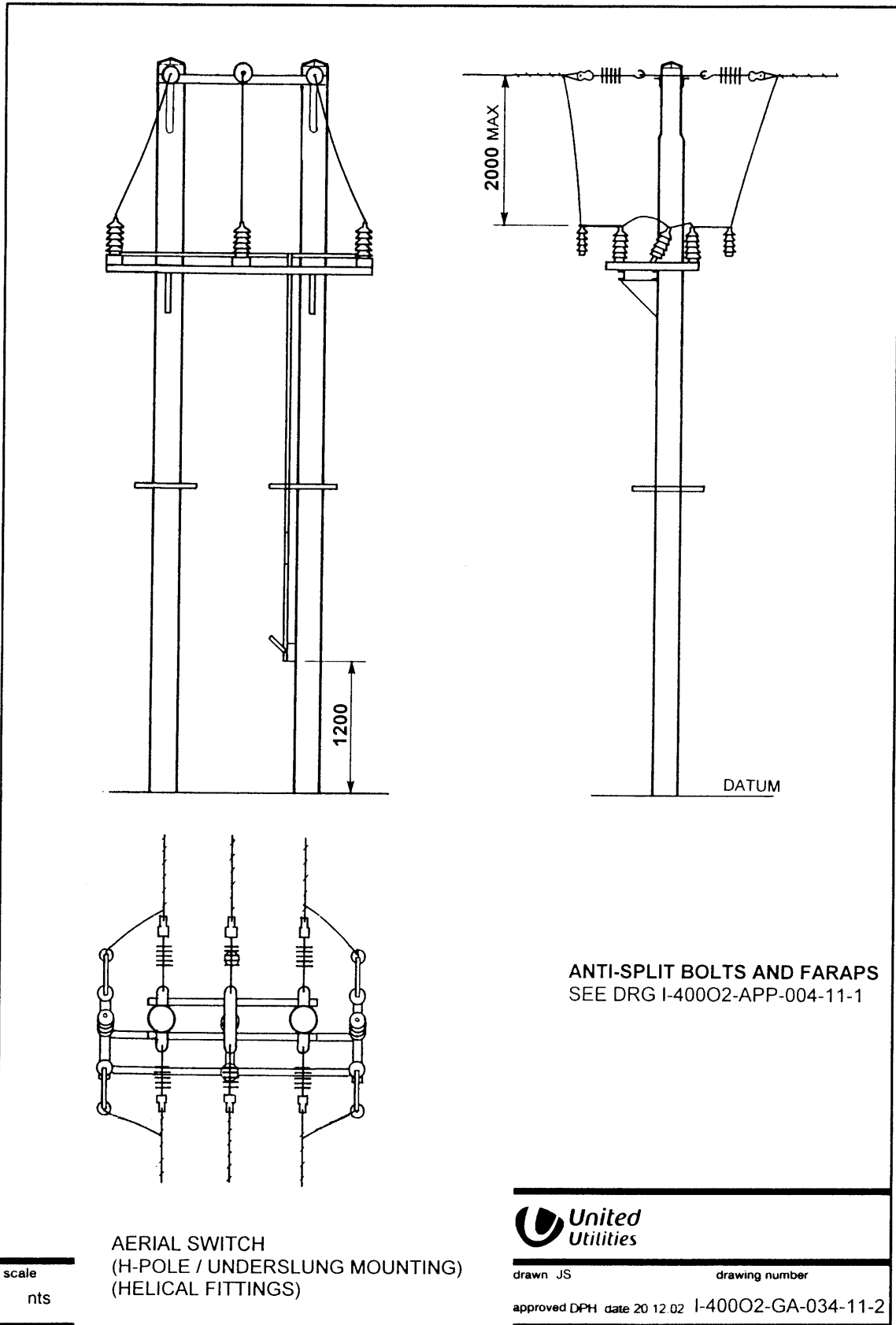
Drawing No: I-40002-GA-032



Aerial Switch (Single Pole/Underslung Mounting) - (compression fittings)

Drawing No: I-40002-GA-033

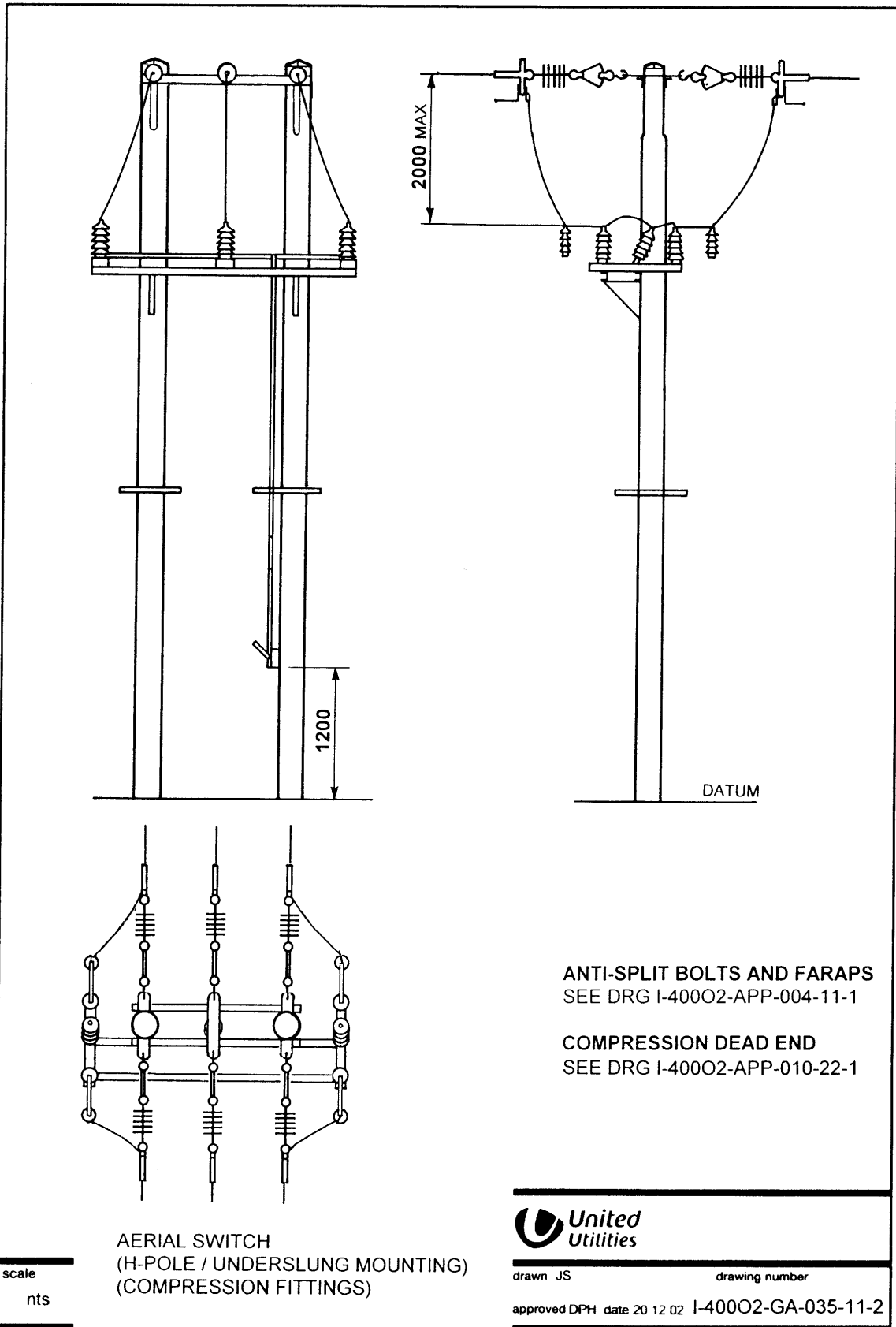
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500112					
11kV - 120mm ²	2	500113					
11kV - 185mm ²	3	500114					
33kV - 120mm ²	4	-					
33kV - 185mm ²	5	-					
Item	ES Ref	Item CC No	-	-	3	2	1
(Items Included in GA Kit Contents)							
Bimetal Arcing Horn	400C29	121004	-	-	6	6	6
Compression Dead End	400C29	121022	-	-	-	-	6
Compression Dead End	400C29	121023	-	-	-	6	-
Compression Dead End	400C29	121024	-	-	6	-	-
Dropper Kit 1	400C29	124871	-	-	-	-	6
Lug, 2-hole, Right Angle	400C29	176245	-	-	-	6	-
Lug, 2-hole, Right Angle	400C29	176250	-	-	6	-	-
Lug, 2-hole, Straight	400C29	124887	-	-	-	6	-
Lug, 2-hole, Straight	400C29	176200	-	-	6	-	-
Bolt, M20, 300mm	400F1	107735	-	-	5	5	5
Bolt, M20, 60mm	400F1	107581	-	-	12	12	12
Bolt, M20, 750mm	400F1	107790	-	-	2	2	2
Coach Screw	400F1	126810	-	-	2	2	2
Washer, Round, Flat	400F1	993018	-	-	8	8	8
Washer, Square, Curved	400F1	139203	-	-	4	4	4
Washer, Square, Flat	400F1	139262	-	-	2	2	2
Vibration Damper	400H2	139115	-	-	-	-	6
Insulator Tension	400I4	125240	-	-	6	6	6
Danger Plate	400N1	195251	-	-	2	2	2
Gouge-mark Plate	400N1	995610	-	-	1	1	1
Ball End Hook	400S11	122297	-	-	6	6	6
Crossarm	400S11	133200	-	-	2	2	2
Crossarm Strut	400S11	133353	-	-	4	4	4
FARAP	400S11	260820	-	-	2	2	2
Sag Link	400S11	144578	-	-	6	6	6
Section Strap	400S11	133345	-	-	2	2	2
Socket Clevis	400S11	122173	-	-	12	12	12
Terminal Strap	400S11	133361	-	-	2	2	2
Tie Rod	400S11	133388	-	-	2	2	2
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	-	-	1	1	1
Pole Cap	400W7	Ref ES400W7	-	-	1	1	1
Aerial Switch	315	Ref ES315	Separate order				
ACDs	400A2	Ref ES400A2	As required				
Conductor, Flexible 65mm ²	400C3	Ref ES400C3	As required				
Conductor, CC 120mm ²	400C3	Ref ES400C3	As required				
Conductor, CC 185mm ²	400C3	Ref ES400C3	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



**AERIAL SWITCH (H-POLE POLE/UNDERSLUNG MOUNTING)
(HELICAL FITTINGS)**

Drawing No: I-40002-GA-034

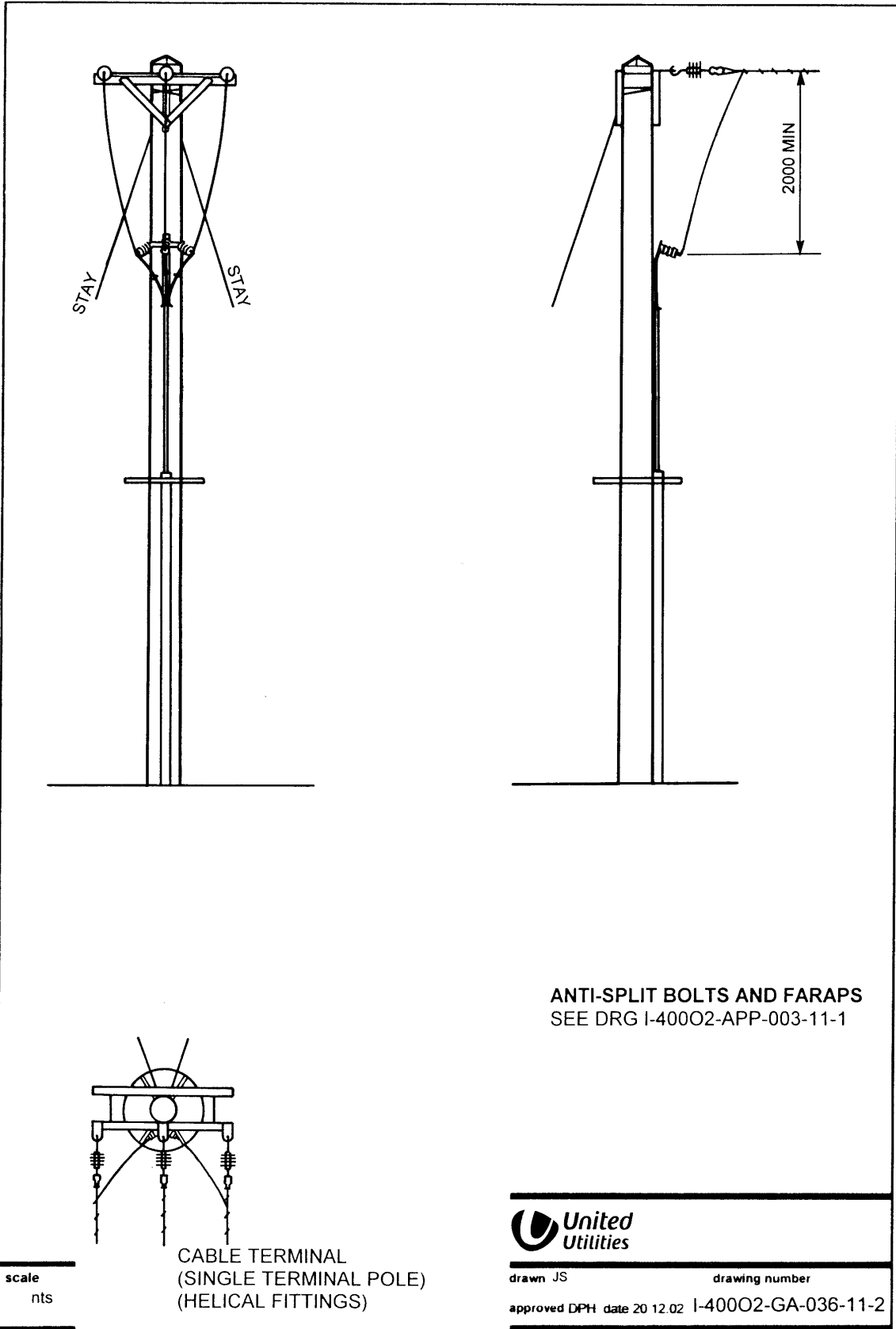
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	-					
11kV - 120mm ²	2	-					
11kV - 185mm ²	3	-					
33kV - 120mm ²	4	500115					
33kV - 185mm ²	5	500116					
Item	ES Ref	Item CC No	5	4	-	-	-
(Items Included in GA Kit Contents)							
Lug, 2-hole, Right Angle	400C29	176245	-	6	-	-	-
Lug, 2-hole, Right Angle	400C29	176250	6	-	-	-	-
Bolt, M20, 300mm	400F1	107735	8	8	-	-	-
Bolt, M20, 60mm	400F1	107581	8	8	-	-	-
Coach Screw	400F1	126810	4	4	-	-	-
Washer, Round, Flat	400F1	993018	4	4	-	-	-
Washer, Square, Curved	400F1	139203	4	4	-	-	-
Helical Dead End	400H2	121438	-	6	-	-	-
Helical Dead End	400H2	121439	6	-	-	-	-
Insulator Tension	400I4	125232	6	6	-	-	-
Danger Plate	400N1	195251	4	4	-	-	-
Gouge-mark Plate	400N1	995610	2	2	-	-	-
Foundation Fasteners Kit	400O2	133540	1	1	-	-	-
Crossarm	400S11	133202	2	2	-	-	-
FARAP	400S11	260820	4	4	-	-	-
Section Strap	400S11	133345	1	1	-	-	-
Socket Thimble	400S11	132234	6	6	-	-	-
Terminal Strap	400S11	133361	4	4	-	-	-
Tie Rod	400S11	133388	1	1	-	-	-
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	2	2	-	-	-
Pole Cap	400W7	Ref ES400W7	2	2	-	-	-
Aerial Switch	315	Ref ES315	Separate order				
ACDs	400A2	Ref ES400A2	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



AERIAL SWITCH (H-POLE POLE/UNDERSLUNG MOUNTING) - (COMPRESSION FITTINGS)

Drawing No: I-40002-GA-035

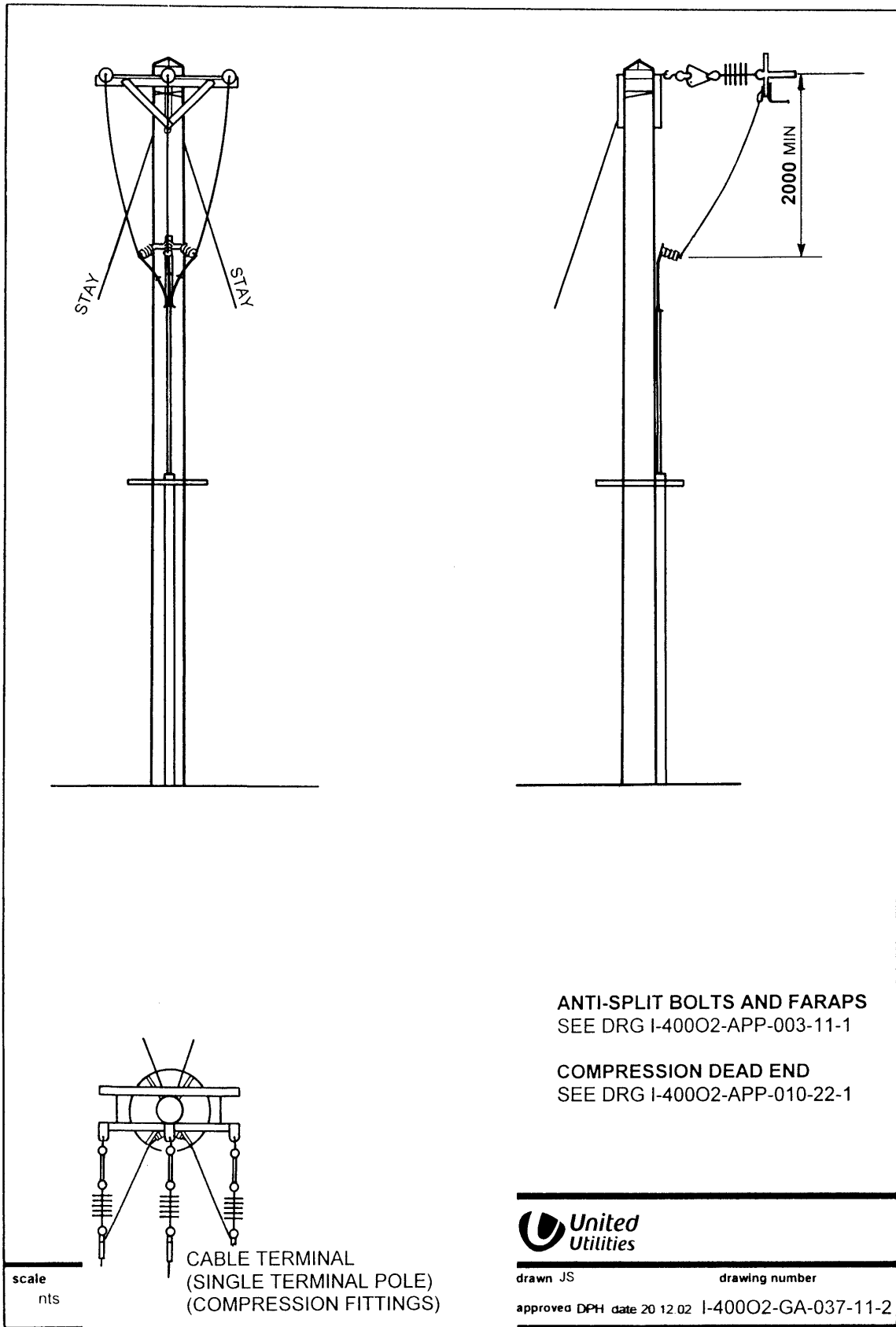
Voltage/Conductor	Ref	GA Kit CC No	Comprising:			
11kV - 50mm ²	1	-				
11kV - 120mm ²	2	-				
11kV - 185mm ²	3	-				
33kV - 120mm ²	4	500117				
33kV - 185mm ²	5	500118				
Item	ES Ref	Item CC No	5	4	-	-
(Items Included in GA Kit Contents)						
Bimetal Arcing Horn	400C29	121004	-	-	6	6
Compression Dead End	400C29	121023	-	6	-	-
Compression Dead End	400C29	121024	6	-	-	-
Lug, 2-hole, Right Angle	400C29	176245	-	6	-	-
Lug, 2-hole, Right Angle	400C29	176250	6	-	-	-
Lug, 2-hole, Straight	400C29	124887	6	6	-	-
Lug, 2-hole, Straight	400C29	176200	6	6	-	-
Bolt, M20, 300mm	400F1	107735	8	8	-	-
Bolt, M20, 60mm	400F1	107581	10	10	-	-
Coach Screw	400F1	126810	4	4	-	-
Washer, Round, Flat	400F1	993018	4	4	-	-
Washer, Square, Curved	400F1	139203	4	4	-	-
Insulator Tension	400I4	125240	6	6	-	-
Danger Plate	400N1	195251	4	4	-	-
Gouge-mark Plate	400N1	995610	2	2	-	-
Foundation Fasteners Kit	400O2	133540	1	1	-	-
Ball End Hook	400S11	122297	6	6	-	-
Crossarm	400S11	133202	2	2	-	-
FARAP	400S11	260820	4	4	-	-
Sag Link	400S11	144578	6	6	-	-
Section Strap	400S11	133345	1	1	-	-
Socket Clevis	400S11	122173	12	12	-	-
Terminal Strap	400S11	133361	4	4	-	-
Tie Rod	400S11	133388	1	1	-	-
(Additional Items Required for GA -But Not Included in GA Kit Contents)						
Wood Pole	400W2	Ref ES400W2	2	2	-	-
Pole Cap	400W7	Ref ES400W7	2	2	-	-
Aerial Switch	315	Ref ES315	Separate order			
ACDs	400A2	Ref ES400A2	As required			
Conductor, CC 120mm ²	400C3	Ref ES400C3	As required			
Conductor, CC 185mm ²	400C3	Ref ES400C3	As required			
Notices	400N1	Ref ES400N1	As required			
Stays	400S13	Ref ES400S13	As required			



**CABLE TERMINAL (SINGLE TERMINAL POLE)
(HELICAL FITTINGS)**

Drawing No: I-40002-GA-036

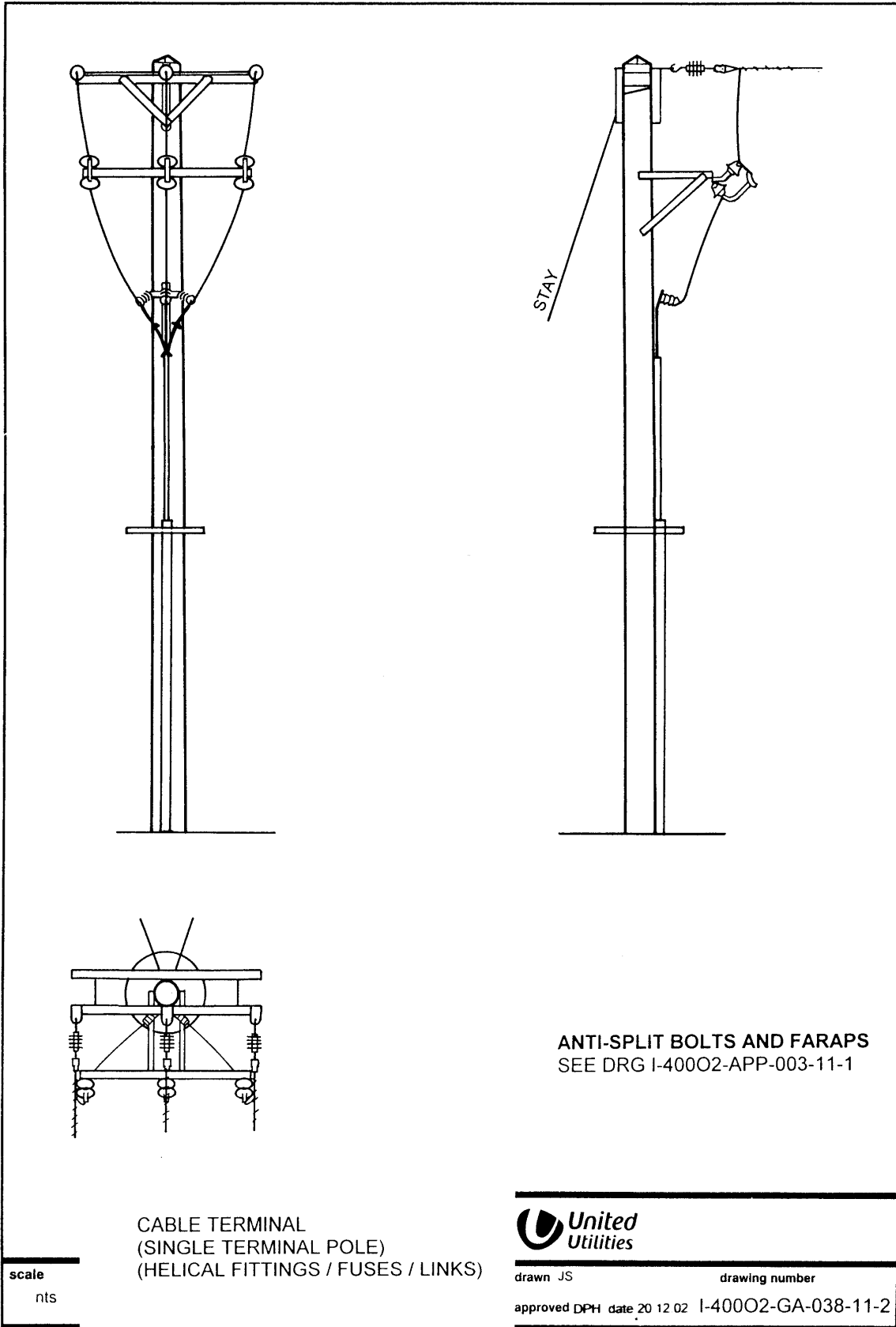
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500119					
11kV - 120mm ²	2	500120					
11kV - 185mm ²	3	500121					
33kV - 120mm ²	4	-					
33kV - 185mm ²	5	-					
Item	ES Ref	Item CC No	-	-	3	2	1
(Items Included in GA Kit Contents)							
Lug, 2-hole, Straight, bimetal	400C29	127237	-	-	-	-	3
Lug, 2-hole, Straight, bimetal	400C29	124894	-	-	-	3	-
Lug, 2-hole, Straight, bimetal	400C29	124890	-	-	3	-	-
Bolt, M20, 300mm	400F1	107735	-	-	3	3	3
Bolt, M20, 60mm	400F1	107581	-	-	10	10	10
Bolt, M20, 750mm	400F1	107790	-	-	2	2	2
Coach Screw	400F1	126810	-	-	2	2	2
Washer, Round, Flat	400F1	993018	-	-	8	8	8
Washer, Square, Curved	400F1	139203	-	-	4	4	4
Washer, Square, Flat	400F1	139262	-	-	2	2	2
Helical Dead End	400H2	121437	-	-	-	-	3
Helical Dead End	400H2	121438	-	-	-	3	-
Helical Dead End	400H2	121439	-	-	3	-	-
Vibration Damper	400H2	139115	-	-	-	-	3
Insulator Tension	400I4	125232	-	-	3	3	3
Danger Plate	400N1	195251	-	-	2	2	2
Gouge-mark Plate	400N1	995610	2	2	-	-	-
Crossarm	400S11	133201	-	-	2	2	2
Crossarm Strut	400S11	133353	-	-	4	4	4
FARAP	400S11	260820	-	-	2	2	2
Socket Thimble	400S11	132234			3	3	3
Terminal Strap	400S11	133361	-	-	3	3	3
Tie Rod	400S11	133388	-	-	2	2	2
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	-	-	1	1	1
Pole Cap	400W7	Ref ES400W7	-	-	1	1	1
ACDs	400A2	Ref ES400A2	As required				
Cable Related Components	400C12	Ref ES400C12	Separate order				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



CABLE TERMINAL (SINGLE TERMINAL POLE) - (COMPRESSION FITTINGS)

Drawing No: I-40002-GA-037

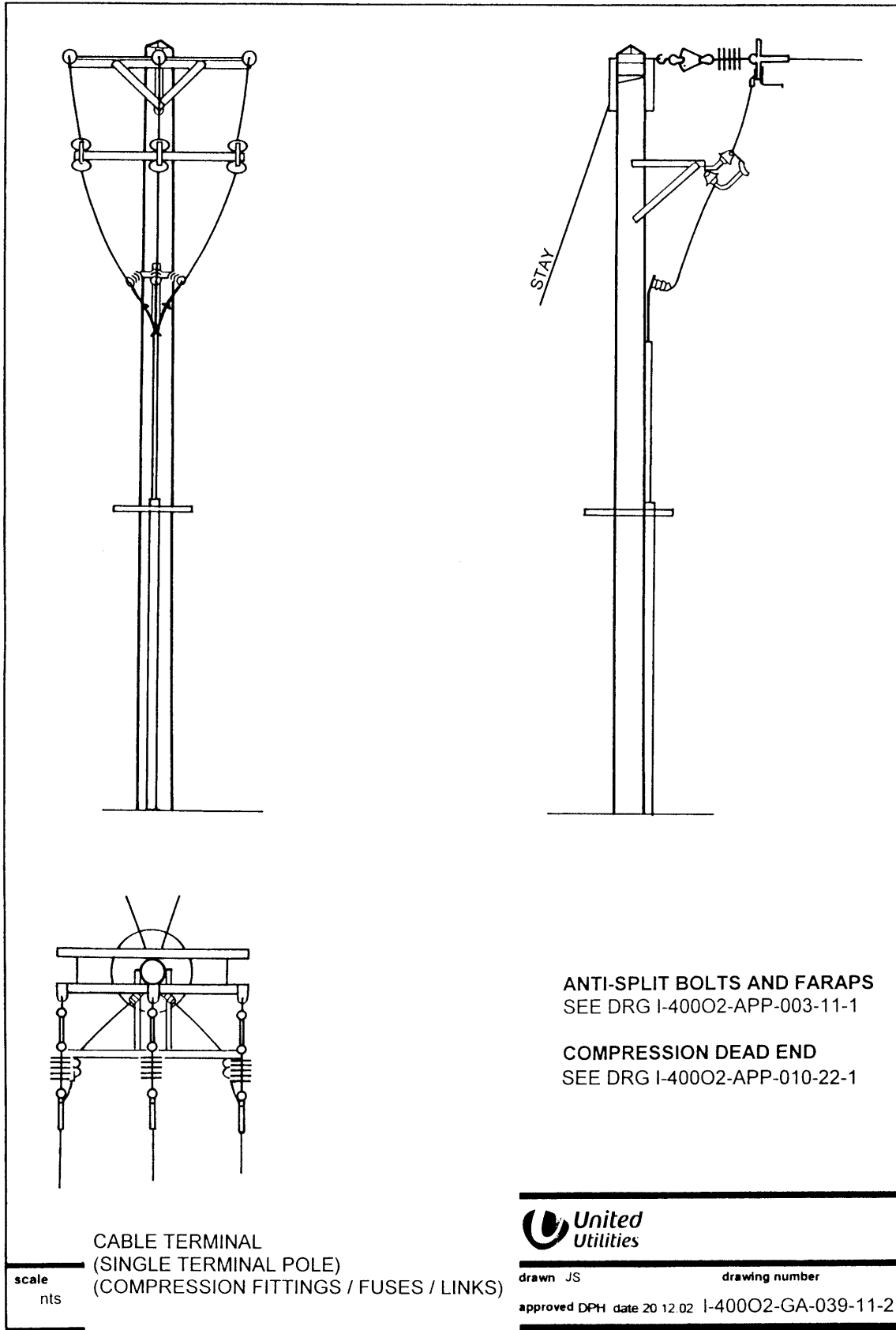
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500122					
11kV - 120mm ²	2	500123					
11kV - 185mm ²	3	500124					
33kV - 120mm ²	4	-					
33kV - 185mm ²	5	-					
Item	ES Ref	Item CC No	-	-	3	2	1
(Items Included in GA Kit Contents)							
Bimetal Arcing Horn	400C29	121004	-	-	-	-	3
Compression Dead End	400C29	121022	-	-	-	-	3
Compression Dead End	400C29	121023	-	-	-	3	-
Compression Dead End	400C29	121024	-	-	3	-	-
Dropper Kit 4	400C29	124883	-	-	-	-	3
Lug, 2-hole, Straight, bimetal	400C29	124894	-	-	-	3	-
Lug, 2-hole, Straight, bimetal	400C29	124890	-	-	3	-	-
Lug, 2-hole, Straight	400C29	124887	-	-	-	3	-
Lug, 2-hole, Straight	400C29	176200	-	-	3	-	-
Bolt, M20, 300mm	400F1	107735	-	-	3	3	3
Bolt, M20, 60mm	400F1	107581	-	-	10	10	10
Bolt, M20, 750mm	400F1	107790	-	-	2	2	2
Coach Screw	400F1	126810	-	-	2	2	2
Washer, Round, Flat	400F1	993018	-	-	8	8	8
Washer, Square, Curved	400F1	139203	-	-	4	4	4
Washer, Square, Flat	400F1	139262	-	-	2	2	2
Vibration Damper	400H2	139115	-	-	-	-	3
Insulator Tension	400I4	125240	-	-	3	3	3
Danger Plate	400N1	195251	-	-	2	2	2
Gouge-mark Plate	400N1	995610	-	-	1	1	1
Ball End Hook	400S11	122297	-	-	3	3	3
Crossarm	400S11	133201	-	-	2	2	2
Crossarm Strut	400S11	133353	-	-	4	4	4
FARAP	400S11	260820	-	-	2	2	2
Sag Link	400S11	144578	-	-	3	3	3
Socket Clevis	400S11	122173	-	-	6	6	6
Terminal Strap	400S11	133361	-	-	3	3	3
Tie Rod	400S11	133388	-	-	2	2	2
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	-	-	1	1	1
Pole Cap	400W7	Ref ES400W7	-	-	1	1	1
ACDs	400A2	Ref ES400A2	As required				
Conductor, Flexible 65mm ²	400C3	Ref ES400C3	As required				
Conductor, CC 120mm ²	400C3	Ref ES400C3	As required				
Conductor, CC 185mm ²	400C3	Ref ES400C3	As required				
Cable Related Components	400C12	Ref ES400C12	Separate order				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



CABLE TERMINAL (SINGLE TERMINAL POLE) - (HELICAL FITTINGS/FUSES/LINKS)

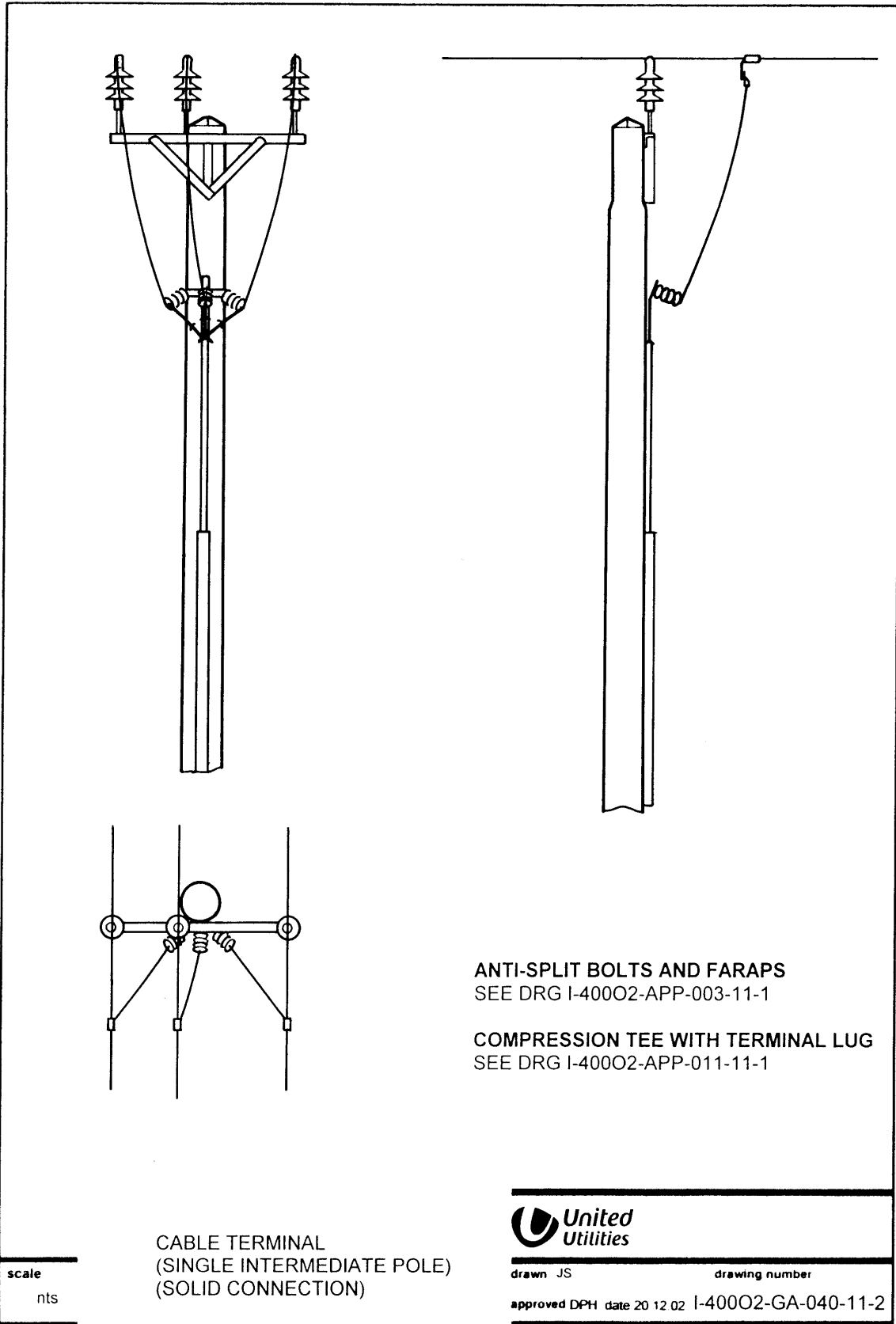
Drawing No: I-40002-GA-038

Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500125					
11kV - 120mm ²	2	500126					
11kV - 185mm ²	3	500127					
33kV - 120mm ²	4	-					
33kV - 185mm ²	5	-					
Item	ES Ref	Item CC No	-	-	3	2	1
(Items Included in GA Kit Contents)							
Lug, 2-hole, Straight, bimetal	400C29	127237	-	-	-	-	9
Lug, 2-hole, Straight, bimetal	400C29	124894	-	-	-	9	-
Lug, 2-hole, Straight, bimetal	400C29	124890	-	-	9	-	-
Bolt, M20, 300mm	400F1	107735	-	-	5	5	5
Bolt, M20, 60mm	400F1	107581	-	-	10	10	10
Bolt, M20, 750mm	400F1	107790	-	-	2	2	2
Coach Screw	400F1	126810	-	-	2	2	2
Washer, Round, Flat	400F1	993018	-	-	8	8	8
Washer, Square, Curved	400F1	139203	-	-	4	4	4
Washer, Square, Flat	400F1	139262	-	-	2	2	2
Helical Dead End	400H2	121437	-	-	-	-	3
Helical Dead End	400H2	121438	-	-	-	3	-
Helical Dead End	400H2	121439	-	-	3	-	-
Insulator Tension	400I4	125232	-	-	3	3	3
Danger Plate	400N1	195251	-	-	2	2	2
Gouge-mark Plate	400N1	995610	-	-	1	1	1
Crossarm	400S11	133201	-	-	2	2	2
Crossarm Strut	400S11	133353	-	-	4	4	4
FARAP	400S11	260820	-	-	2	2	2
Socket Thimble	400S11	132234	-	-	3	3	3
Steelwork, Links, Long	400S11	133206	-	-	1	1	1
Terminal Strap	400S11	133361	-	-	3	3	3
Tie Rod	400S11	133388	-	-	2	2	2
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	-	-	1	1	1
Pole Cap	400W7	Ref ES400W7	-	-	1	1	1
ACDs	400A2	Ref ES400A2	As required				
Cable Related Components	400C12	Ref ES400C12	Separate order				
Fuse	400C29	Ref ES400C29	As required				
Fuse Carrier	400C29	Ref ES400C29	As required				
Fuse Unit	400C29	Ref ES400C29	As required				
Link Solid	400C29	Ref ES400C29	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



CABLE TERMINAL (SINGLE TERMINAL POLE) - (COMPRESSION FITTINGS/FUSES/LINKS)

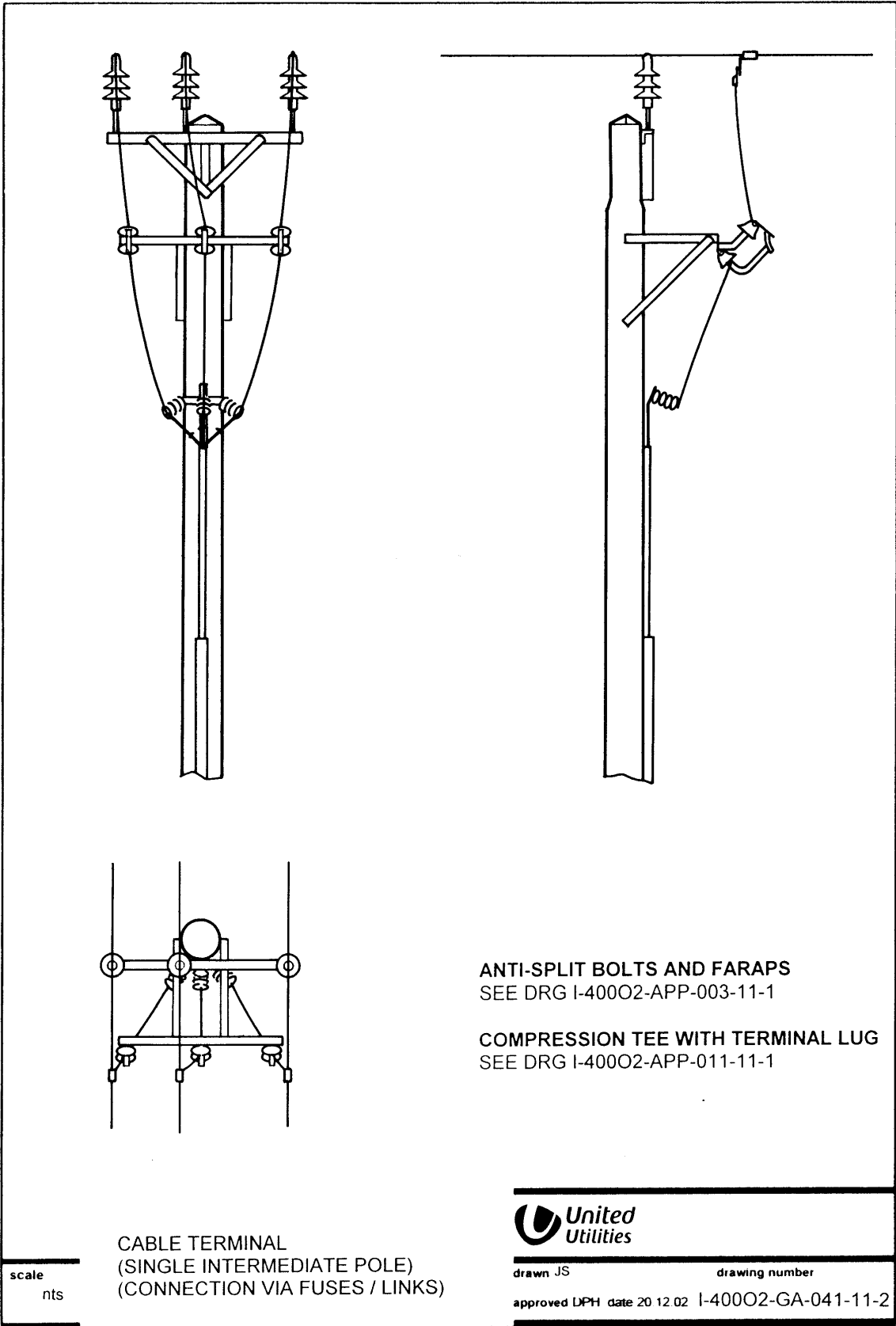
			Drawing No: I-4002-GA-039				
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500128					
11kV - 120mm ²	2	500129					
11kV - 185mm ²	3	500130					
33kV - 120mm ²	4	-					
33kV - 185mm ²	5	-					
Item	ES Ref	Item CC No	-	-	3	2	1
(Items Included in GA Kit Contents)							
Bimetal Arcing Horn	400C29	121004	-	-	-	-	3
Compression Dead End	400C29	121022	-	-	-	-	3
Compression Dead End	400C29	121023	-	-	-	3	-
Compression Dead End	400C29	121024	-	-	3	-	-
Dropper Kit 2	400C29	121010	-	-	-	-	3
Lug, 2-hole, Straight	400C29	124887	-	-	-	3	-
Lug, 2-hole, Straight	400C29	176200	-	-	3	-	-
Lug, 2-hole, Straight, for Conductor, Flexible, 65mm ²	400C29	124892	-	-	-	-	3
Lug, 2-hole, Straight, bimetal	400C29	124894	-	-	-	9	-
Lug, 2-hole, Straight, bimetal	400C29	124890	-	-	9	-	-
Bolt, M20, 300mm	400F1	107735	-	-	5	5	5
Bolt, M20, 60mm	400F1	107581	-	-	10	10	10
Bolt, M20, 750mm	400F1	107790	-	-	2	2	2
Coach Screw	400F1	126810	-	-	2	2	2
Washer, Round, Flat	400F1	993018	-	-	8	8	8
Washer, Square, Curved	400F1	139203	-	-	4	4	4
Washer, Square, Flat	400F1	139262	-	-	2	2	2
Vibration Damper	400H2	139115	-	-	-	-	3
Insulator Tension	400I4	125240	-	-	3	3	3
Danger Plate	400N1	195251	-	-	2	2	2
Gouge-mark Plate	400N1	995610	-	-	1	1	1
Ball End Hook	400S11	122297	-	-	3	3	3
Crossarm	400S11	133201	-	-	2	2	2
Crossarm Strut	400S11	133353	-	-	4	4	4
FARAP	400S11	260820	-	-	2	2	2
Sag Link	400S11	144578	-	-	3	3	3
Socket Clevis	400S11	122173	-	-	6	6	6
Steelwork, Links, Long	400S11	133206	-	-	1	1	1
Terminal Strap	400S11	133361	-	-	3	3	3
Tie Rod	400S11	133388	-	-	2	2	2
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	-	-	1	1	1
Pole Cap	400W7	Ref ES400W7	-	-	1	1	1
ACDs	400A2	Ref ES400A2	As required				
Conductor, Flexible 65mm ²	400C3	Ref ES400C3	As required				
Conductor, CC 120mm ²	400C3	Ref ES400C3	As required				
Conductor, CC 185mm ²	400C3	Ref ES400C3	As required				
Fuse	400C29	Ref ES400C29	As required				
Fuse Carrier	400C29	Ref ES400C29	As required				
Fuse Unit	400C29	Ref ES400C29	As required				
Link Solid	400C29	Ref ES400C29	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



CABLE TERMINAL (SINGLE INTERMEDIATE POLE) - (SOLID CONNECTION)

Drawing No: I-40002-GA-040

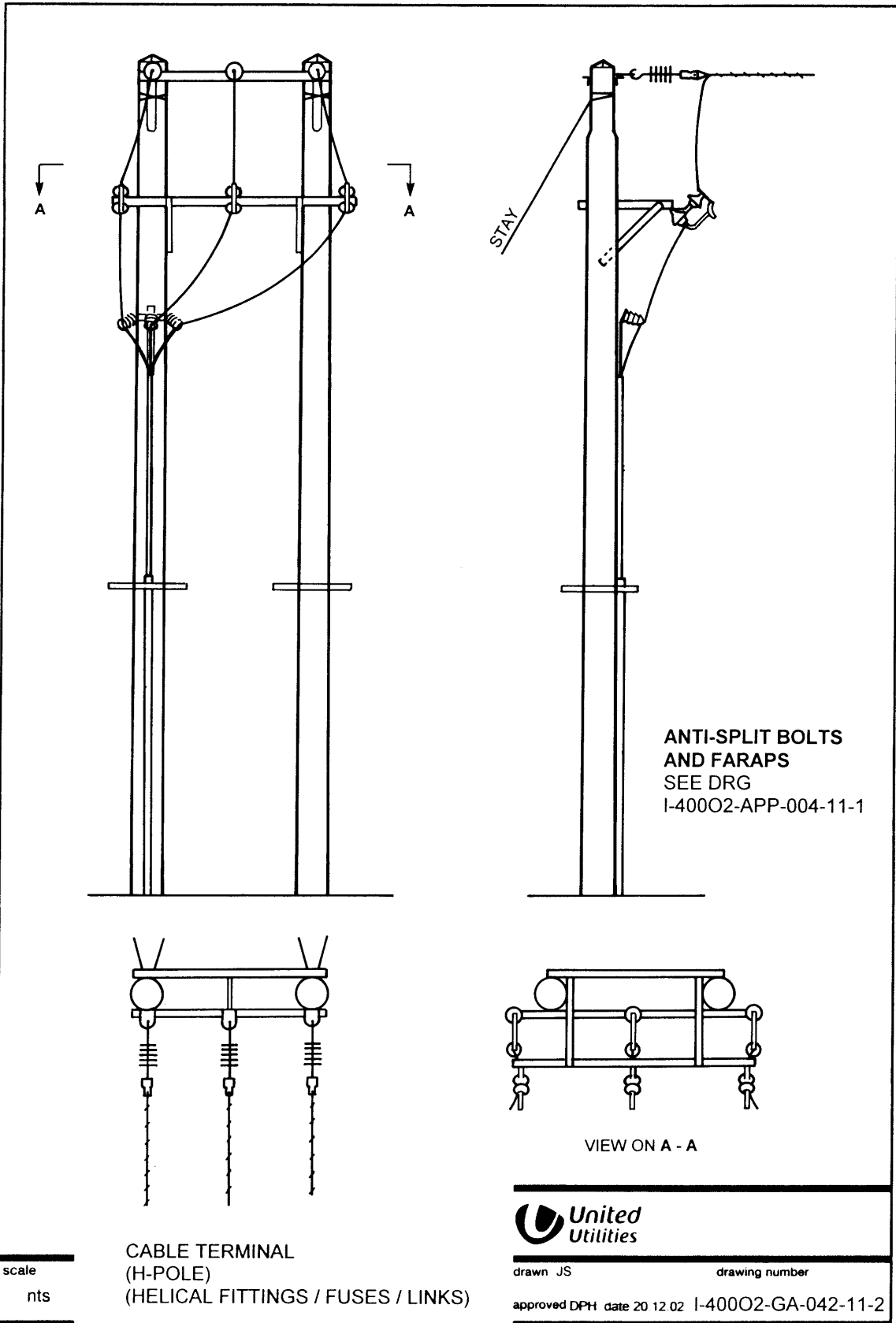
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500131					
11kV - 120mm ²	2	500132					
11kV - 185mm ²	3	500133					
33kV - 120mm ²	4	-					
33kV - 185mm ²	5	-					
Item	ES Ref	Item CC No	-	-	3	2	1
(Items Included in GA Kit Contents)							
Bimetal Arcing Horn	400C29	121004	-	-	-	-	3
Dropper Kit 4	400C29	124883	-	-	-	3	3
Backplate	400C29	121020	-	-	3	3	-
IPCC	400C29	121006	-	-	-	-	3
IPCC	400C29	121003	-	-	-	3	-
IPCC	400C29	121008	-	-	3	-	-
Lug, 2-hole, Straight	400C29	124887	-	-	-	3	-
Lug, 2-hole, Straight	400C29	176200	-	-	3	-	-
Lug, 2-hole, Straight, bimetal	400C29	124894	-	-	-	3	-
Lug, 2-hole, Straight, bimetal	400C29	124890	-	-	3	-	-
Bolt, M20, 300mm	400F1	107735	-	-	3	3	3
Bolt, M20, 60mm	400F1	107581	-	-	2	2	2
Bolt, M20, 750mm	400F1	107790	-	-	2	2	2
Coach Screw	400F1	126810	-	-	2	2	2
Washer, Square, Curved	400F1	139203	-	-	4	4	4
Washer, Square, Flat	400F1	139262	-	-	4	4	4
Helical Intermediate Tie	400H2	139100	-	-	-	-	3
Helical Intermediate Tie	400H2	139101	-	-	-	3	-
Helical Intermediate Tie	400H2	139102	-	-	3	-	-
Vibration Damper	400H2	139115	-	-	-	-	6
Insulator, Pin-Mounted	400I4	175270	-	-	3	3	3
Danger Plate	400N1	195251	-	-	2	2	2
Gouge-mark Plate	400N1	995610	-	-	1	1	1
Crossarm	400S11	133200	-	-	1	1	1
Crossarm Strut	400S11	133353	-	-	2	2	2
FARAP	400S11	260820	-	-	2	2	2
Insulator Pin	400S11	128252	-	-	3	3	3
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	-	-	1	1	1
Pole Cap	400W7	Ref ES400W7	-	-	1	1	1
ACDs	400A2	Ref ES400A2	As required				
Conductor, Flexible 65mm ²	400C3	Ref ES400C3	As required				
Cable Related Components	400C12	Ref ES400C12	Separate order				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



CABLE TERMINAL (SINGLE INTERMEDIATE POLE) - (CONNECTION VIA FUSES/LINKS)

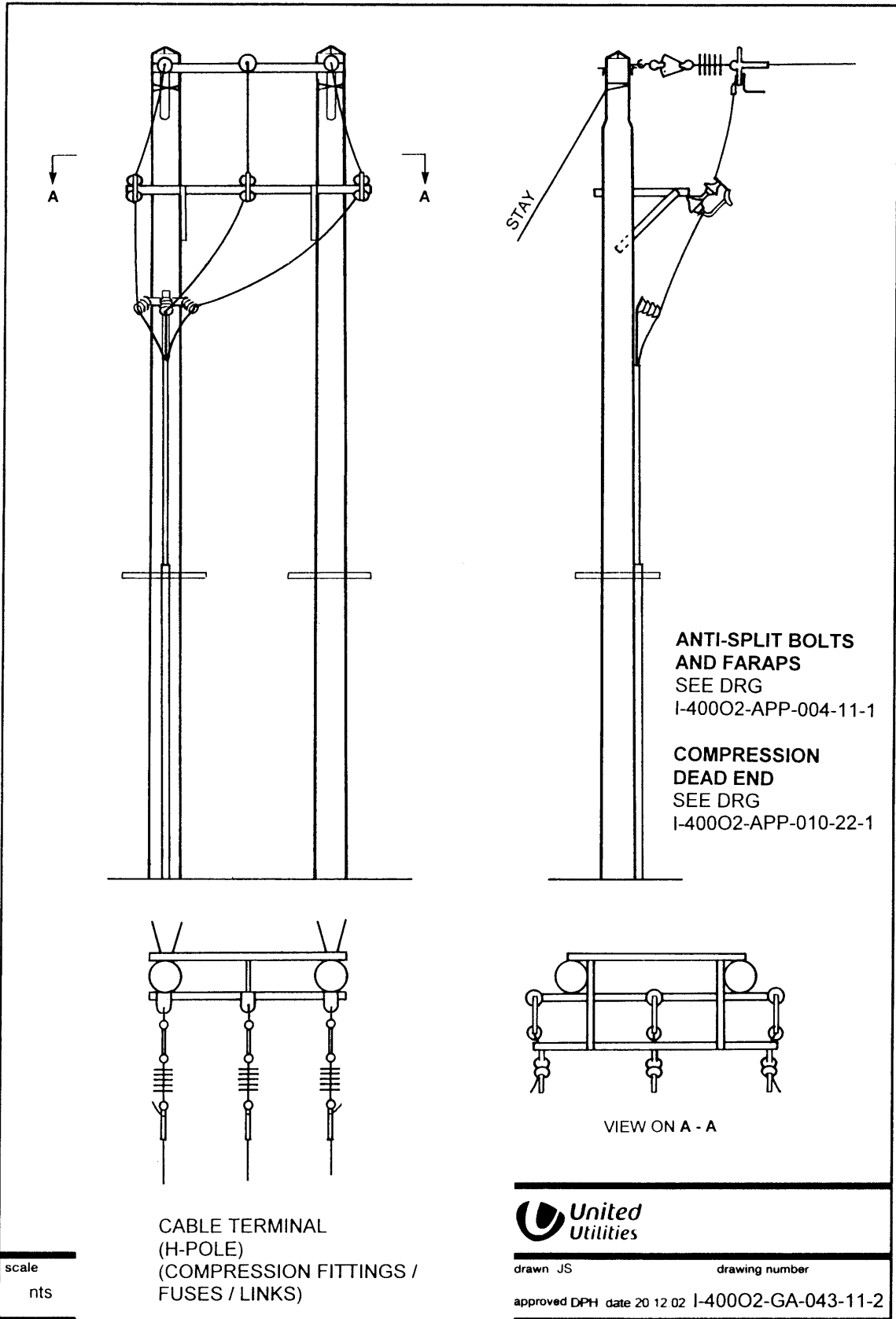
Drawing No: I-40002-GA-041

Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500134					
11kV - 120mm ²	2	500135					
11kV - 185mm ²	3	500136					
33kV - 120mm ²	4	-					
33kV - 185mm ²	5	-					
Item	ES Ref	Item CC No	-	-	3	2	1
(Items Included in GA Kit Contents)							
Bimetal Arcing Horn	400C29	121004	-	-	3	3	3
Dropper Kit 2	400C29	121010	-	-	-	-	3
Backplate	400C29	121020	-	-	3	3	-
IPCC	400C29	121006	-	-	-	-	3
IPCC	400C29	121003	-	-	-	3	-
IPCC	400C29	121008	-	-	3	-	-
Lug, 2-hole, Straight	400C29	124887	-	-	-	3	-
Lug, 2-hole, Straight	400C29	176200	-	-	3	-	-
Lug, 2-hole, Straight, bimetal	400C29	124894	-	-	-	9	-
Lug, 2-hole, Straight, bimetal	400C29	124890	-	-	9	-	-
Lug, 2-hole, Straight, for Conductor, Flexible, 65mm ²	400C29	124892	-	-	-	-	3
Bolt, M20, 300mm	400F1	107735	-	-	5	5	5
Bolt, M20, 60mm	400F1	107581	-	-	2	2	2
Bolt, M20, 750mm	400F1	107790	-	-	2	2	2
Coach Screw	400F1	126810	-	-	2	2	2
Washer, Square, Curved	400F1	139203	-	-	4	4	4
Washer, Square, Flat	400F1	139262	-	-	4	4	4
Helical Intermediate Tie	400H2	139100	-	-	-	-	3
Helical Intermediate Tie	400H2	139101	-	-	-	3	-
Helical Intermediate Tie	400H2	139102	-	-	3	-	-
Vibration Damper	400H2	139115	-	-	-	-	6
Insulator, Pin-Mounted	400I4	175270	-	-	3	3	3
Danger Plate	400N1	195251	-	-	2	2	2
Gouge-mark Plate	400N1	995610	-	-	1	1	1
Crossarm	400S11	133200	-	-	1	1	1
Crossarm Strut	400S11	133353	-	-	2	2	2
FARAP	400S11	260820	-	-	2	2	2
Insulator Pin	400S11	128252	-	-	3	3	3
Steelwork, Links, Long	400S11	133206	-	-	1	1	1
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	-	-	-	1	1
Pole Cap	400W7	Ref ES400W7	-	-	-	1	1
ACDs	400A2	Ref ES400A2	As required				
Conductor, Flexible 65mm ²	400C3	Ref ES400C3	As required				
Conductor, CC 120mm ²	400C3	Ref ES400C3	As required				
Conductor, CC 185mm ²	400C3	Ref ES400C3	As required				
Cable Related Components	400C12	Ref ES400C12	Separate order				
Fuse	400C29	Ref ES400C29	As required				
Fuse Carrier	400C29	Ref ES400C29	As required				
Fuse Unit	400C29	Ref ES400C29	As required				
Link Solid	400C29	Ref ES400C29	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



CABLE TERMINAL (H-POLE) - (HELICAL FITTINGS/FUSES/LINKS)

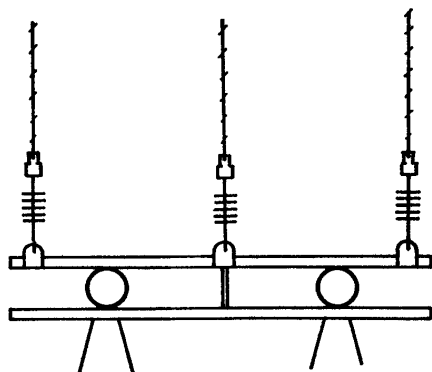
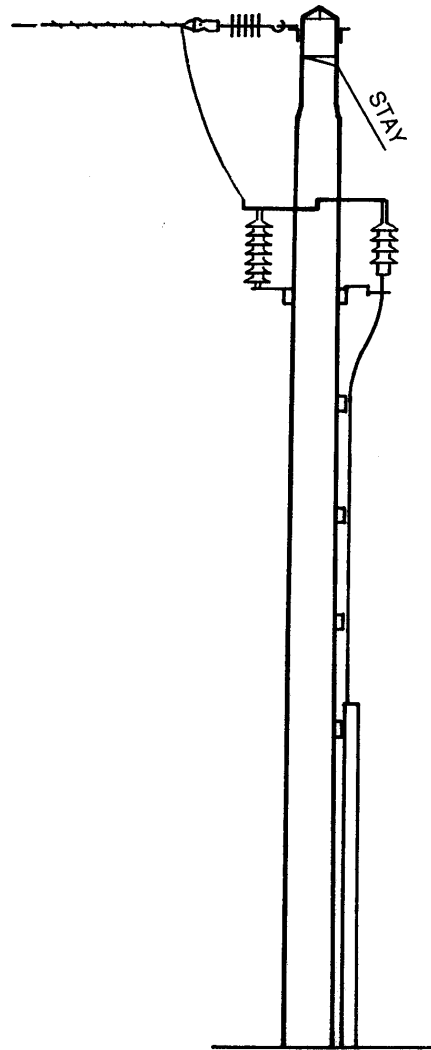
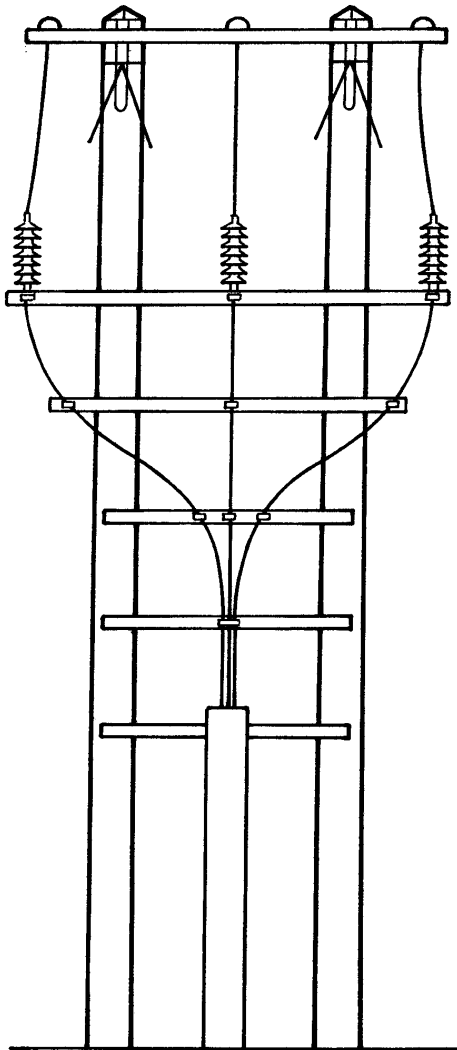
			Drawing No: I-40002-GA-042				
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500137					
11kV - 120mm ²	2	500138					
11kV - 185mm ²	3	500139					
33kV - 120mm ²	4	-					
33kV - 185mm ²	5	-					
Item	ES Ref	Item CC No	-	-	3	2	1
(Items Included in GA Kit Contents)							
Lug, 2-hole, Straight, bimetal	400C29	127237	-	-	-	-	9
Lug, 2-hole, Straight, bimetal	400C29	124894	-	-	-	9	-
Lug, 2-hole, Straight, bimetal	400C29	124890	-	-	9	-	-
Copperwork Kit	400C30	787933	1	1	-	-	-
Bolt, M20, 300mm	400F1	107735	-	-	7	7	7
Bolt, M20, 60mm	400F1	107581	-	-	6	6	6
Coach Screw	400F1	126810	-	-	4	4	4
Washer, Round, Flat	400F1	993018	-	-	4	4	4
Washer, Square, Curved	400F1	139203	-	-	2	2	2
Fasteners and Washers Kit, Cable Gaurd	400F1	787934	1	1	-	-	-
Fasteners and Washers Kit, Steelwork	400F1	787935	1	1	-	-	-
Helical Dead End	400H2	121437	-	-	-	-	3
Helical Dead End	400H2	121438	-	-	-	3	-
Helical Dead End	400H2	121439	-	-	3	-	-
Vibration Damper	400H2	139115	-	-	-	-	3
Insulator Tension	400I4	125232	-	-	3	3	3
Danger Plate	400N1	195251	-	-	4	4	4
Gouge-mark Plate	400N1	995610	-	-	2	2	2
Foundation Fasteners Kit	400O2	133540	-	-	1	1	1
Crossarm	400S11	133203	-	-	2	2	2
FARAP	400S11	260820	-	-	4	4	4
Socket Thimble	400S11	132234	-	-	3	3	3
Steelwork Kit	400S11	122826	1	1	-	-	-
Steelwork, Links, Long	400S11	133206	-	-	1	1	1
Terminal Strap	400S11	133361	-	-	3	3	3
Tie Rod	400S11	133388	-	-	1	1	1
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	-	-	2	2	2
Pole Cap	400W7	Ref ES400W7	-	-	2	2	2
ACDs	400A2	Ref ES400A2	As required				
Conductor, CC 50mm ²	400C3	Ref ES400C3	As required				
Conductor, CC 120mm ²	400C3	Ref ES400C3	As required				
Conductor, CC 185mm ²	400C3	Ref ES400C3	As required				
Cable Related Components	400C12	Ref ES400C12	Separate order				
Fuse	400C29	Ref ES400C29	As required				
Fuse Carrier	400C29	Ref ES400C29	As required				
Fuse Unit	400C29	Ref ES400C29	As required				
Link Solid	400C29	Ref ES400C29	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



CABLE TERMINAL (H-POLE) - (COMPRESSION FITTINGS/FUSES/LINKS)

Drawing No: I-40002-GA-043

Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	500140					
11kV - 120mm ²	2	500141					
11kV - 185mm ²	3	500142					
33kV - 120mm ²	4	-					
33kV - 185mm ²	5	-					
Item	ES Ref	Item CC No	-	-	3	2	1
(Items Included in GA Kit Contents)							
Bimetal Arcing Horn	400C29	121004	-	-	3	3	3
Compression Dead End	400C29	121022	-	-	-	-	3
Compression Dead End	400C29	121023	-	-	-	3	-
Compression Dead End	400C29	121024	-	-	3	-	-
Dropper Kit 2	400C29	121010	-	-	-	-	3
Lug, 2-hole, Straight	400C29	124887	-	-	-	3	-
Lug, 2-hole, Straight	400C29	176200	-	-	3	-	-
Lug, 2-hole, Straight, bimetal	400C29	124894	-	-	-	9	-
Lug, 2-hole, Straight, bimetal	400C29	124890	-	-	9	-	-
Lug, 2-hole, Straight, for Conductor, Flexible, 65mm ²	400C29	124892	-	-	-	-	3
Copperwork Kit	400C30	787933	1	1	-	-	-
Bolt, M20, 300mm	400F1	107735	-	-	7	7	7
Bolt, M20, 60mm	400F1	107581	-	-	6	6	6
Coach Screw	400F1	126810	-	-	4	4	4
Fasteners and Washers Kit, Cable Gaurd	400F1	787934	1	1	-	-	-
Fasteners and Washers Kit, Steelwork	400F1	787935	1	1	-	-	-
Washer, Round, Flat	400F1	993018	-	-	4	4	4
Washer, Square, Curved	400F1	139203	-	-	2	2	2
Vibration Damper	400H2	139115	-	-	-	-	3
Insulator Tension	400I4	125240	-	-	3	3	3
Danger Plate	400N1	195251	-	-	4	4	4
Gouge-mark Plate	400N1	995610	-	-	2	2	2
Foundation Fasteners Kit	400O4	133540	-	-	1	1	1
Ball End Hook	400S11	122297	-	-	3	3	3
Crossarm	400S11	133203	-	-	2	2	2
FARAP	400S11	260820	-	-	4	4	4
Sag Link	400S11	144578	-	-	3	3	3
Socket Clevis	400S11	122173	-	-	6	6	6
Steelwork Kit	400S11	122826	1	1	-	-	-
Steelwork, Links, Long	400S11	133206	-	-	1	1	1
Terminal Strap	400S11	133361	-	-	3	3	3
Tie Rod	400S11	133388	-	-	1	1	1
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	-	-	2	2	2
Pole Cap	400W7	Ref ES400W7	-	-	2	2	2
ACDs	400A2	Ref ES400A2	As required				
Conductor, Flexible 65mm ²	400C3	Ref ES400C3	As required				
Conductor, CC 120mm ²	400C3	Ref ES400C3	As required				
Conductor, CC 185mm ²	400C3	Ref ES400C3	As required				
Cable Related Components	400C12	Ref ES400C12	Separate order				
Fuse	400C29	Ref ES400C29	As required				
Fuse Carrier	400C29	Ref ES400C29	As required				
Fuse Unit	400C29	Ref ES400C29	As required				
Link Solid	400C29	Ref ES400C29	As required				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



CABLE TERMINAL
(H-POLE)
(HELICAL FITTINGS)

scale

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ANTI-SPLIT BOLTS AND FARAPS
SEE DRG I-40002-APP-004-11-1



drawn JS

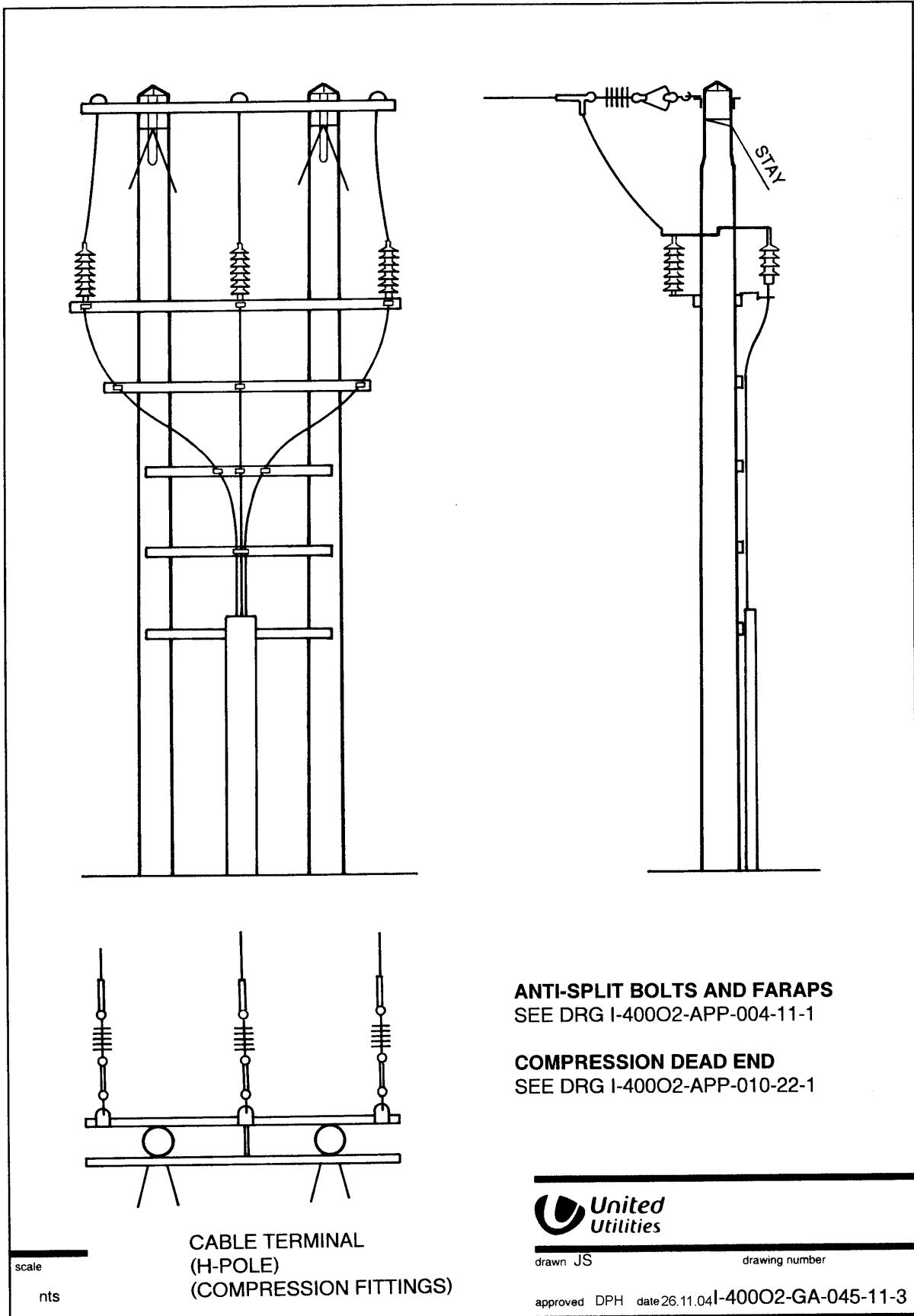
drawing number

approved DPH date 26.11.04 I-40002-GA-044-11-3

CABLE TERMINAL (H-POLE) - (HELICAL FITTINGS)

Drawing No: I-40002-GA-044

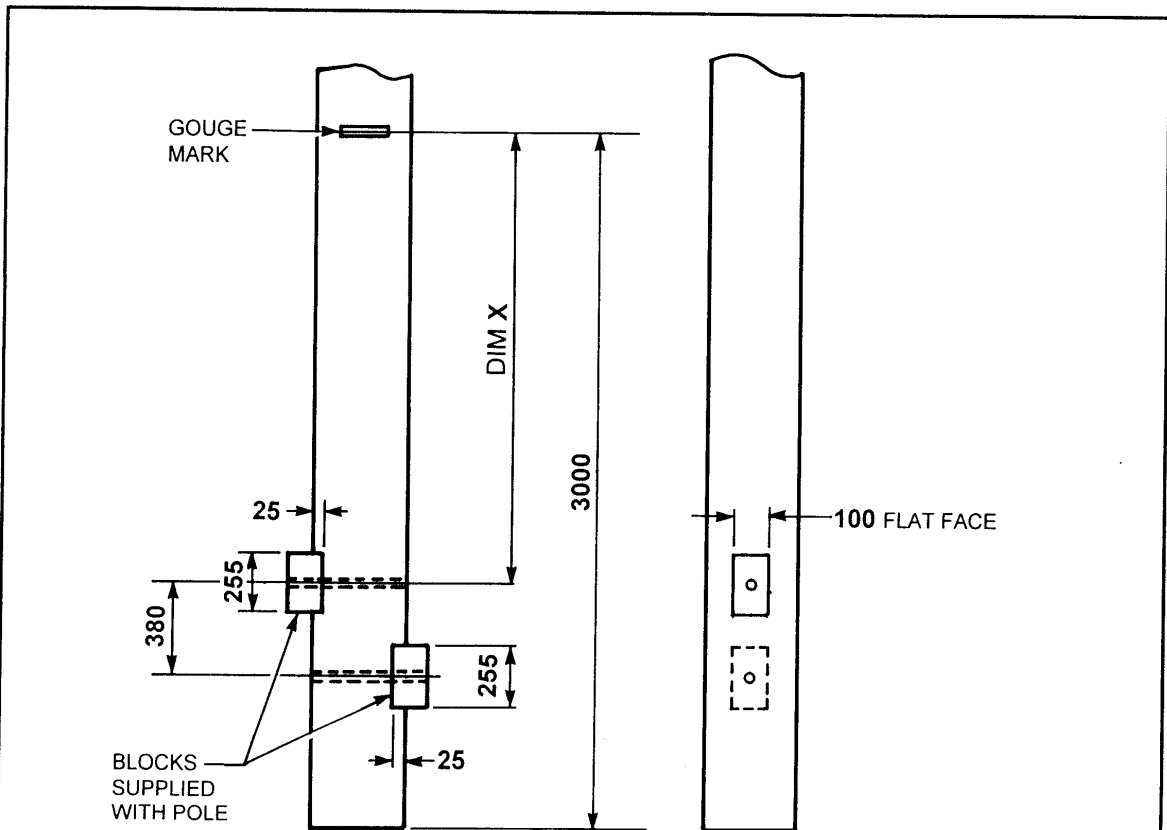
Voltage/Conductor	Ref	GA Kit CC No	Comprising:				
11kV - 50mm ²	1	-					
11kV - 120mm ²	2	-					
11kV - 185mm ²	3	-					
33kV - 120mm ²	4	500143					
33kV - 185mm ²	5	500144					
Item	ES Ref	Item CC No	5	4	-	-	-
(Items Included in GA Kit Contents)							
Lug, 2-hole, Right Angle	400C29	176245	-	3	-	-	-
Lug, 2-hole, Right Angle	400C29	176250	3	-	-	-	-
Copperwork Kit	400C30	787933	1	1	-	-	-
Bolt, M20, 300mm	400F1	107735	14	14	-	-	-
Bolt, M20, 530mm	400F1	107786	2	2	-	-	-
Bolt, M20, 60mm	400F1	107581	6	6	-	-	-
Bolt, M20, 750mm	400F1	107790	6	6	-	-	-
Coach Screw	400F1	126810	4	4	-	-	-
Fasteners and Washers Kit, Cable Gaurd	400F1	787934	1	1	-	-	-
Fasteners and Washers Kit, Steelwork	400F1	787935	1	1	-	-	-
Washer, Round, Flat	400F1	993018	4	4	-	-	-
Washer, Square, Curved	400F1	139203	18	18	-	-	-
Washer, Square, Flat	400F1	139262	7	7	-	-	-
Cable Gaurd	400G1	787930	1	1	-	-	-
Helical Dead End	400H2	121438	-	3	-	-	-
Helical Dead End	400H2	121439	3	-	-	-	-
Insulator Tension	400I4	125232	3	3	-	-	-
Danger Plate	400N1	195251	4	4	-	-	-
Foundation Fasteners Kit	400O2	133540	1	1	-	-	-
Crossarm	400S11	133203	2	2	-	-	-
FARAP	400S11	260820	4	4	-	-	-
Socket Thimble	400S11	132234	3	3	-	-	-
Steelwork Kit	400S11	122826	1	1	-	-	-
Terminal Strap	400S11	133361	3	3	-	-	-
Tie Rod	400S11	133388	1	1	-	-	-
(Additional Items Required for GA -But Not Included in GA Kit Contents)							
Wood Pole	400W2	Ref ES400W2	2	2	-	-	-
Pole Cap	400W7	Ref ES400W7	2	2	-	-	-
ACDs	400A2	Ref ES400A2	As required				
Cable Related Components	400C12	Ref ES400C12	Separate order				
Notices	400N1	Ref ES400N1	As required				
Stays	400S13	Ref ES400S13	As required				



CABLE TERMINAL (H-POLE) - (COMPRESSION FITTINGS)

Drawing No: I-40002-GA-045

Voltage/Conductor	Ref	GA Kit CC No	Comprising:			
11kV - 50mm ²	1	-				
11kV - 120mm ²	2	-				
11kV - 185mm ²	3	-				
33kV - 120mm ²	4	500145				
33kV - 185mm ²	5	500146				
Item	ES Ref	Item CC No	5	4	-	-
(Items Included in GA Kit Contents)						
Compression Dead End	400C29	121023	-	3	-	-
Compression Dead End	400C29	121024	3	-	-	-
Lug, 2-hole, Right Angle	400C29	176245	-	3	-	-
Lug, 2-hole, Right Angle	400C29	176250	3	-	-	-
Copperwork Kit	400C30	787933	1	1	-	-
Bolt, M20, 300mm	400F1	107735	10	10	-	-
Bolt, M20, 530mm	400F1	107786	2	2	-	-
Bolt, M20, 60mm	400F1	107581	6	6	-	-
Bolt, M20, 750mm	400F1	107790	6	6	-	-
Coach Screw	400F1	126810	4	4	-	-
Fasteners and Washers Kit, Cable Gaurd	400F1	787934	1	1	-	-
Fasteners and Washers Kit, Steelwork	400F1	787935	1	1	-	-
Washer, Round, Flat	400F1	993018	4	4	-	-
Washer, Square, Curved	400F1	139203	18	18	-	-
Washer, Square, Flat	400F1	139262	7	7	-	-
Cable Gaurd	400G1	787930	1	1	-	-
Insulator Tension	400I4	125240	3	3	-	-
Danger Plate	400N1	195251	4	4	-	-
Foundation Fasteners Kit	400O2	133540	1	1	-	-
Ball Clevis	400S11	122114	3	3	-	-
Crossarm	400S11	133203	2	2	-	-
FARAP	400S11	260820	4	4	-	-
Sag Link	400S11	144578	3	3	-	-
Socket Clevis	400S11	122173	3	3	-	-
Steelwork Kit	400S11	122826	1	1	-	-
Terminal Strap	400S11	133361	3	3	-	-
Tie Rod	400S11	133388	1	1	-	-
(Additional Items Required for GA -But Not Included in GA Kit Contents)						
Wood Pole	400W2	Ref ES400W2	2	2	-	-
Pole Cap	400W7	Ref ES400W7	2	2	-	-
ACDs	400A2	Ref ES400A2	As required			
Cable Related Components	400C12	Ref ES400C12	Separate order			
Notices	400N1	Ref ES400N1	As required			
Stays	400S13	Ref ES400S13	As required			



POLE LENGTH (m)	DIMENSION 'X' (mm)	PLANTING DEPTH (mm)
9	1700	1800
10	1700	1800
11	1700	1800
12	1700	1800
13	1100	2400
14	1100	2400
15	1100	2400
16	1100	2400
17	1100	2400
18	1100	2400
20	500	3000
22	500	3000
24	500	3000

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nts

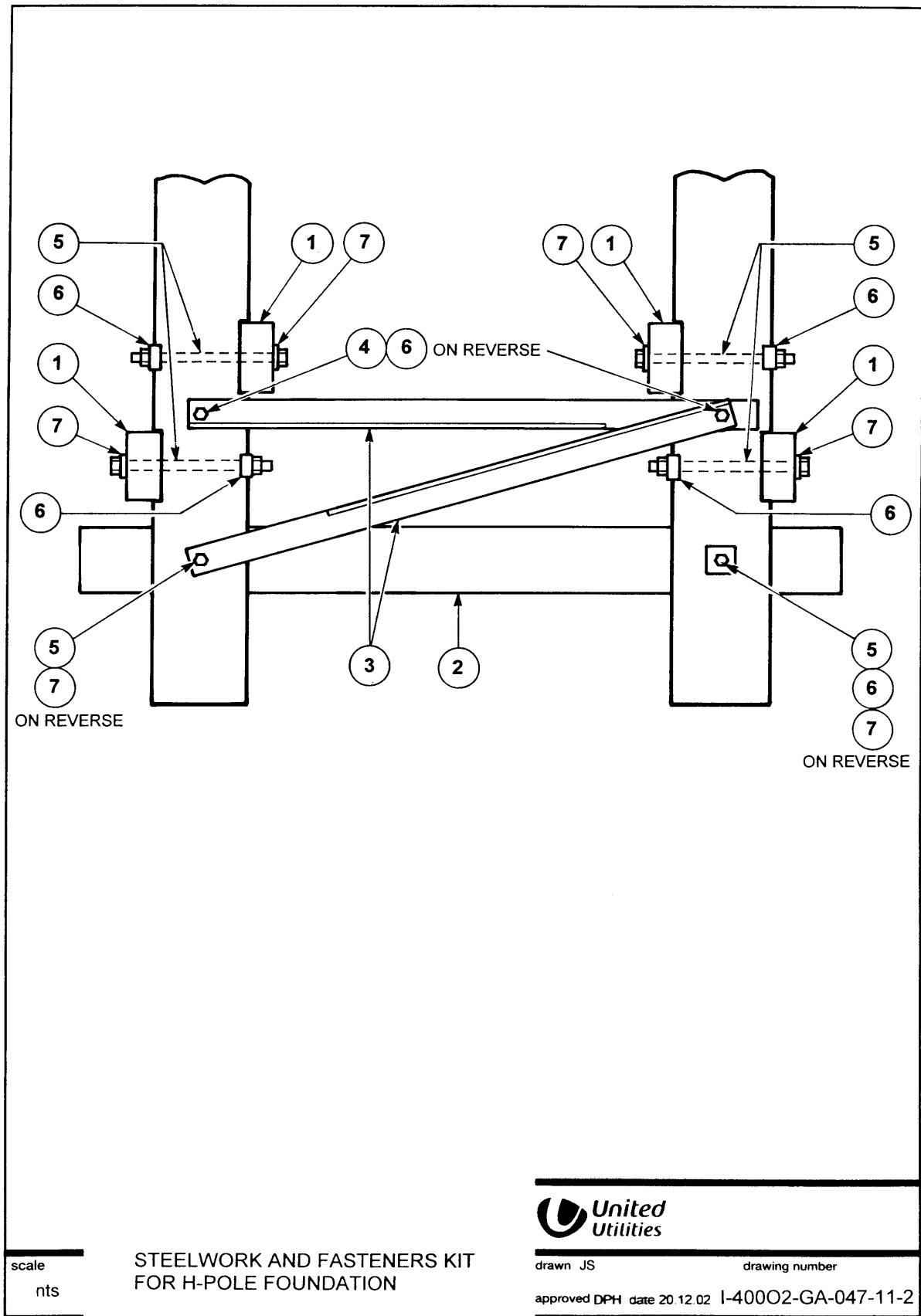
SINGLE POLE FOUNDATIONS



drawn JS

drawing number

approved DPH date 20.12.02 I-40002-GA-046-11-2



STEELWORK AND FASTENERS KIT FOR H-POLE FOUNDATION - (POLE CENTRES 1830MM)

		Drawing No: I-40002-GA-047		
Item No.	Description	ES Ref	CC No	Quantity
1	Wood Block	400W2	-	4
2	Wood Brace Block	400W2	-	1
3	Steelwork Foundation Brace	400S11	111325	2
4	Bolt M20, 530mm, Steel, Galvanised	400F1	107786	2
5	Bolt M20, 750mm, Steel, Galvanised	400F1	107790	6
6	Washer, Square, Curved	400F1	139203	7
7	Washer, Square, Flat	400F1	139262	6

NOTE:

Items 1 and 2 supplied with pole.

Items 3 - 7 supplied in kit CC No. 133540.

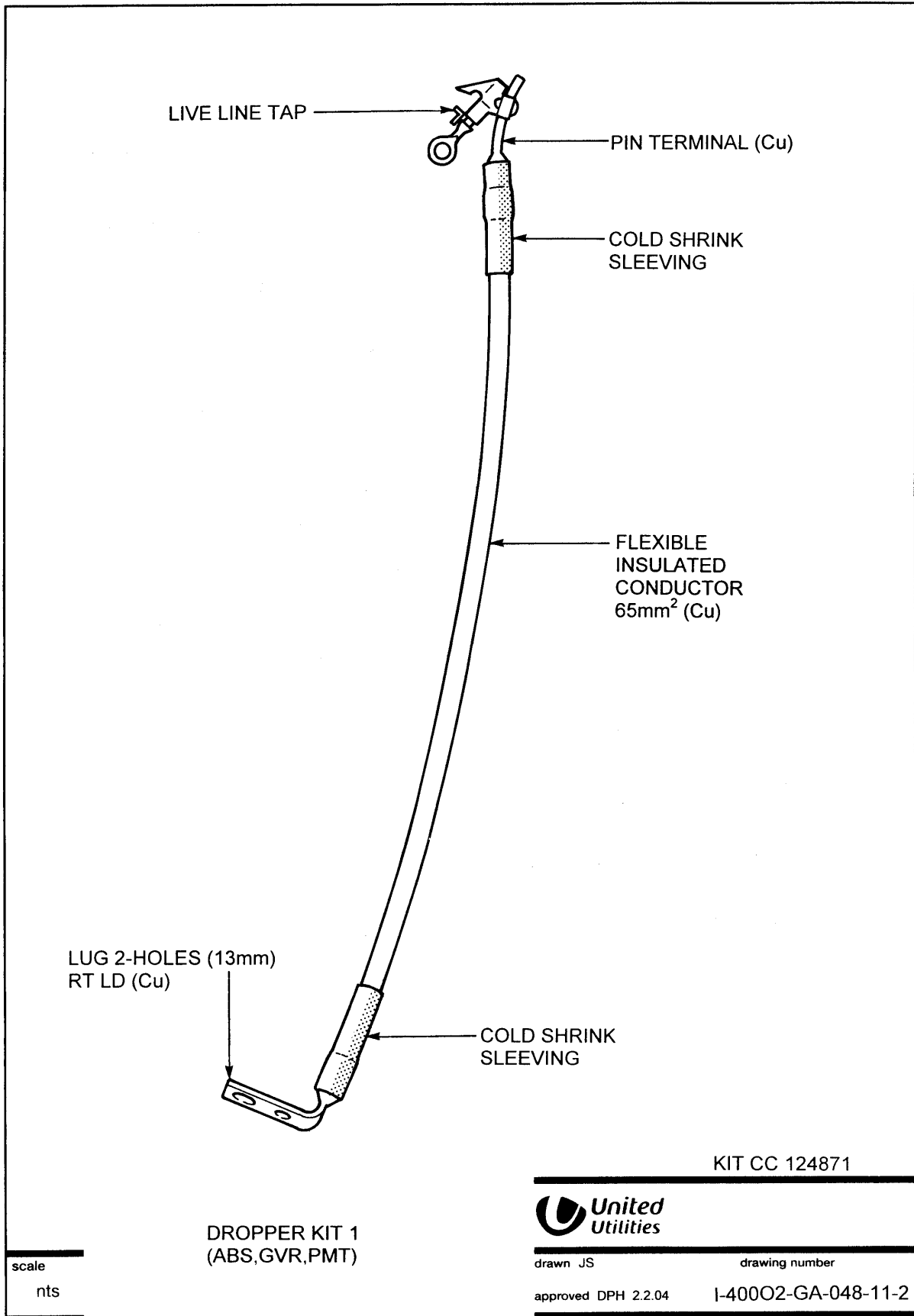
STEELWORK AND FASTENERS KIT FOR H-POLE FOUNDATION - (POLE CENTRES 2500MM)

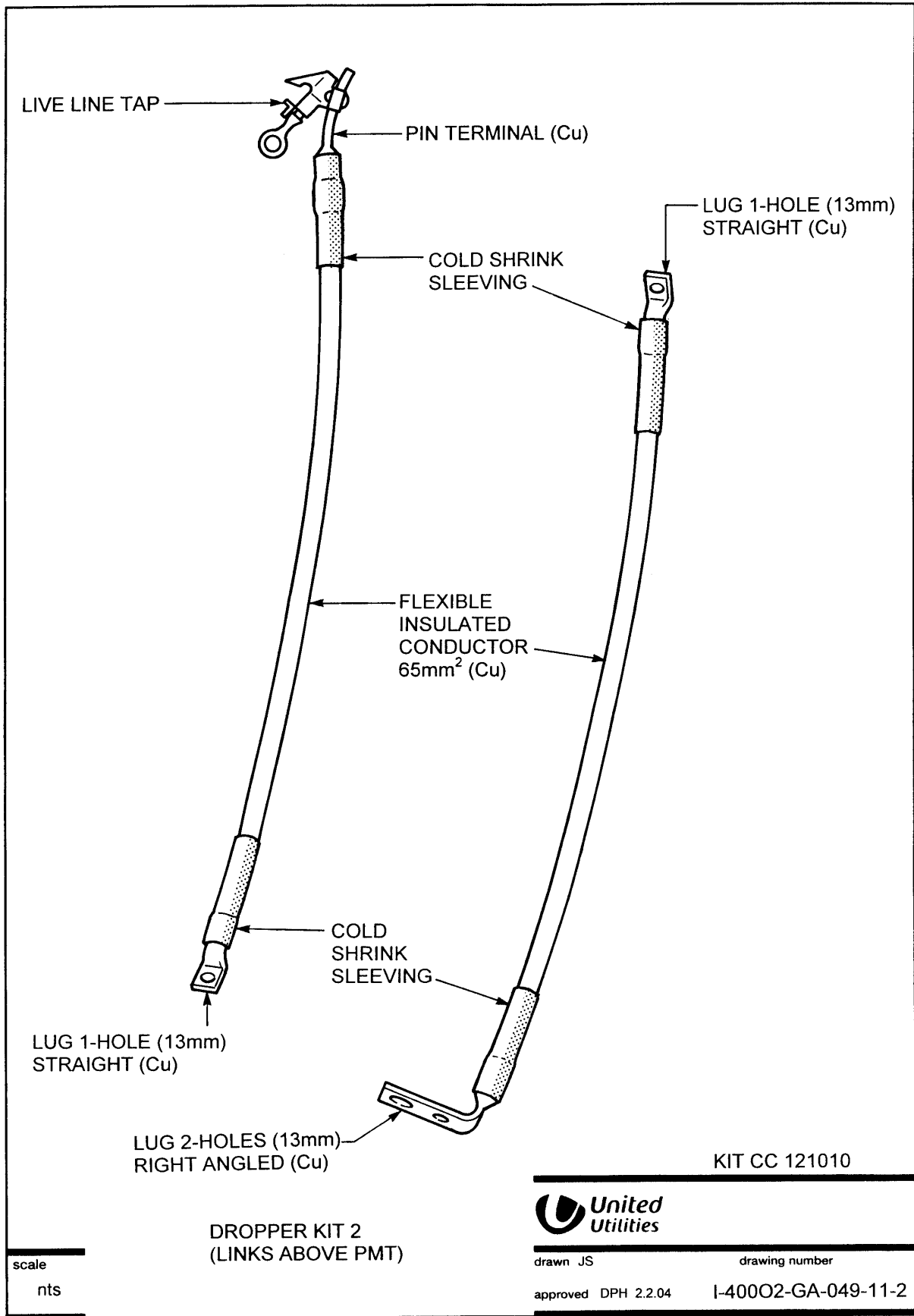
		Drawing No: I-40002-GA-047		
Item No.	Description	ES Ref	CC No	Quantity
1	Wood Block	400W2	-	4
2	Wood Brace Block	400W2	-	1
3	Steelwork Foundation Brace	400S11	111320	2
4	Bolt M20, 530mm, Steel, Galvanised	400F1	107786	2
5	Bolt M20, 750mm, Steel, Galvanised	400F1	107790	6
6	Washer, Square, Curved	400F1	139203	7
7	Washer, Square, Flat	400F1	139262	6

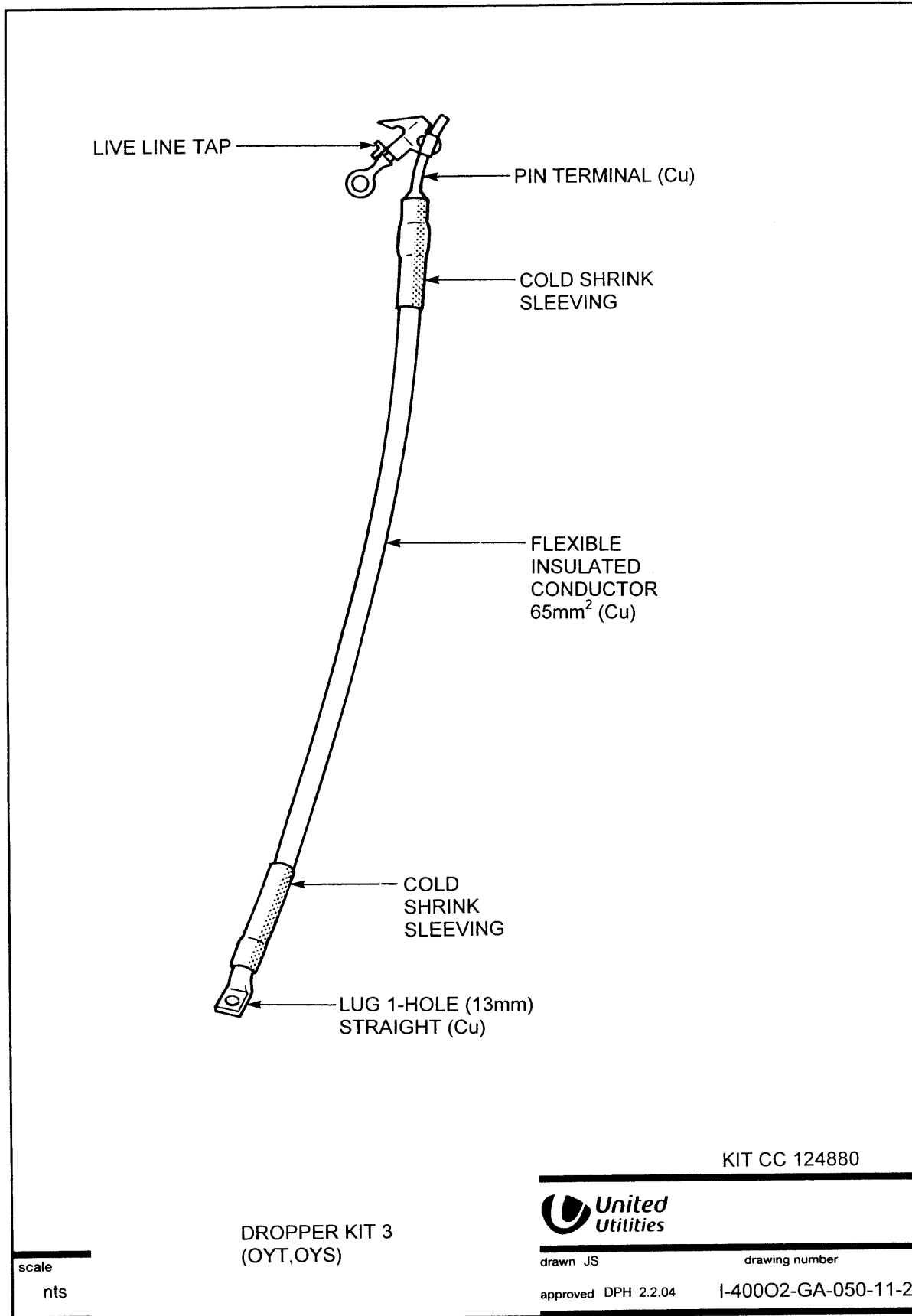
NOTE:

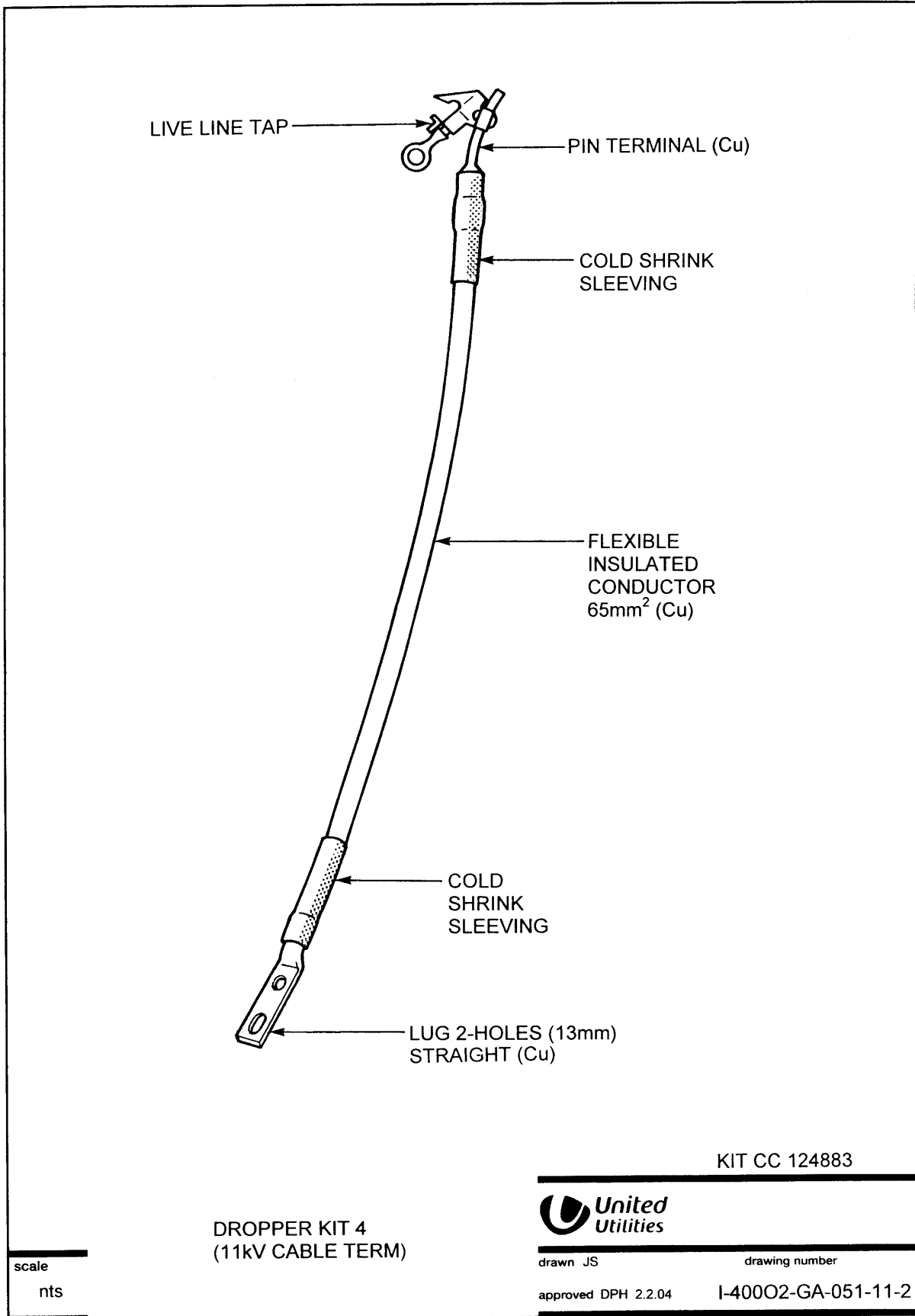
Items 1 and 2 supplied with pole.

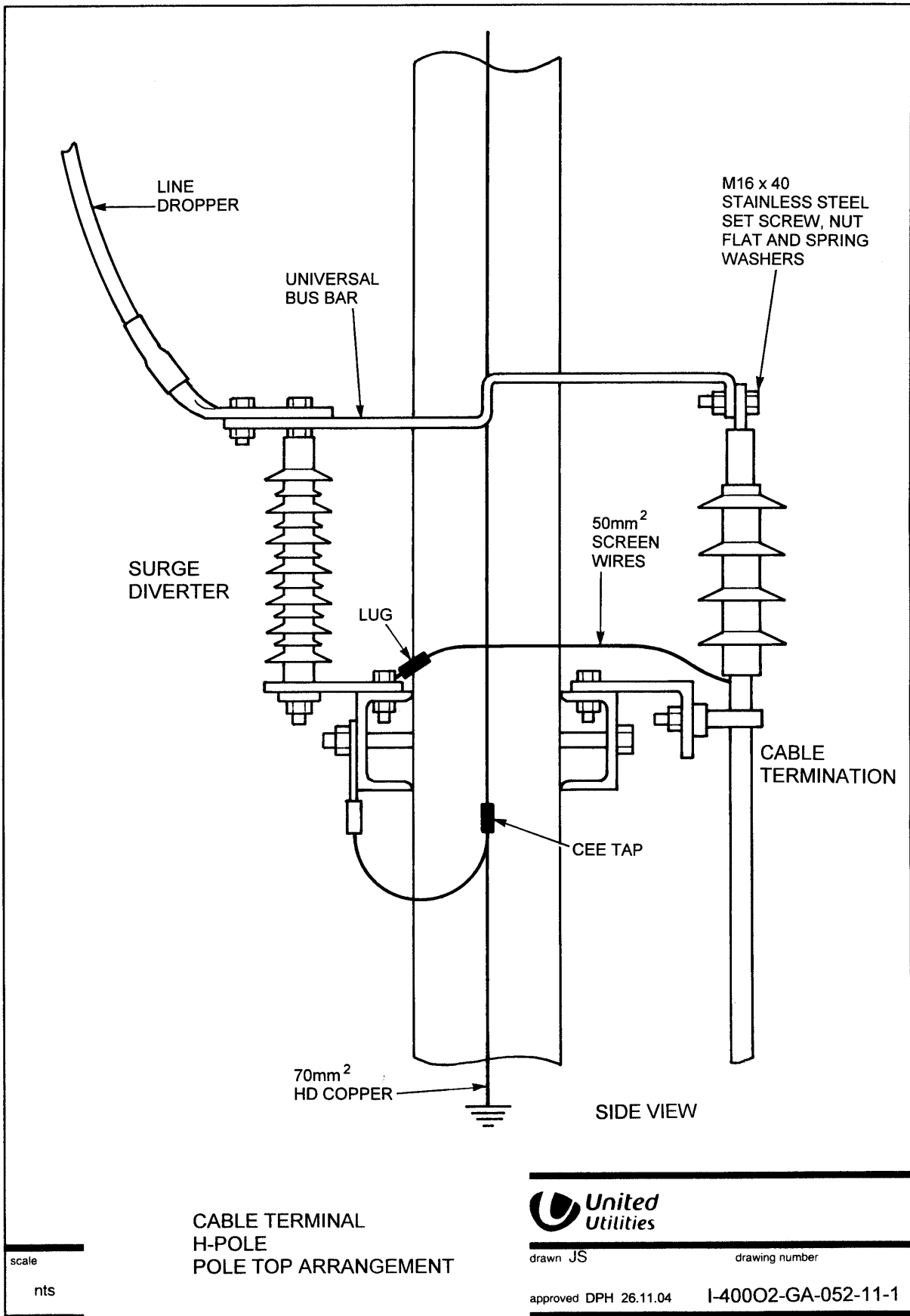
Items 3 - 7 supplied in kit CC No. 111330.

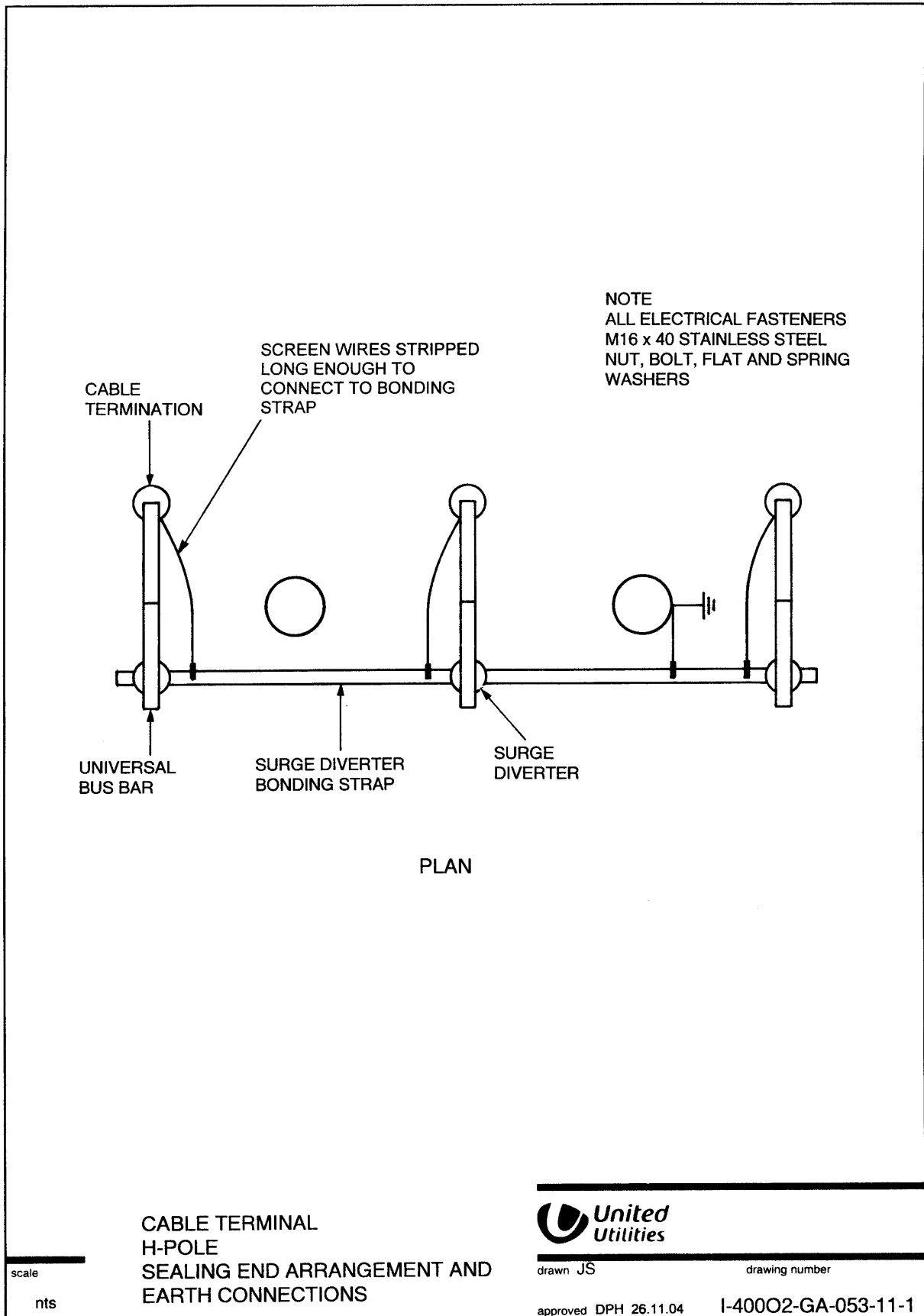








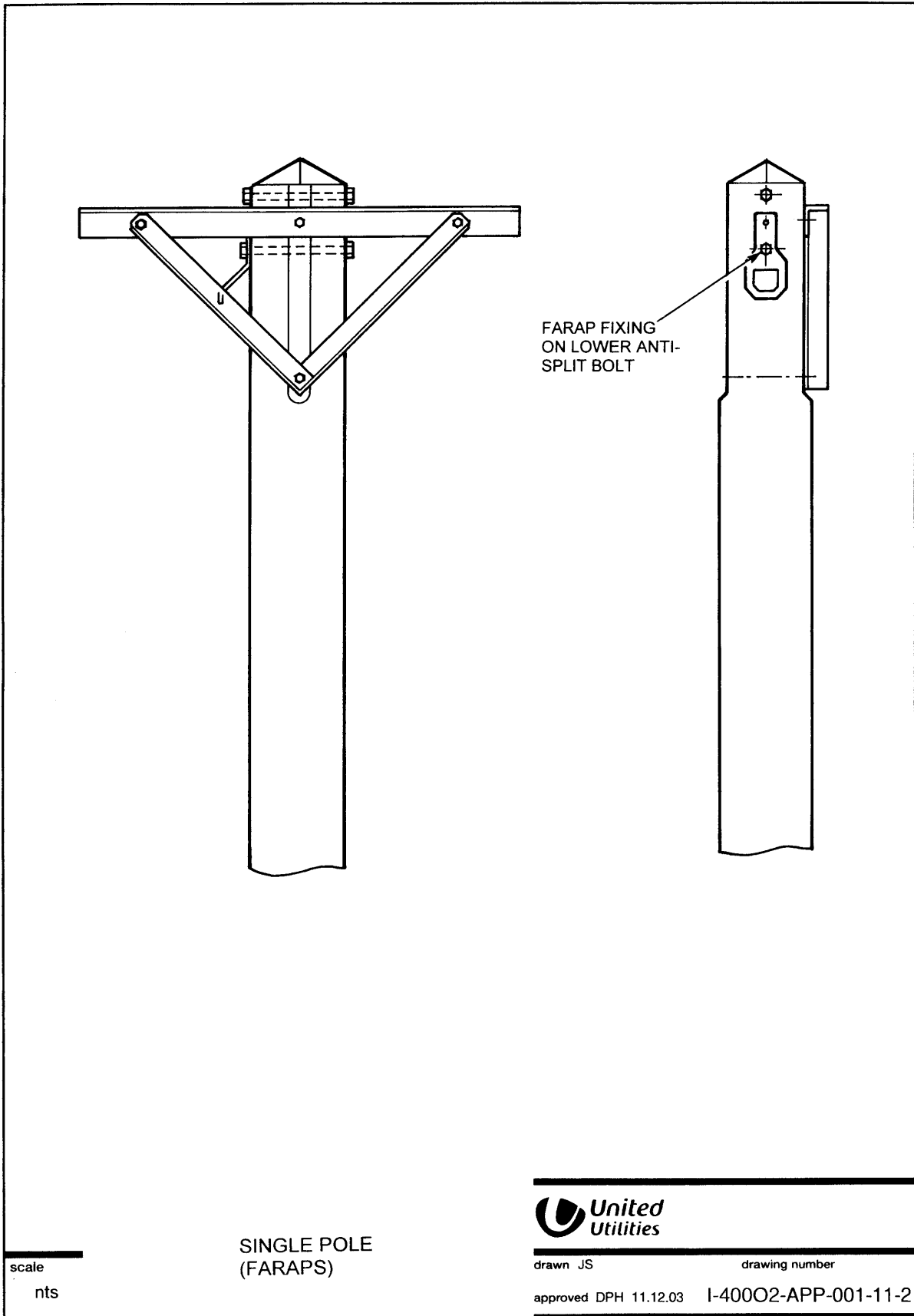


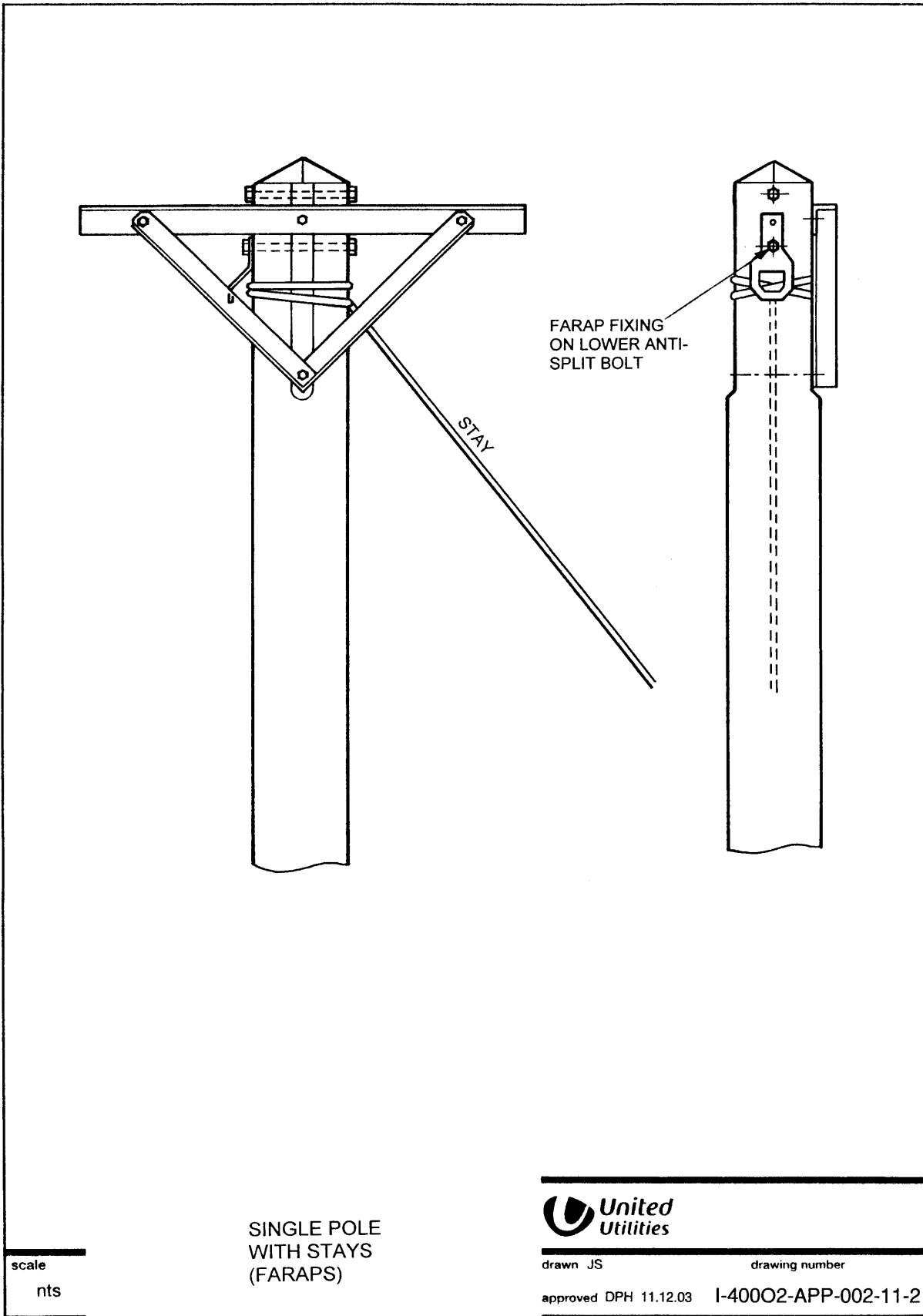


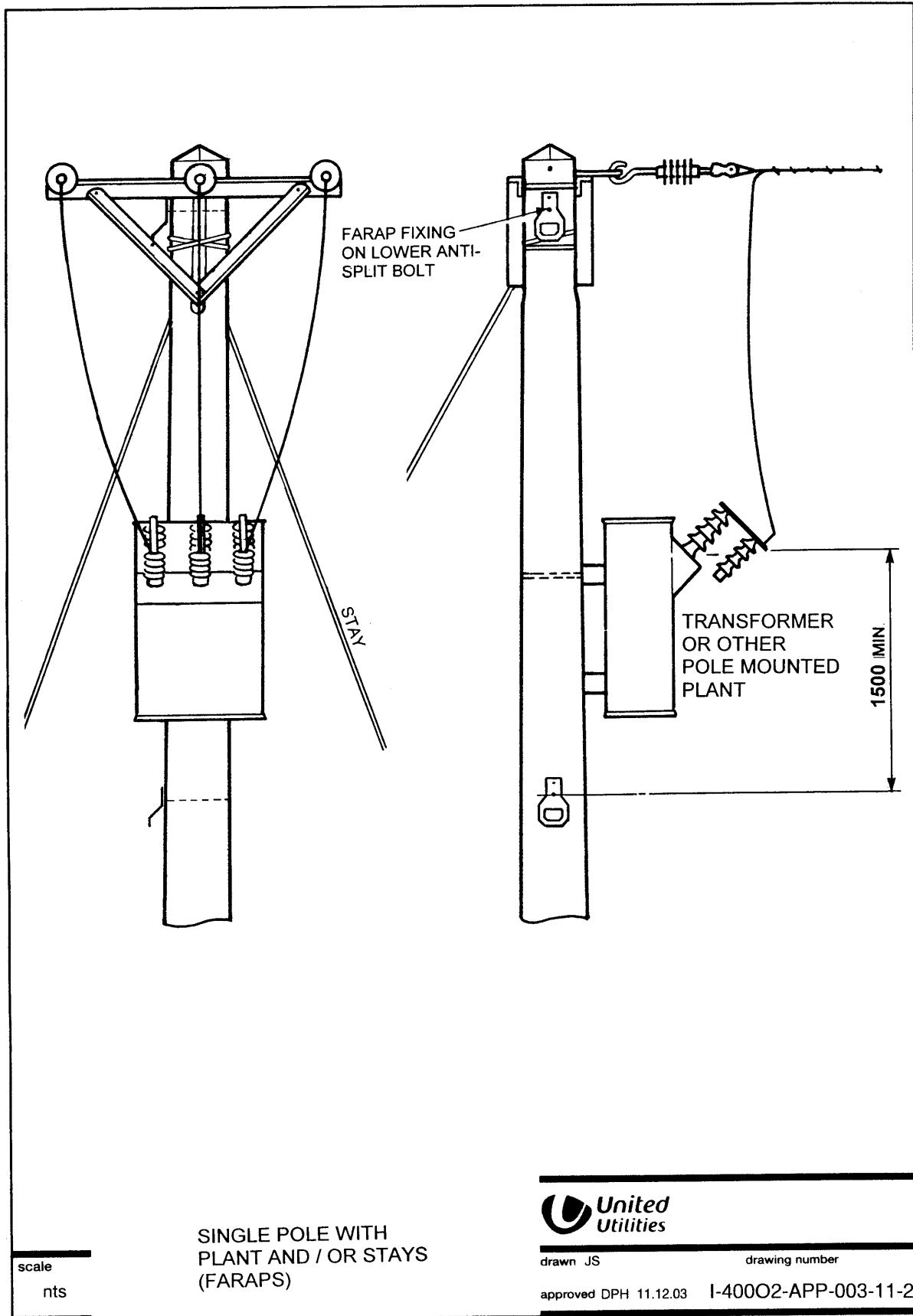
A2 Application Drawings

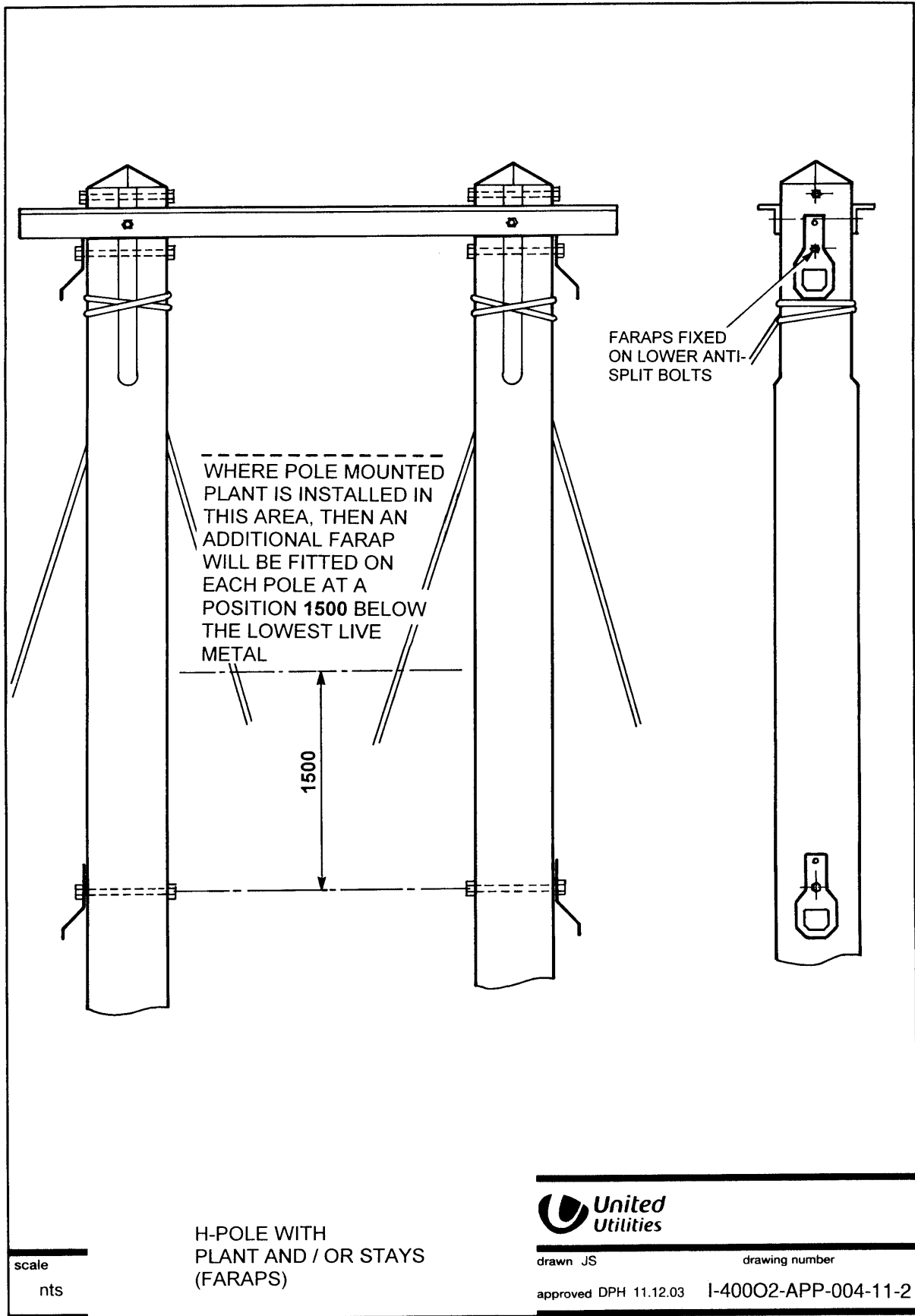
Index to Drawings

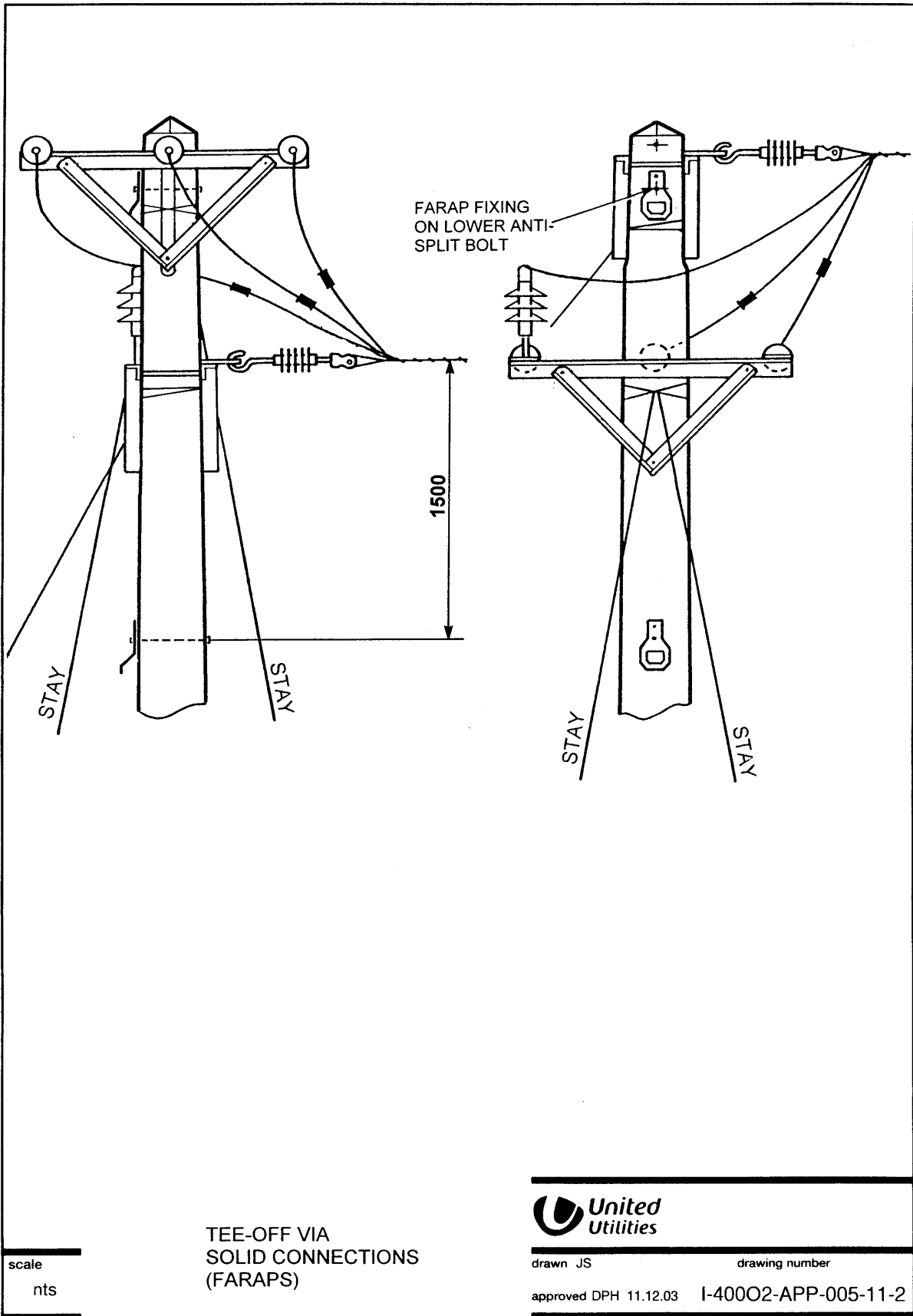
DRAWING NUMBER	TITLE
I-40002-APP-001	Single Pole (FARAPs)
I-40002-APP-002	Single Pole with Stays (FARAPs)
I-40002-APP-003	Single Pole with Plant and/or Stays (FARAPs)
I-40002-APP-004	H- Pole with Plant and/or Stays (FARAPs)
I-40002-APP-005	Tee Off Via Solid Connections (FARAPs)
I-40002-APP-006	Tee Off Via Fuses/Links (FARAPs)
I-40002-APP-007	Spare
I-40002-APP-008	Spare
I-40002-APP-009	Spare
I-40002-APP-010	Conductor Fitting Applications - Compression Dead End with Terminal Lug (Sheet 1) Conductor Fitting Applications - Compression Dead End with Terminal Lug & Arcing Horn (Sheet 2)
I-40002-APP-011	Conductor Fittings - Applications of Insulation Piercing Compression Tee with Terminal Lug
I-40002-APP-012	Conductor Fittings - Applications of Insulation Piercing Compression Tee with Bail Connection
I-40002-APP-013	Conductor Fittings - Lightning Protection Device

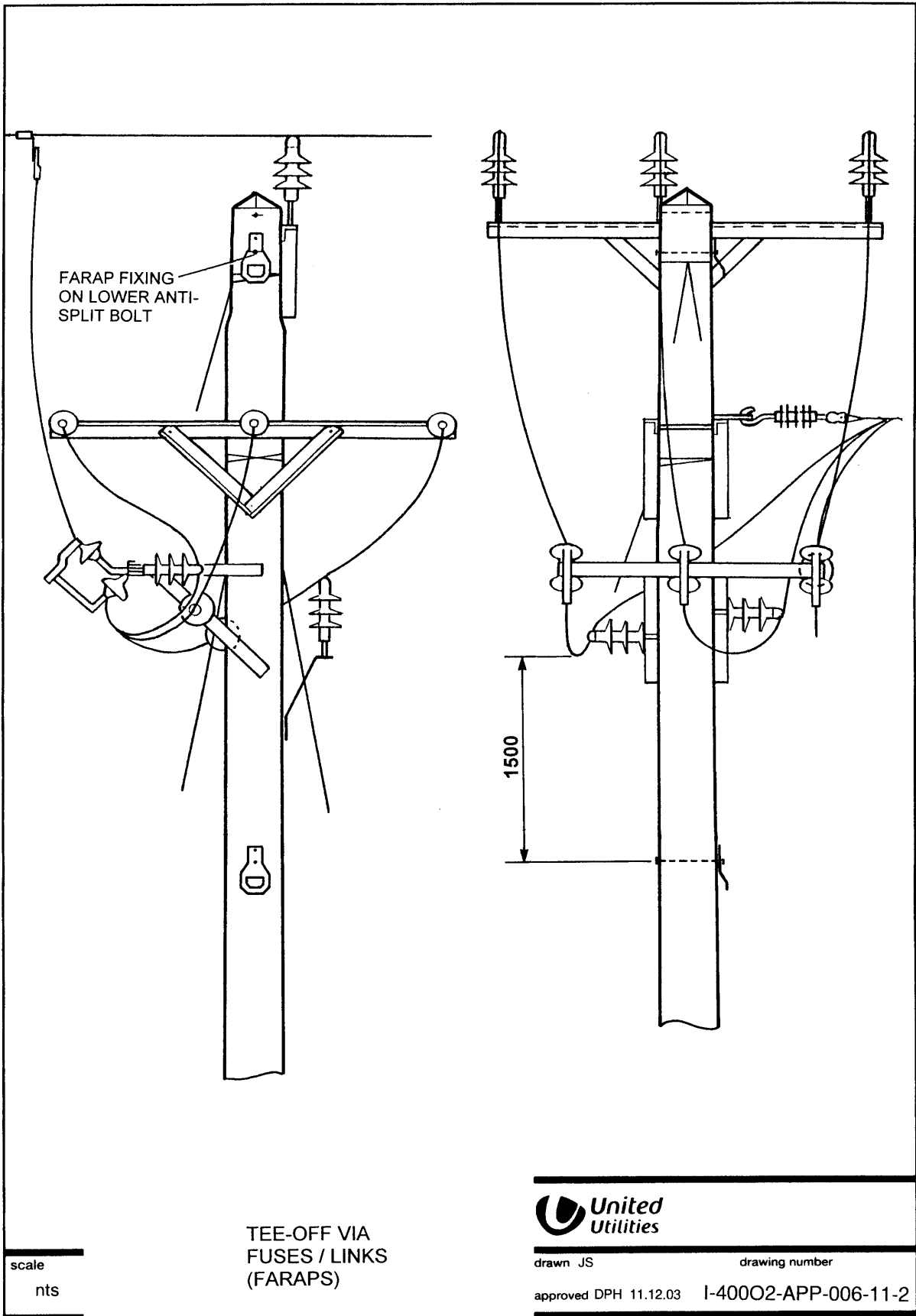


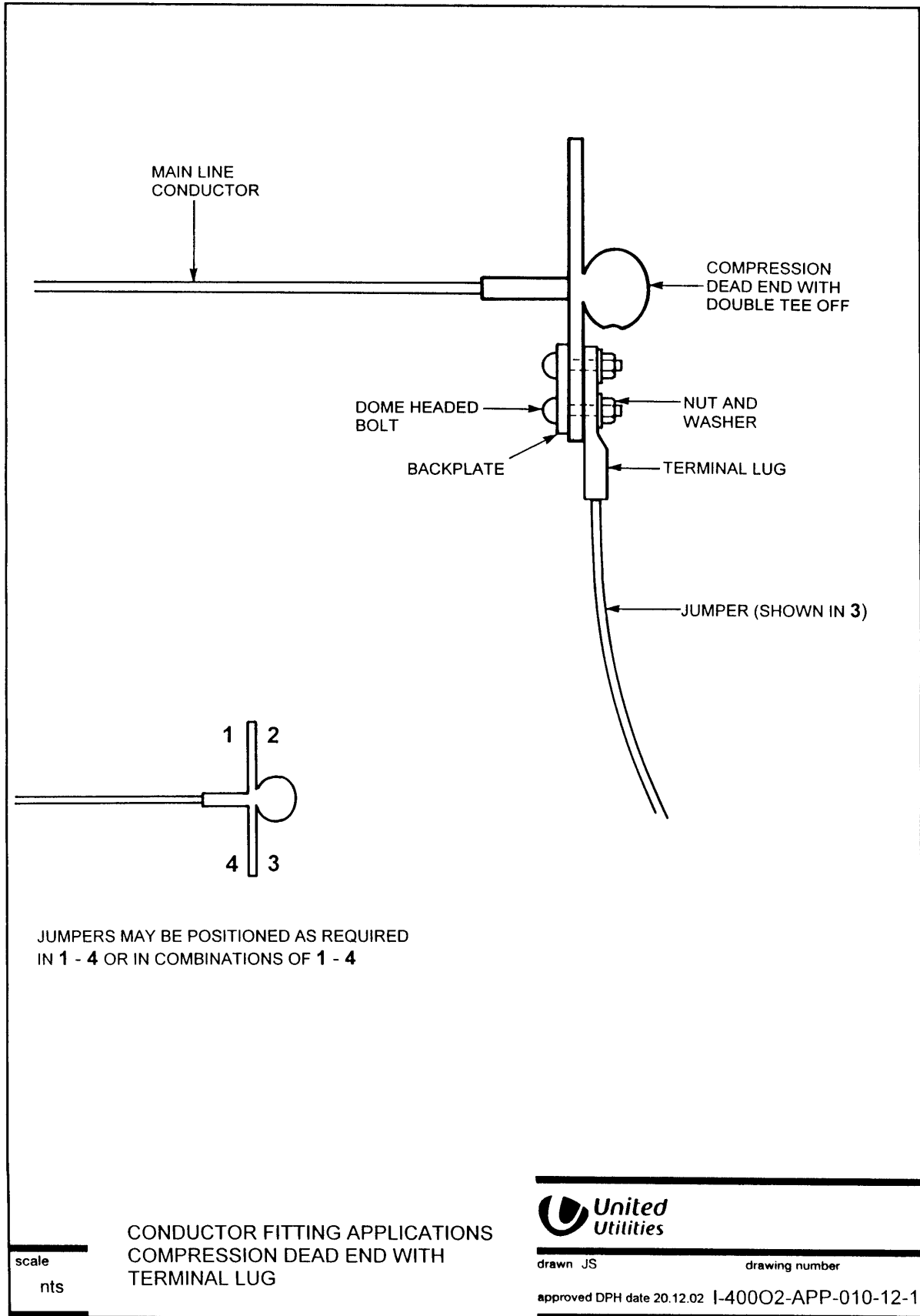


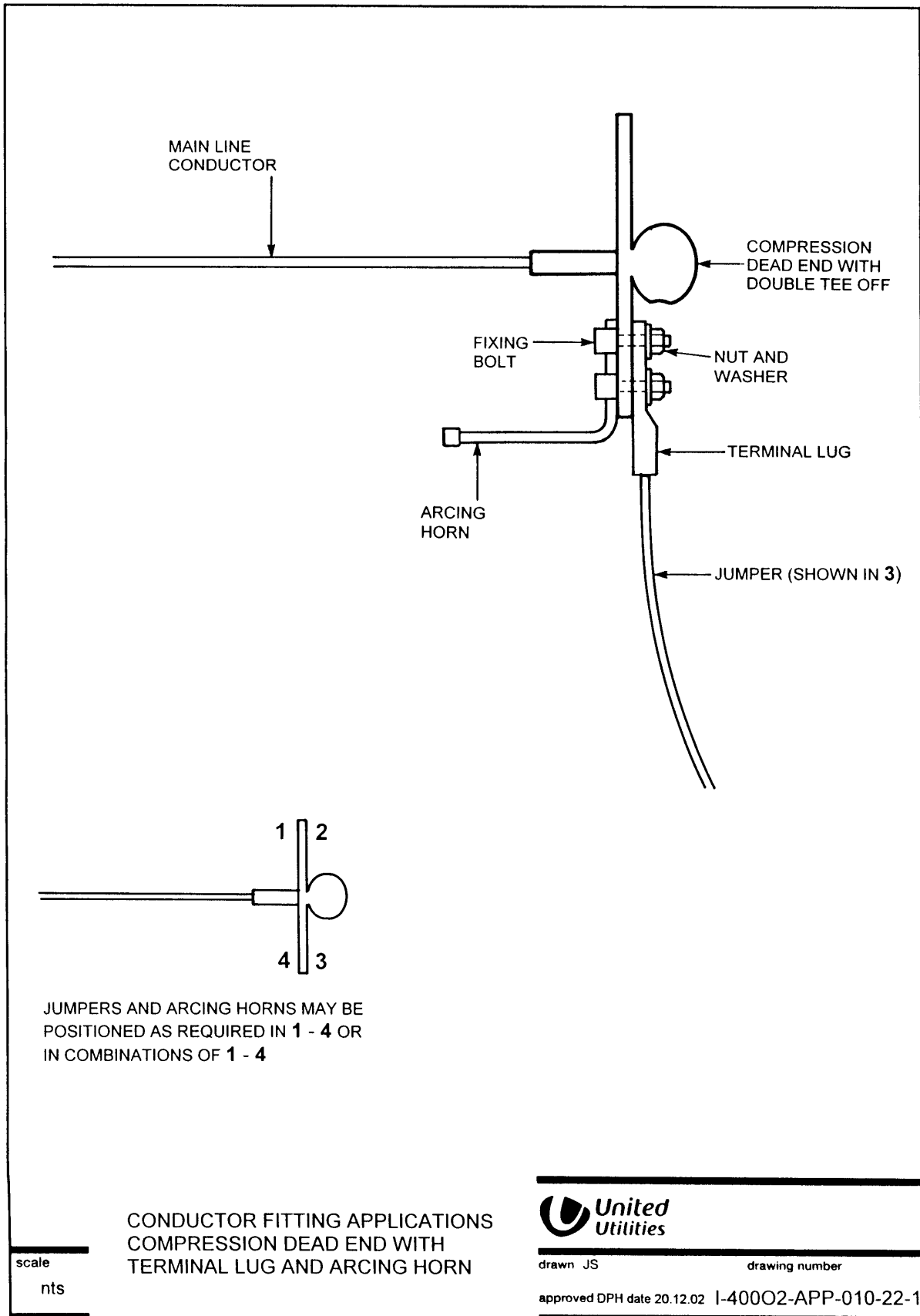


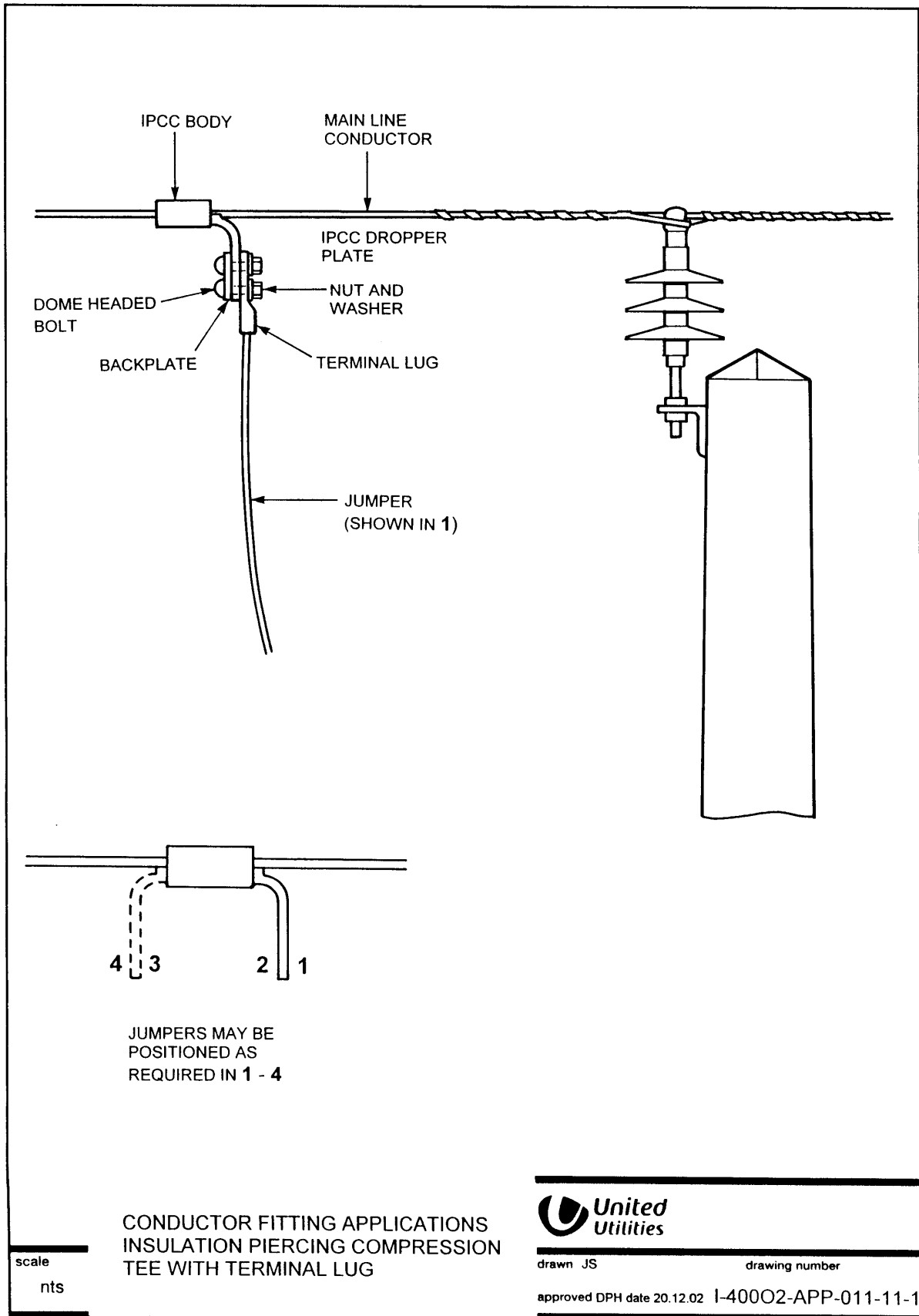


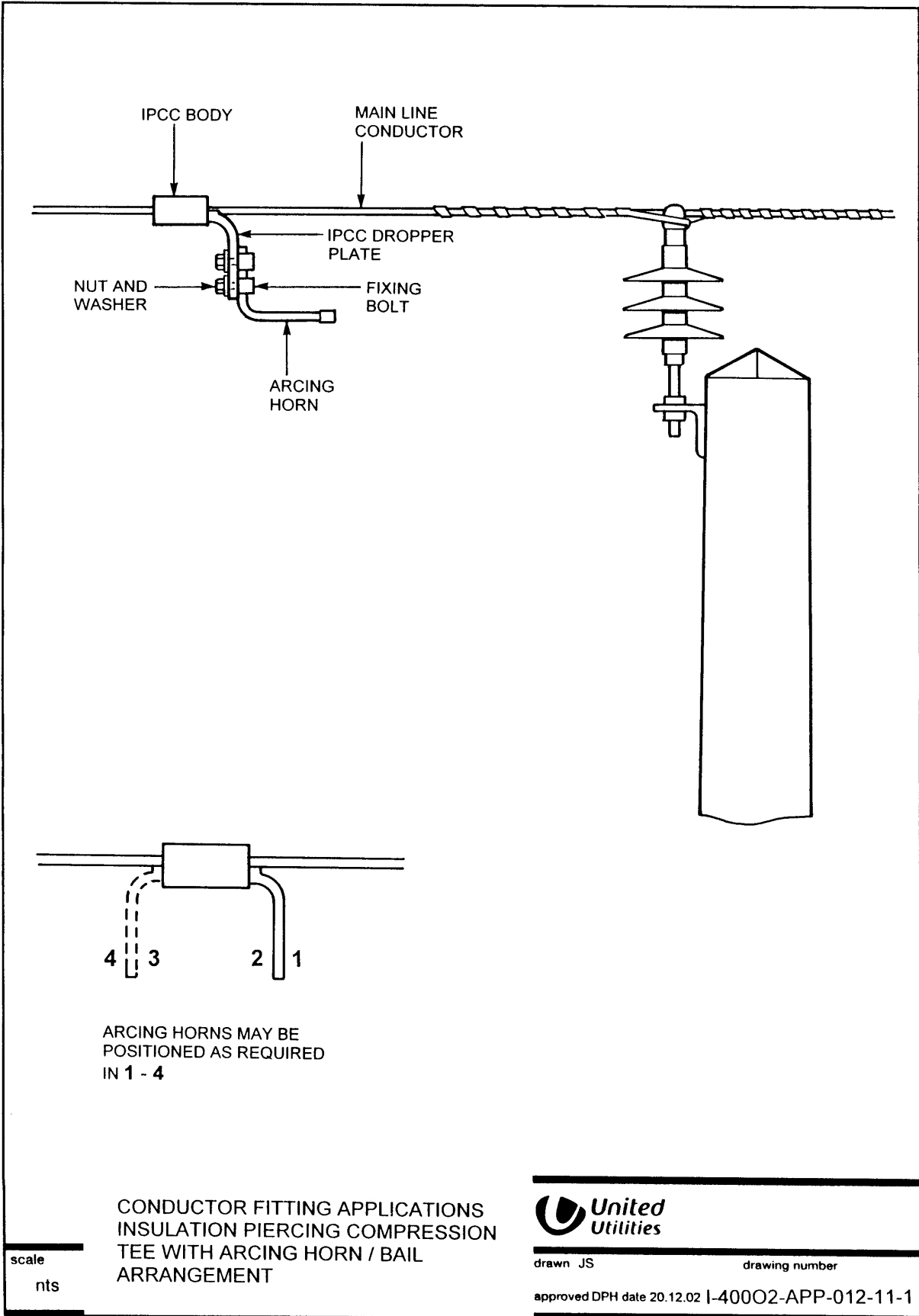


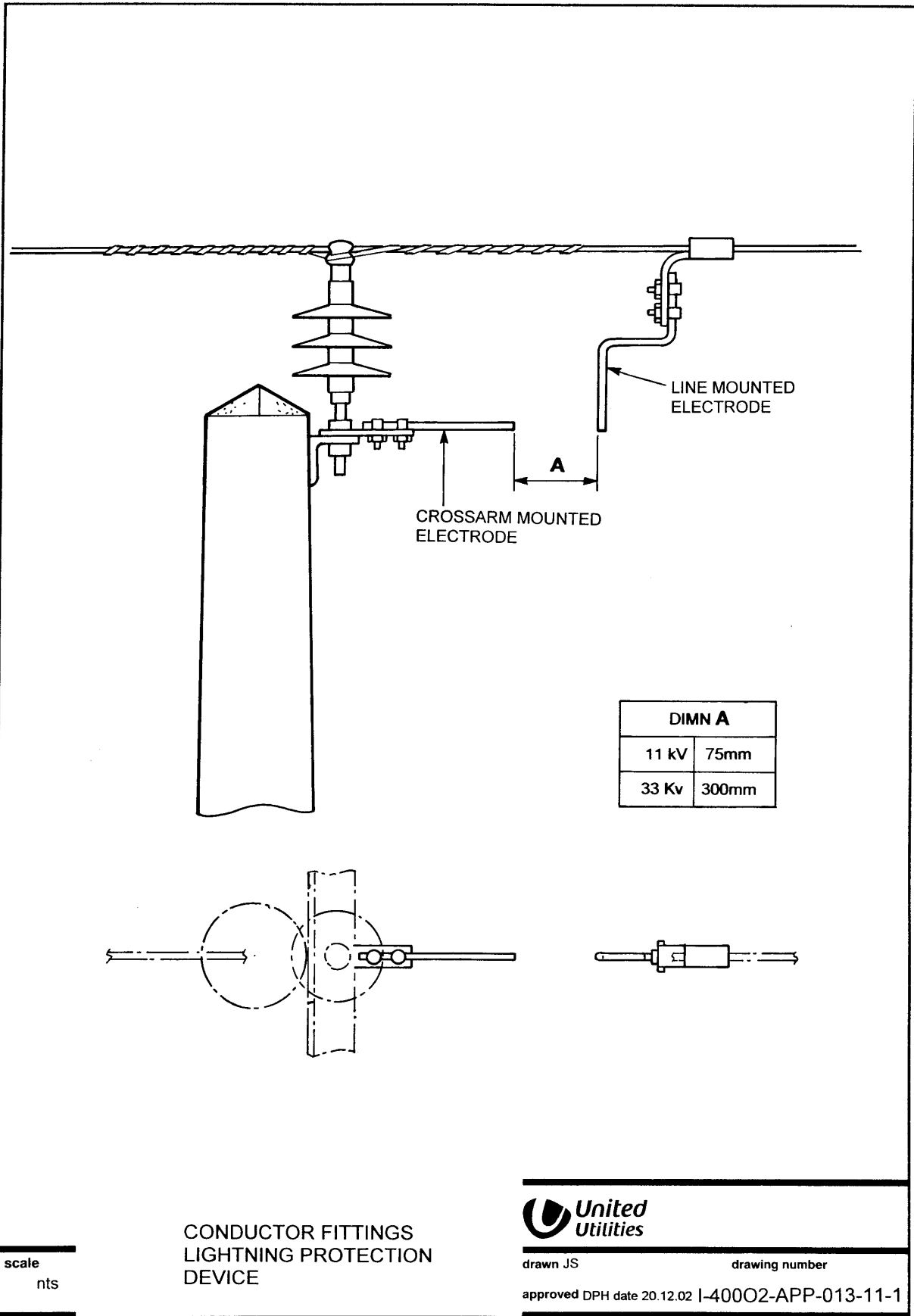












CONDUCTOR FITTINGS LIGHTNING PROTECTION DEVICE

Drawing No: I-40002-APP-013

Voltage/Conductor	Ref	Kit CC No	Comprising:				
11kV - 50mm ²	1	121001					
11kV - 120mm ²	2	121018					
11kV - 185mm ²	3	121013					
33kV - 120mm ²	4	121014					
33kV - 185mm ²	5	121015					
Item	ES Ref	Item CC No	5	4	3	2	1
(Items Included in GA Kit Contents)							
Base Plate	400C29	119400	3	3	3	3	3
Base Plate Electrode	400C29	119410	3	3	3	3	3
Bimetal Electrode 11kV	400C29	119420	-	-	3	3	3
Bimetal Electrode 33kV	400C29	121030	3	3	-	-	-
IPCC	400C29	121006	-	-	-	-	3
IPCC	400C29	121003	-	3	-	3	-
IPCC	400C29	121008	3	-	3	-	-
Shroud	400C29	121009	-	3	-	3	3
Shroud	400C29	121031	3	-	3	-	-

Appendix B – Index to CCC Materials

This Appendix comprises an index to all materials that are included in this specification. The index is in alphabetical order, and is provided as a means of identifying acceptable materials that can be used in CCC line construction (for example, in circumstances where a standard general arrangement may need to be modified). In addition to specification/reference and CC No for each material, the following index cross-references each material to any associated drawings - contained in this specification - on which that material is used.

INDEX TO CCC MATERIALS			
Item	Specification (ES)	CC No	Used on Dwg (this spec)
ACDs	400A2	Ref ES400A2	I-40002-GA-001A
			I-40002-GA-001B
			I-40002-GA-002A
			I-40002-GA-002B
			I-40002-GA-003
			I-40002-GA-004
			I-40002-GA-005
			I-40002-GA-006
			I-40002-GA-007
			I-40002-GA-008
			I-40002-GA-009
			I-40002-GA-010
			I-40002-GA-011
			I-40002-GA-012
			I-40002-GA-013
			I-40002-GA-014
			I-40002-GA-015
			I-40002-GA-016

			I-40002-GA-017
			I-40002-GA-018
			I-40002-GA-019
			I-40002-GA-020
			I-40002-GA-021
			I-40002-GA-022
			I-40002-GA-023
			I-40002-GA-024
			I-40002-GA-025
			I-40002-GA-026
			I-40002-GA-027
			I-40002-GA-028
			I-40002-GA-029
			I-40002-GA-030
			I-40002-GA-031
			I-40002-GA-032
			I-40002-GA-033
			I-40002-GA-034
			I-40002-GA-035
			I-40002-GA-036
			I-40002-GA-037
			I-40002-GA-038
			I-40002-GA-039
			I-40002-GA-040
			I-40002-GA-041

			I-40002-GA-042
			I-40002-GA-043
			I-40002-GA-044
			I-40002-GA-045
Aerial Switch	315	Ref ES315	I-40002-GA-033
			I-40002-GA-034
			I-40002-GA-035
Auto recloser/auto sectionaliser	315	Ref ES315	I-40002-GA-029
			I-40002-GA-030
Backplate	400C29	121020	I-40002-GA-004
			I-40002-GA-008
			I-40002-GA-010
			I-40002-GA-011
			I-40002-GA-012
			I-40002-GA-013
			I-40002-GA-040
			I-40002-GA-041
Ball Clevis	400S11	122114	I-40002-GA-045
Ball End Hook	400S11	122297	I-40002-GA-004
			I-40002-GA-006
			I-40002-GA-008
			I-40002-GA-010
			I-40002-GA-013
			I-40002-GA-017
			I-40002-GA-019

			I-40002-GA-023
			I-40002-GA-025
			I-40002-GA-027
			I-40002-GA-029
			I-40002-GA-030
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			I-40002-GA-035
			I-40002-GA-037
			I-40002-GA-039
			I-40002-GA-043
Bimetal Arcing Horn	400C29	121004	I-40002-GA-004
			I-40002-GA-008
			I-40002-GA-010
			I-40002-GA-013
			I-40002-GA-014
			I-40002-GA-015
			I-40002-GA-017
			I-40002-GA-019
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			I-40002-GA-023
			I-40002-GA-025
			I-40002-GA-027
			I-40002-GA-028

			I-40002-GA-029
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			I-40002-GA-035
			I-40002-GA-037
			I-40002-GA-039
			I-40002-GA-040
			I-40002-GA-041
			I-40002-GA-043
Bolt, M20, 60mm	400F1	107581	I-40002-GA-001A
			I-40002-GA-001B
			I-40002-GA-002A
			I-40002-GA-002B
			I-40002-GA-003
			I-40002-GA-004
			I-40002-GA-005
			I-40002-GA-006
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			I-40002-GA-008
			I-40002-GA-009
			I-40002-GA-010
			I-40002-GA-011
			I-40002-GA-012
			I-40002-GA-013

			I-40002-GA-014
			I-40002-GA-015
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			I-40002-GA-017
			I-40002-GA-018
			I-40002-GA-019
			I-40002-GA-020
			I-40002-GA-021
			I-40002-GA-022
			I-40002-GA-023
			I-40002-GA-024
			I-40002-GA-025
			I-40002-GA-026
			I-40002-GA-027
			I-40002-GA-028
			I-40002-GA-029
			I-40002-GA-030
			I-40002-GA-031
			I-40002-GA-032
			I-40002-GA-033
			I-40002-GA-034
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			I-40002-GA-036
			I-40002-GA-037
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			I-40002-GA-040
			I-40002-GA-041
			I-40002-GA-042
			I-40002-GA-043
			I-40002-GA-044
			I-40002-GA-045
Bolt, M20, 300mm	400F1	107735	I-40002-GA-001A
			I-40002-GA-001B
			I-40002-GA-002A
			I-40002-GA-002B
			I-40002-GA-003
			I-40002-GA-004
			I-40002-GA-005
			I-40002-GA-006
			I-40002-GA-007
			I-40002-GA-008
			I-40002-GA-009
			I-40002-GA-010
			I-40002-GA-011
			I-40002-GA-012
			I-40002-GA-013
			I-40002-GA-014
			I-40002-GA-015
			I-40002-GA-016

			I-40002-GA-017
			I-40002-GA-018
			I-40002-GA-019
			I-40002-GA-020
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			I-40002-GA-022
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			I-40002-GA-026
			I-40002-GA-027
			I-40002-GA-028
			I-40002-GA-029
			I-40002-GA-030
			I-40002-GA-031
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			I-40002-GA-034
			I-40002-GA-035
			I-40002-GA-036
			I-40002-GA-037
			I-40002-GA-038
			I-40002-GA-039
			I-40002-GA-040
			I-40002-GA-041

			I-40002-GA-042
			I-40002-GA-043
			I-40002-GA-044
			I-40002-GA-045
Bolt, M20, 530mm	400F1	107786	I-40002-GA-044
			I-40002-GA-045
			I-40002-GA-047
Bolt, M20, 750mm	400F1	107790	I-40002-GA-001A
			I-40002-GA-001B
			I-40002-GA-002A
			I-40002-GA-002B
			I-40002-GA-003
			I-40002-GA-004
			I-40002-GA-007
			I-40002-GA-008
			I-40002-GA-011
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			I-40002-GA-013
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			I-40002-GA-015
			I-40002-GA-016
			I-40002-GA-017
			I-40002-GA-018
			I-40002-GA-019
			I-40002-GA-020

			I-40002-GA-021
			I-40002-GA-022
			I-40002-GA-023
			I-40002-GA-024
			I-40002-GA-025
			I-40002-GA-029
			I-40002-GA-030
			I-40002-GA-031
			I-40002-GA-032
			I-40002-GA-033
			I-40002-GA-036
			I-40002-GA-037
			I-40002-GA-038
			I-40002-GA-039
			I-40002-GA-040
			I-40002-GA-041
			I-40002-GA-044
			I-40002-GA-045
			I-40002-GA-047
Cable Related Components	400C12	Ref ES400C12	I-40002-GA-036
			I-40002-GA-037
			I-40002-GA-038
			I-40002-GA-040
			I-40002-GA-041
			I-40002-GA-042

			I-40002-GA-043
			I-40002-GA-044
Copperwork Kit	400C30	787933	I-40002-GA-042
			I-40002-GA-043
			I-40002-GA-044
			I-40002-GA-045
Coach Screw	400F1	126810	I-40002-GA-001A
			I-40002-GA-001B
			I-40002-GA-002A
			I-40002-GA-002B
			I-40002-GA-003
			I-40002-GA-004
			I-40002-GA-005
			I-40002-GA-006
			I-40002-GA-007
			I-40002-GA-008
			I-40002-GA-009
			I-40002-GA-010
			I-40002-GA-011
			I-40002-GA-012
			I-40002-GA-013
			I-40002-GA-014
			I-40002-GA-015
			I-40002-GA-016
			I-40002-GA-017

			I-40002-GA-018
			I-40002-GA-019
			I-40002-GA-020
			I-40002-GA-021
			I-40002-GA-022
			I-40002-GA-023
			I-40002-GA-024
			I-40002-GA-025
			I-40002-GA-026
			I-40002-GA-027
			I-40002-GA-028
			I-40002-GA-029
			I-40002-GA-030
			I-40002-GA-031
			I-40002-GA-032
			I-40002-GA-033
			I-40002-GA-034
			I-40002-GA-035
			I-40002-GA-036
			I-40002-GA-037
			I-40002-GA-038
			I-40002-GA-039
			I-40002-GA-040
			I-40002-GA-041
			I-40002-GA-042

			I-40002-GA-043
			I-40002-GA-044
			I-40002-GA-045
Compression Dead End	400C29	121022	I-40002-GA-004
			I-40002-GA-006
			I-40002-GA-008
			I-40002-GA-010
			I-40002-GA-013
			I-40002-GA-017
			I-40002-GA-019
			I-40002-GA-023
			I-40002-GA-025
			I-40002-GA-027
			I-40002-GA-029
			I-40002-GA-030
			I-40002-GA-032
			I-40002-GA-033
			I-40002-GA-037
			I-40002-GA-039
			I-40002-GA-043
Compression Dead End	400C29	121023	I-40002-GA-004
			I-40002-GA-006
			I-40002-GA-008
			I-40002-GA-010
			I-40002-GA-013

			I-40002-GA-017
			I-40002-GA-019
			I-40002-GA-023
			I-40002-GA-025
			I-40002-GA-027
			I-40002-GA-029
			I-40002-GA-030
			I-40002-GA-032
			I-40002-GA-033
			I-40002-GA-035
			I-40002-GA-037
			I-40002-GA-039
			I-40002-GA-043
			I-40002-GA-045
Compression Dead End	400C29	121024	I-40002-GA-004
			I-40002-GA-006
			I-40002-GA-010
			I-40002-GA-013
			I-40002-GA-017
			I-40002-GA-019
			I-40002-GA-023
			I-40002-GA-025
			I-40002-GA-027
			I-40002-GA-029
			I-40002-GA-030

			I-40002-GA-032
			I-40002-GA-033
			I-40002-GA-035
			I-40002-GA-037
			I-40002-GA-039
			I-40002-GA-043
			I-40002-GA-045
Conductor, CC, 50mm ²	400C3	Ref ES400C3	I-40002-GA-042
Conductor, CC, 120mm ²	400C3	Ref ES400C3	I-40002-GA-029
			I-40002-GA-030
			I-40002-GA-032
			I-40002-GA-033
			I-40002-GA-035
			I-40002-GA-037
			I-40002-GA-041
			I-40002-GA-042
			I-40002-GA-043
Conductor, CC, 185mm ²	400C3	Ref ES400C3	I-40002-GA-029
			I-40002-GA-030
			I-40002-GA-032
			I-40002-GA-033
			I-40002-GA-035
			I-40002-GA-037
			I-40002-GA-041
			I-40002-GA-042

			I-40002-GA-043
Conductor, Flexible, 65mm²	400C3	Ref ES400C3	I-40002-GA-014
			I-40002-GA-015
			I-40002-GA-017
			I-40002-GA-018
			I-40002-GA-019
			I-40002-GA-020
			I-40002-GA-021
			I-40002-GA-023
			I-40002-GA-024
			I-40002-GA-025
			I-40002-GA-026
			I-40002-GA-027
			I-40002-GA-028
			I-40002-GA-029
			I-40002-GA-030
			I-40002-GA-032
			I-40002-GA-033
			I-40002-GA-037
			I-40002-GA-039
			I-40002-GA-040
			I-40002-GA-041
			I-40002-GA-043
Crossarm	400S11	133200	I-40002-GA-001A
			I-40002-GA-001B

			I-40002-GA-002A
			I-40002-GA-002B
			I-40002-GA-003
			I-40002-GA-004
			I-40002-GA-011
			I-40002-GA-012
			I-40002-GA-013
			I-40002-GA-014
			I-40002-GA-015
			I-40002-GA-020
			I-40002-GA-021
			I-40002-GA-028
			I-40002-GA-029
			I-40002-GA-030
			I-40002-GA-031
			I-40002-GA-032
			I-40002-GA-033
			I-40002-GA-040
			I-40002-GA-041
Crossarm	400S11	133201	I-40002-GA-007
			I-40002-GA-008
			I-40002-GA-011
			I-40002-GA-012
			I-40002-GA-013
			I-40002-GA-016

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			I-40002-GA-018
			I-40002-GA-019
			I-40002-GA-022
			I-40002-GA-023
			I-40002-GA-024
			I-40002-GA-025
			I-40002-GA-036
			I-40002-GA-037
			I-40002-GA-038
			I-40002-GA-039
Crossarm	400S11	133202	I-40002-GA-005
			I-40002-GA-006
			I-40002-GA-034
			I-40002-GA-035
Crossarm	400S11	133203	I-40002-GA-009
			I-40002-GA-010
			I-40002-GA-026
			I-40002-GA-027
			I-40002-GA-042
			I-40002-GA-043
			I-40002-GA-044
			I-40002-GA-045
Crossarm Strut	400S11	133353	I-40002-GA-001A
			I-40002-GA-001B

			I-40002-GA-002A
			I-40002-GA-002B
			I-40002-GA-003
			I-40002-GA-004
			I-40002-GA-007
			I-40002-GA-008
			I-40002-GA-011
			I-40002-GA-012
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			I-40002-GA-014
			I-40002-GA-015
			I-40002-GA-016
			I-40002-GA-017
			I-40002-GA-018
			I-40002-GA-019
			I-40002-GA-020
			I-40002-GA-021
			I-40002-GA-022
			I-40002-GA-023
			I-40002-GA-024
			I-40002-GA-025
			I-40002-GA-028
			I-40002-GA-029
			I-40002-GA-030
			I-40002-GA-031

			I-40002-GA-032
			I-40002-GA-033
			I-40002-GA-036
			I-40002-GA-037
			I-40002-GA-038
			I-40002-GA-039
			I-40002-GA-040
			I-40002-GA-041
Danger Plate	400N1	195251	I-40002-GA-001A
			I-40002-GA-001B
			I-40002-GA-002A
			I-40002-GA-002B
			I-40002-GA-003
			I-40002-GA-004
			I-40002-GA-005
			I-40002-GA-006
			I-40002-GA-007
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			I-40002-GA-009
			I-40002-GA-010
			I-40002-GA-011
			I-40002-GA-012
			I-40002-GA-013
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			I-40002-GA-019
			I-40002-GA-020
			I-40002-GA-021
			I-40002-GA-022
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			I-40002-GA-024
			I-40002-GA-025
			I-40002-GA-026
			I-40002-GA-027
			I-40002-GA-028
			I-40002-GA-029
			I-40002-GA-030
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			I-40002-GA-035
			I-40002-GA-036
			I-40002-GA-037
			I-40002-GA-038
			I-40002-GA-039
			I-40002-GA-040

			I-40002-GA-041
			I-40002-GA-042
			I-40002-GA-043
			I-40002-GA-044
			I-40002-GA-045
Dropper Kit 1	400C29	124871	I-40002-GA-014
			I-40002-GA-017
			I-40002-GA-020
			I-40002-GA-023
			I-40002-GA-033
Dropper Kit 2	400C29	121010	I-40002-GA-015
			I-40002-GA-019
			I-40002-GA-021
			I-40002-GA-025
			I-40002-GA-027
			I-40002-GA-028
			I-40002-GA-039
			I-40002-GA-041
			I-40002-GA-043
Dropper Kit 3	400C29	124880	I-40002-GA-029
			I-40002-GA-030
			I-40002-GA-032
Dropper Kit 4	400C29	124883	I-40002-GA-037
			I-40002-GA-040
FARAP	400S11	260820	I-40002-GA-001A

			I-40002-GA-001B
			I-40002-GA-002A
			I-40002-GA-002B
			I-40002-GA-003
			I-40002-GA-004
			I-40002-GA-005
			I-40002-GA-006
			I-40002-GA-007
			I-40002-GA-008
			I-40002-GA-009
			I-40002-GA-010
			I-40002-GA-011
			I-40002-GA-012
			I-40002-GA-013
			I-40002-GA-014
			I-40002-GA-015
			I-40002-GA-016
			I-40002-GA-017
			I-40002-GA-018
			I-40002-GA-019
			I-40002-GA-020
			I-40002-GA-021
			I-40002-GA-022
			I-40002-GA-023
			I-40002-GA-024

			I-40002-GA-025
			I-40002-GA-026
			I-40002-GA-027
			I-40002-GA-028
			I-40002-GA-029
			I-40002-GA-030
			I-40002-GA-031
			I-40002-GA-032
			I-40002-GA-033
			I-40002-GA-034
			I-40002-GA-035
			I-40002-GA-036
			I-40002-GA-037
			I-40002-GA-038
			I-40002-GA-039
			I-40002-GA-040
			I-40002-GA-041
			I-40002-GA-042
			I-40002-GA-043
			I-40002-GA-044
			I-40002-GA-045
Fasteners and Washers Kit, Cable Guard	400F1	787934	I-40002-GA-042
			I-40002-GA-043
			I-40002-GA-044
			I-40002-GA-045

Fasteners and Washers Kit, Steelwork	400F1	787934	I-40002-GA-042
			I-40002-GA-043
			I-40002-GA-044
			I-40002-GA-045
Foundation Brace	400S11	111325	I-40002-GA-047
Foundation Fasteners Kit	400O2	133540	I-40002-GA-005
			I-40002-GA-006
			I-40002-GA-009
			I-40002-GA-010
			I-40002-GA-026
			I-40002-GA-027
			I-40002-GA-028
			I-40002-GA-034
			I-40002-GA-035
			I-40002-GA-042
			I-40002-GA-043
			I-40002-GA-044
			I-40002-GA-045
Fuse	400C29	Ref ES400C29	I-40002-GA-012
			I-40002-GA-013
			I-40002-GA-015
			I-40002-GA-018
			I-40002-GA-019
			I-40002-GA-021
			I-40002-GA-024

			I-40002-GA-025
			I-40002-GA-026
			I-40002-GA-027
			I-40002-GA-028
			I-40002-GA-031
			I-40002-GA-032
			I-40002-GA-038
			I-40002-GA-039
			I-40002-GA-041
			I-40002-GA-042
			I-40002-GA-043
Fuse Carrier	400C29	Ref ES400C29	I-40002-GA-012
			I-40002-GA-013
			I-40002-GA-015
			I-40002-GA-018
			I-40002-GA-019
			I-40002-GA-021
			I-40002-GA-024
			I-40002-GA-025
			I-40002-GA-026
			I-40002-GA-027
			I-40002-GA-028
			I-40002-GA-031
			I-40002-GA-032
			I-40002-GA-038

			I-40002-GA-039
			I-40002-GA-041
			I-40002-GA-042
			I-40002-GA-043
Fuse Unit	400C29	Ref ES400C29	I-40002-GA-012
			I-40002-GA-013
			I-40002-GA-015
			I-40002-GA-018
			I-40002-GA-019
			I-40002-GA-021
			I-40002-GA-024
			I-40002-GA-025
			I-40002-GA-026
			I-40002-GA-027
			I-40002-GA-028
			I-40002-GA-031
			I-40002-GA-032
			I-40002-GA-038
			I-40002-GA-039
			I-40002-GA-041
			I-40002-GA-042
			I-40002-GA-043
Gouge-mark Plate	400N1	995610	I-40002-GA-001A
			I-40002-GA-001B
			I-40002-GA-002A

			I-40002-GA-002B
			I-40002-GA-003
			I-40002-GA-004
			I-40002-GA-005
			I-40002-GA-006
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			I-40002-GA-009
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			I-40002-GA-011
			I-40002-GA-012
			I-40002-GA-013
			I-40002-GA-014
			I-40002-GA-015
			I-40002-GA-016
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			I-40002-GA-018
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			I-40002-GA-022
			I-40002-GA-023
			I-40002-GA-024
			I-40002-GA-025
			I-40002-GA-026

			I-40002-GA-027
			I-40002-GA-028
			I-40002-GA-029
			I-40002-GA-030
			I-40002-GA-031
			I-40002-GA-032
			I-40002-GA-033
			I-40002-GA-034
			I-40002-GA-035
			I-40002-GA-036
			I-40002-GA-037
			I-40002-GA-038
			I-40002-GA-039
			I-40002-GA-040
			I-40002-GA-041
			I-40002-GA-042
			I-40002-GA-043
			I-40002-GA-044
			I-40002-GA-045
Helical Dead End	400H2	121439	I-40002-GA-003
			I-40002-GA-005
			I-40002-GA-009
			I-40002-GA-011
			I-40002-GA-012
			I-40002-GA-016

			I-40002-GA-018
			I-40002-GA-022
			I-40002-GA-024
			I-40002-GA-026
			I-40002-GA-031
			I-40002-GA-034
			I-40002-GA-036
			I-40002-GA-038
			I-40002-GA-042
			I-40002-GA-044
Helical Dead End	400H2	121437	I-40002-GA-003
			I-40002-GA-005
			I-40002-GA-007
			I-40002-GA-009
			I-40002-GA-011
			I-40002-GA-012
			I-40002-GA-016
			I-40002-GA-018
			I-40002-GA-022
			I-40002-GA-024
			I-40002-GA-026
			I-40002-GA-031
			I-40002-GA-036
			I-40002-GA-038
			I-40002-GA-042

Helical Dead End	400H2	121438	I-40002-GA-003
			I-40002-GA-005
			I-40002-GA-007
			I-40002-GA-009
			I-40002-GA-011
			I-40002-GA-012
			I-40002-GA-016
			I-40002-GA-018
			I-40002-GA-022
			I-40002-GA-024
			I-40002-GA-026
			I-40002-GA-031
			I-40002-GA-034
			I-40002-GA-036
			I-40002-GA-038
			I-40002-GA-042
			I-40002-GA-044
Helical Intermediate Tie	400H2	139100	I-40002-GA-001A
			I-40002-GA-001B
			I-40002-GA-002A
			I-40002-GA-002B
			I-40002-GA-003
			I-40002-GA-004
			I-40002-GA-005
			I-40002-GA-006

			I-40002-GA-007
			I-40002-GA-008
			I-40002-GA-009
			I-40002-GA-010
			I-40002-GA-011
			I-40002-GA-012
			I-40002-GA-014
			I-40002-GA-015
			I-40002-GA-020
			I-40002-GA-021
			I-40002-GA-028
			I-40002-GA-029
			I-40002-GA-040
			I-40002-GA-041
Helical Intermediate Tie	400H2	139101	I-40002-GA-001A
			I-40002-GA-001B
			I-40002-GA-002A
			I-40002-GA-002B
			I-40002-GA-003
			I-40002-GA-004
			I-40002-GA-005
			I-40002-GA-006
			I-40002-GA-007
			I-40002-GA-008
			I-40002-GA-009

			I-40002-GA-010
			I-40002-GA-011
			I-40002-GA-012
			I-40002-GA-014
			I-40002-GA-015
			I-40002-GA-020
			I-40002-GA-021
			I-40002-GA-028
			I-40002-GA-029
			I-40002-GA-040
			I-40002-GA-041
Helical Intermediate Tie	400H2	139102	I-40002-GA-001A
			I-40002-GA-001B
			I-40002-GA-002A
			I-40002-GA-002B
			I-40002-GA-003
			I-40002-GA-004
			I-40002-GA-005
			I-40002-GA-006
			I-40002-GA-009
			I-40002-GA-010
			I-40002-GA-011
			I-40002-GA-012
			I-40002-GA-014
			I-40002-GA-015

			I-40002-GA-020
			I-40002-GA-021
			I-40002-GA-028
			I-40002-GA-029
			I-40002-GA-030
			I-40002-GA-031
			I-40002-GA-032
			I-40002-GA-040
			I-40002-GA-041
Helical Intermediate Tie	400H2	139103	I-40002-GA-001A
			I-40002-GA-001B
			I-40002-GA-002A
			I-40002-GA-002B
			I-40002-GA-003
			I-40002-GA-004
			I-40002-GA-005
			I-40002-GA-006
			I-40002-GA-009
			I-40002-GA-010
			I-40002-GA-011
Helical Intermediate Tie	400H2	139104	I-40002-GA-001A
			I-40002-GA-001B
			I-40002-GA-002A
			I-40002-GA-002B
			I-40002-GA-003

			I-40002-GA-004
			I-40002-GA-005
			I-40002-GA-006
			I-40002-GA-009
			I-40002-GA-010
			I-40002-GA-011
Insulator Pin	400S11	128104	I-40002-GA-001A
			I-40002-GA-001B
			I-40002-GA-002A
			I-40002-GA-002B
			I-40002-GA-011
Insulator Pin	400S11	128252	I-40002-GA-001A
			I-40002-GA-001B
			I-40002-GA-002A
			I-40002-GA-002B
			I-40002-GA-011
			I-40002-GA-012
			I-40002-GA-013
			I-40002-GA-020
			I-40002-GA-021
			I-40002-GA-028
			I-40002-GA-029
			I-40002-GA-040
			I-40002-GA-041
			I-40002-GA-014

			I-40002-GA-015
Insulator, Pin-Mounted	400I4	175271	I-40002-GA-001A
			I-40002-GA-001B
			I-40002-GA-002A
			I-40002-GA-002B
			I-40002-GA-003
			I-40002-GA-004
			I-40002-GA-005
			I-40002-GA-006
			I-40002-GA-009
			I-40002-GA-010
			I-40002-GA-011
Insulator, Pin-Mounted	400I4	175270	I-40002-GA-001A
			I-40002-GA-001B
			I-40002-GA-002A
			I-40002-GA-002B
			I-40002-GA-003
			I-40002-GA-004
			I-40002-GA-005
			I-40002-GA-006
			I-40002-GA-007
			I-40002-GA-008
			I-40002-GA-009
			I-40002-GA-010
			I-40002-GA-011

			I-40002-GA-012
			I-40002-GA-013
			I-40002-GA-014
			I-40002-GA-015
			I-40002-GA-020
			I-40002-GA-021
			I-40002-GA-028
			I-40002-GA-029
			I-40002-GA-030
			I-40002-GA-031
			I-40002-GA-032
			I-40002-GA-040
			I-40002-GA-041
Insulator Tension	400I4	125240	I-40002-GA-004
			I-40002-GA-006
			I-40002-GA-008
			I-40002-GA-010
			I-40002-GA-017
			I-40002-GA-019
			I-40002-GA-023
			I-40002-GA-025
			I-40002-GA-027
			I-40002-GA-029
			I-40002-GA-030
			I-40002-GA-032

			I-40002-GA-033
			I-40002-GA-035
			I-40002-GA-037
			I-40002-GA-039
			I-40002-GA-043
			I-40002-GA-045
Insulator Tension	400I4	125232	I-40002-GA-003
			I-40002-GA-007
			I-40002-GA-009
			I-40002-GA-011
			I-40002-GA-012
			I-40002-GA-013
			I-40002-GA-016
			I-40002-GA-018
			I-40002-GA-022
			I-40002-GA-024
			I-40002-GA-026
			I-40002-GA-031
			I-40002-GA-034
			I-40002-GA-036
			I-40002-GA-038
			I-40002-GA-042
			I-40002-GA-044
IPCC	400C29	121008	I-40002-GA-011
			I-40002-GA-012

			I-40002-GA-013
			I-40002-GA-014
			I-40002-GA-015
			I-40002-GA-020
			I-40002-GA-021
			I-40002-GA-028
			I-40002-GA-040
			I-40002-GA-041
IPCC	400C29	121003	I-40002-GA-011
			I-40002-GA-012
			I-40002-GA-013
			I-40002-GA-014
			I-40002-GA-015
			I-40002-GA-020
			I-40002-GA-021
			I-40002-GA-028
			I-40002-GA-040
			I-40002-GA-041
IPCC	400C29	121006	I-40002-GA-011
			I-40002-GA-012
			I-40002-GA-013
			I-40002-GA-014
			I-40002-GA-015
			I-40002-GA-020
			I-40002-GA-021

			I-40002-GA-028
			I-40002-GA-040
			I-40002-GA-041
Jumper Splice	400C29	124910	I-40002-GA-003
			I-40002-GA-005
			I-40002-GA-009
Jumper Splice	400C29	121021	I-40002-GA-003
			I-40002-GA-005
			I-40002-GA-007
			I-40002-GA-009
Jumper Splice	400C29	127269	I-40002-GA-003
			I-40002-GA-005
			I-40002-GA-007
			I-40002-GA-009
Lightning Protection Device	400C29	121001	I-40002-GA-001B
			I-40002-GA-002B
Lightning Protection Device	400C29	121018	I-40002-GA-001B
			I-40002-GA-002B
Lightning Protection Device	400C29	121013	I-40002-GA-001B
			I-40002-GA-002B
Lightning Protection Device	400C29	121014	I-40002-GA-001B
			I-40002-GA-002B
Lightning Protection Device	400C29	121015	I-40002-GA-001B
			I-40002-GA-002B
Link Solid	400C29	Ref ES 400C29	I-40002-GA-012
			I-40002-GA-013

			I-40002-GA-015
			I-40002-GA-018
			I-40002-GA-019
			I-40002-GA-021
			I-40002-GA-024
			I-40002-GA-025
			I-40002-GA-026
			I-40002-GA-027
			I-40002-GA-028
			I-40002-GA-031
			I-40002-GA-032
			I-40002-GA-038
			I-40002-GA-039
			I-40002-GA-041
			I-40002-GA-042
			I-40002-GA-043
Lug, 2-hole, Right Angle	400C29	176245	I-40002-GA-016
			I-40002-GA-033
			I-40002-GA-034
			I-40002-GA-035
			I-40002-GA-044
			I-40002-GA-045
Lug, 2-hole, Right Angle	400C29	176250	I-40002-GA-016
			I-40002-GA-033
			I-40002-GA-034

			I-40002-GA-035
			I-40002-GA-044
			I-40002-GA-045
Lug, 2-hole, Right Angle	400C29	176240	I-40002-GA-016
Lug, 2-hole, Right Angle, for Conductor, Flexible, 65mm ²	400C29	176255	I-40002-GA-018
			I-40002-GA-024
			I-40002-GA-026
Lug, 2-hole, Straight	400C29	124886	I-40002-GA-004
			I-40002-GA-006
			I-40002-GA-008
			I-40002-GA-010
			I-40002-GA-011
			I-40002-GA-012
			I-40002-GA-013
Lug, 2-hole, Straight	400C29	124887	I-40002-GA-004
			I-40002-GA-006
			I-40002-GA-008
			I-40002-GA-010
			I-40002-GA-011
			I-40002-GA-012
			I-40002-GA-013
			I-40002-GA-029
			I-40002-GA-030
			I-40002-GA-032

			I-40002-GA-033
			I-40002-GA-035
			I-40002-GA-037
			I-40002-GA-039
			I-40002-GA-040
			I-40002-GA-041
			I-40002-GA-043
Lug, 2-hole, Straight	400C29	176200	I-40002-GA-004
			I-40002-GA-006
			I-40002-GA-010
			I-40002-GA-011
			I-40002-GA-012
			I-40002-GA-013
			I-40002-GA-029
			I-40002-GA-030
			I-40002-GA-032
			I-40002-GA-033
			I-40002-GA-035
			I-40002-GA-037
			I-40002-GA-039
			I-40002-GA-040
			I-40002-GA-041
			I-40002-GA-043
Lug, 2-hole, Straight, bimetal	400C29	127237	I-40002-GA-018
			I-40002-GA-022

			I-40002-GA-024
			I-40002-GA-026
			I-40002-GA-031
			I-40002-GA-036
			I-40002-GA-038
			I-40002-GA-042
Lug, 2-hole, Straight, bimetal	400C29	124894	I-40002-GA-018
			I-40002-GA-022
			I-40002-GA-024
			I-40002-GA-026
			I-40002-GA-029
			I-40002-GA-030
			I-40002-GA-031
			I-40002-GA-032
			I-40002-GA-036
			I-40002-GA-037
			I-40002-GA-038
			I-40002-GA-039
			I-40002-GA-040
			I-40002-GA-041
			I-40002-GA-042
			I-40002-GA-043
Lug, 2-hole, Straight, bimetal	400C29	124890	I-40002-GA-018
			I-40002-GA-022
			I-40002-GA-024

			I-40002-GA-026
			I-40002-GA-029
			I-40002-GA-030
			I-40002-GA-031
			I-40002-GA-032
			I-40002-GA-036
			I-40002-GA-037
			I-40002-GA-038
			I-40002-GA-039
			I-40002-GA-040
			I-40002-GA-041
			I-40002-GA-042
			I-40002-GA-043
Lug, 2-hole, Straight, for Conductor, Flexible, 65mm ²	400C29	124892	I-40002-GA-018
			I-40002-GA-024
			I-40002-GA-026
			I-40002-GA-039
			I-40002-GA-041
			I-40002-GA-043
Notices	400N1	Ref ES400N1	I-40002-GA-001A
			I-40002-GA-001B
			I-40002-GA-002A
			I-40002-GA-002B
			I-40002-GA-003

			I-40002-GA-004
			I-40002-GA-005
			I-40002-GA-006
			I-40002-GA-007
			I-40002-GA-008
			I-40002-GA-009
			I-40002-GA-010
			I-40002-GA-011
			I-40002-GA-012
			I-40002-GA-013
			I-40002-GA-014
			I-40002-GA-015
			I-40002-GA-016
			I-40002-GA-017
			I-40002-GA-018
			I-40002-GA-019
			I-40002-GA-020
			I-40002-GA-021
			I-40002-GA-022
			I-40002-GA-023
			I-40002-GA-024
			I-40002-GA-025
			I-40002-GA-026
			I-40002-GA-027
			I-40002-GA-028

			I-40002-GA-029
			I-40002-GA-030
			I-40002-GA-031
			I-40002-GA-032
			I-40002-GA-033
			I-40002-GA-034
			I-40002-GA-035
			I-40002-GA-036
			I-40002-GA-037
			I-40002-GA-038
			I-40002-GA-039
			I-40002-GA-040
			I-40002-GA-041
			I-40002-GA-042
			I-40002-GA-043
			I-40002-GA-044
			I-40002-GA-045
Pilot Pin	400S11	128376	I-40002-GA-003
			I-40002-GA-004
			I-40002-GA-005
			I-40002-GA-006
			I-40002-GA-007
			I-40002-GA-008
			I-40002-GA-009
			I-40002-GA-010

			I-40002-GA-012
			I-40002-GA-013
			I-40002-GA-030
			I-40002-GA-031
			I-40002-GA-032
Pilot Pin Bracket	400S11	111457	I-40002-GA-012
			I-40002-GA-013
			I-40002-GA-030
			I-40002-GA-031
			I-40002-GA-032
Platform Kit	400S11	133213	I-40002-GA-026
			I-40002-GA-027
			I-40002-GA-028
Platform Kit	400S11	133396	I-40002-GA-020
			I-40002-GA-021
			I-40002-GA-022
			I-40002-GA-023
			I-40002-GA-024
			I-40002-GA-025
Pole Cap	400C29	Ref ES400C29	I-40002-GA-001A
			I-40002-GA-001B
			I-40002-GA-002A
			I-40002-GA-002B
			I-40002-GA-003
			I-40002-GA-004

			I-40002-GA-005
			I-40002-GA-006
			I-40002-GA-007
			I-40002-GA-008
			I-40002-GA-009
			I-40002-GA-010
			I-40002-GA-011
			I-40002-GA-012
			I-40002-GA-013
			I-40002-GA-014
			I-40002-GA-015
			I-40002-GA-016
			I-40002-GA-017
			I-40002-GA-018
			I-40002-GA-019
			I-40002-GA-020
			I-40002-GA-021
			I-40002-GA-022
			I-40002-GA-023
			I-40002-GA-024
			I-40002-GA-025
			I-40002-GA-026
			I-40002-GA-027
			I-40002-GA-028
			I-40002-GA-029

			I-40002-GA-030
			I-40002-GA-031
			I-40002-GA-032
			I-40002-GA-033
			I-40002-GA-034
			I-40002-GA-035
			I-40002-GA-036
			I-40002-GA-037
			I-40002-GA-038
			I-40002-GA-039
			I-40002-GA-040
			I-40002-GA-041
			I-40002-GA-042
			I-40002-GA-043
			I-40002-GA-044
			I-40002-GA-045
Sag Link	400S11	144578	I-40002-GA-004
			I-40002-GA-006
			I-40002-GA-008
			I-40002-GA-010
			I-40002-GA-013
			I-40002-GA-017
			I-40002-GA-019
			I-40002-GA-023
			I-40002-GA-025

			I-40002-GA-027
			I-40002-GA-029
			I-40002-GA-030
			I-40002-GA-032
			I-40002-GA-033
			I-40002-GA-035
			I-40002-GA-037
			I-40002-GA-039
			I-40002-GA-043
			I-40002-GA-045
Section Strap	400S11	133345	I-40002-GA-003
			I-40002-GA-004
			I-40002-GA-005
			I-40002-GA-006
			I-40002-GA-030
			I-40002-GA-031
			I-40002-GA-032
			I-40002-GA-033
			I-40002-GA-034
			I-40002-GA-035
Shroud, Insulated, PMT/GVR	400S12	160798	I-40002-GA-014
			I-40002-GA-015
			I-40002-GA-016
			I-40002-GA-017
			I-40002-GA-018

			I-40002-GA-019
			I-40002-GA-020
			I-40002-GA-021
			I-40002-GA-022
			I-40002-GA-023
			I-40002-GA-024
			I-40002-GA-025
			I-40002-GA-026
			I-40002-GA-027
			I-40002-GA-028
Socket Clevis	400S11	122173	I-40002-GA-004
			I-40002-GA-006
			I-40002-GA-008
			I-40002-GA-010
			I-40002-GA-013
			I-40002-GA-017
			I-40002-GA-019
			I-40002-GA-023
			I-40002-GA-025
			I-40002-GA-027
			I-40002-GA-029
			I-40002-GA-030
			I-40002-GA-032
			I-40002-GA-033
			I-40002-GA-035

			I-40002-GA-037
			I-40002-GA-039
			I-40002-GA-043
			I-40002-GA-045
Socket Thimble	400S11	132234	I-40002-GA-003
			I-40002-GA-005
			I-40002-GA-007
			I-40002-GA-009
			I-40002-GA-011
			I-40002-GA-016
			I-40002-GA-018
			I-40002-GA-022
			I-40002-GA-024
			I-40002-GA-026
			I-40002-GA-031
			I-40002-GA-034
			I-40002-GA-036
			I-40002-GA-038
			I-40002-GA-042
			I-40002-GA-044
Stays	400S13	Ref ES400S13	I-40002-GA-001B
			I-40002-GA-002A
			I-40002-GA-002B
			I-40002-GA-003
			I-40002-GA-004

			I-40002-GA-005
			I-40002-GA-006
			I-40002-GA-007
			I-40002-GA-008
			I-40002-GA-009
			I-40002-GA-010
			I-40002-GA-011
			I-40002-GA-012
			I-40002-GA-013
			I-40002-GA-014
			I-40002-GA-015
			I-40002-GA-016
			I-40002-GA-017
			I-40002-GA-018
			I-40002-GA-019
			I-40002-GA-020
			I-40002-GA-021
			I-40002-GA-022
			I-40002-GA-023
			I-40002-GA-024
			I-40002-GA-025
			I-40002-GA-026
			I-40002-GA-027
			I-40002-GA-028
			I-40002-GA-029

			I-40002-GA-030
			I-40002-GA-031
			I-40002-GA-032
			I-40002-GA-033
			I-40002-GA-034
			I-40002-GA-035
			I-40002-GA-036
			I-40002-GA-037
			I-40002-GA-038
			I-40002-GA-039
			I-40002-GA-040
			I-40002-GA-041
			I-40002-GA-042
			I-40002-GA-043
			I-40002-GA-044
			I-40002-GA-045
Steelwork Kit	400S11	122826	I-40002-GA-042
			I-40002-GA-043
			I-40002-GA-044
			I-40002-GA-045
Steelwork, Links, Long	400S11	133206	I-40002-GA-012
			I-40002-GA-013
			I-40002-GA-031
			I-40002-GA-032
			I-40002-GA-038

			I-40002-GA-039
			I-40002-GA-041
			I-40002-GA-042
			I-40002-GA-043
Steelwork, Links, Short	400S11	133207	I-40002-GA-015
			I-40002-GA-018
			I-40002-GA-019
			I-40002-GA-021
			I-40002-GA-024
			I-40002-GA-025
			I-40002-GA-026
			I-40002-GA-027
			I-40002-GA-028
Surge Arrestor		Ref ES TBA	I-40002-GA-029
			I-40002-GA-030
Terminal Strap	400S11	133361	I-40002-GA-003
			I-40002-GA-004
			I-40002-GA-005
			I-40002-GA-006
			I-40002-GA-007
			I-40002-GA-008
			I-40002-GA-009
			I-40002-GA-010
			I-40002-GA-011
			I-40002-GA-012

			I-40002-GA-013
			I-40002-GA-016
			I-40002-GA-017
			I-40002-GA-018
			I-40002-GA-019
			I-40002-GA-022
			I-40002-GA-023
			I-40002-GA-024
			I-40002-GA-025
			I-40002-GA-026
			I-40002-GA-027
			I-40002-GA-030
			I-40002-GA-031
			I-40002-GA-032
			I-40002-GA-033
			I-40002-GA-034
			I-40002-GA-035
			I-40002-GA-036
			I-40002-GA-037
			I-40002-GA-038
			I-40002-GA-039
			I-40002-GA-042
			I-40002-GA-043
			I-40002-GA-044
			I-40002-GA-045

Tie Rod	400S11	133388	I-40002-GA-003
			I-40002-GA-004
			I-40002-GA-005
			I-40002-GA-006
			I-40002-GA-007
			I-40002-GA-008
			I-40002-GA-009
			I-40002-GA-010
			I-40002-GA-011
			I-40002-GA-012
			I-40002-GA-013
			I-40002-GA-016
			I-40002-GA-017
			I-40002-GA-018
			I-40002-GA-019
			I-40002-GA-022
			I-40002-GA-023
			I-40002-GA-024
			I-40002-GA-025
			I-40002-GA-026
			I-40002-GA-027
			I-40002-GA-030
			I-40002-GA-031
			I-40002-GA-032
			I-40002-GA-033

			I-40002-GA-034
			I-40002-GA-035
			I-40002-GA-036
			I-40002-GA-037
			I-40002-GA-038
			I-40002-GA-039
			I-40002-GA-042
			I-40002-GA-043
			I-40002-GA-044
			I-40002-GA-045
Transformer	321	Ref ES321	I-40002-GA-014
			I-40002-GA-015
			I-40002-GA-016
			I-40002-GA-017
			I-40002-GA-018
			I-40002-GA-019
			I-40002-GA-020
			I-40002-GA-021
			I-40002-GA-022
			I-40002-GA-023
			I-40002-GA-024
			I-40002-GA-025
			I-40002-GA-026
			I-40002-GA-027
			I-40002-GA-028

Vibration Damper	400H2	139115	I-40002-GA-001A
			I-40002-GA-001B
			I-40002-GA-002A
			I-40002-GA-002B
			I-40002-GA-003
			I-40002-GA-004
			I-40002-GA-005
			I-40002-GA-006
			I-40002-GA-007
			I-40002-GA-008
			I-40002-GA-009
			I-40002-GA-010
			I-40002-GA-011
			I-40002-GA-012
			I-40002-GA-014
			I-40002-GA-015
			I-40002-GA-016
			I-40002-GA-017
			I-40002-GA-018
			I-40002-GA-019
			I-40002-GA-020
			I-40002-GA-021
			I-40002-GA-022
			I-40002-GA-023
			I-40002-GA-024

			I-40002-GA-025
			I-40002-GA-026
			I-40002-GA-027
			I-40002-GA-028
			I-40002-GA-029
			I-40002-GA-030
			I-40002-GA-031
			I-40002-GA-032
			I-40002-GA-033
			I-40002-GA-036
			I-40002-GA-037
			I-40002-GA-039
			I-40002-GA-040
			I-40002-GA-041
			I-40002-GA-042
			I-40002-GA-043
Washer, Round, Flat	400F1	993018	I-40002-GA-003
			I-40002-GA-004
			I-40002-GA-005
			I-40002-GA-006
			I-40002-GA-007
			I-40002-GA-008
			I-40002-GA-009
			I-40002-GA-010
			I-40002-GA-011

			I-40002-GA-012
			I-40002-GA-013
			I-40002-GA-016
			I-40002-GA-017
			I-40002-GA-018
			I-40002-GA-019
			I-40002-GA-022
			I-40002-GA-023
			I-40002-GA-024
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			I-40002-GA-026
			I-40002-GA-027
			I-40002-GA-030
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			I-40002-GA-032
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			I-40002-GA-034
			I-40002-GA-035
			I-40002-GA-036
			I-40002-GA-037
			I-40002-GA-038
			I-40002-GA-039
			I-40002-GA-042
			I-40002-GA-043
			I-40002-GA-044

			I-40002-GA-045
Washer, Square, Curved	400F1	139203	I-40002-GA-001A
			I-40002-GA-001B
			I-40002-GA-002A
			I-40002-GA-002B
			I-40002-GA-003
			I-40002-GA-004
			I-40002-GA-007
			I-40002-GA-008
			I-40002-GA-009
			I-40002-GA-010
			I-40002-GA-011
			I-40002-GA-012
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			I-40002-GA-016
			I-40002-GA-017
			I-40002-GA-018
			I-40002-GA-019
			I-40002-GA-020
			I-40002-GA-021
			I-40002-GA-022
			I-40002-GA-023
			I-40002-GA-024

			I-40002-GA-025
			I-40002-GA-026
			I-40002-GA-027
			I-40002-GA-028
			I-40002-GA-029
			I-40002-GA-030
			I-40002-GA-031
			I-40002-GA-032
			I-40002-GA-033
			I-40002-GA-034
			I-40002-GA-035
			I-40002-GA-036
			I-40002-GA-037
			I-40002-GA-038
			I-40002-GA-039
			I-40002-GA-040
			I-40002-GA-041
			I-40002-GA-042
			I-40002-GA-043
			I-40002-GA-044
			I-40002-GA-045
			I-40002-GA-047
Washer, Square, Flat	400F1	139262	I-40002-GA-001A
			I-40002-GA-001B
			I-40002-GA-002A

			I-40002-GA-002B
			I-40002-GA-003
			I-40002-GA-004
			I-40002-GA-007
			I-40002-GA-008
			I-40002-GA-011
			I-40002-GA-012
			I-40002-GA-013
			I-40002-GA-014
			I-40002-GA-015
			I-40002-GA-016
			I-40002-GA-017
			I-40002-GA-018
			I-40002-GA-019
			I-40002-GA-020
			I-40002-GA-021
			I-40002-GA-022
			I-40002-GA-023
			I-40002-GA-024
			I-40002-GA-025
			I-40002-GA-028
			I-40002-GA-029
			I-40002-GA-030
			I-40002-GA-031
			I-40002-GA-032

			I-40002-GA-033
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			I-40002-GA-037
			I-40002-GA-038
			I-40002-GA-039
			I-40002-GA-040
			I-40002-GA-041
			I-40002-GA-044
			I-40002-GA-045
			I-40002-GA-047
Wood Pole	400W2	Ref ES400W2	I-40002-GA-001A
			I-40002-GA-001B
			I-40002-GA-002A
			I-40002-GA-002B
			I-40002-GA-003
			I-40002-GA-004
			I-40002-GA-005
			I-40002-GA-006
			I-40002-GA-007
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			I-40002-GA-009
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			I-40002-GA-011
			I-40002-GA-012
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			I-40002-GA-014
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			I-40002-GA-016
			I-40002-GA-017
			I-40002-GA-018
			I-40002-GA-019
			I-40002-GA-020
			I-40002-GA-021
			I-40002-GA-022
			I-40002-GA-023
			I-40002-GA-024
			I-40002-GA-025
			I-40002-GA-026
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			I-40002-GA-028
			I-40002-GA-029
			I-40002-GA-030
			I-40002-GA-031
			I-40002-GA-032
			I-40002-GA-033
			I-40002-GA-034
			I-40002-GA-035
			I-40002-GA-036
			I-40002-GA-037
			I-40002-GA-038

			I-40002-GA-039
			I-40002-GA-040
			I-40002-GA-041
			I-40002-GA-042
			I-40002-GA-043
			I-40002-GA-044
			I-40002-GA-045

Appendix C – Design Information and Validation

This Appendix comprises three standalone sets of design data:

- [Appendix C1](#): for line design using 50 mm² (50CC) conductor
- [Appendix C2](#): for line design using 120 mm² (120CC) conductor
- [Appendix C3](#): for line design using 185 mm² (185CC) conductor

Design Information

Introduction

Electricity North West has in the past followed and adopted the requirements of the 1970 Overhead Line Electricity Supply Regulations, and the principles of a deterministic approach to overhead line design. However, this approach changed with the advent of the Electricity Supply Regulations of 1988, which, unlike the Overhead Line Regulations previously in force, did not set specific mechanical design requirements. Instead they required that, "All works shall be sufficient for the purpose, and the circumstances in which they are used. They shall be constructed, installed, protected (both electrically and mechanically), used and maintained to prevent danger and interruption of supply so far as is reasonably practical". This approach has remained unchanged with the introduction of the Electricity Safety, Quality and Continuity Regulations 2002, ie: "Generators, distributors and meter operators shall ensure that their equipment is - (a) sufficient for the purposes for and the circumstances in which it is used; and (b) so constructed, installed, protected (both electrically and mechanically), used and maintained as to prevent danger, interference with or interruption of supply, so far as is reasonably practicable."

Also in 1988, the Electricity Industry produced a national design specification for overhead lines, which was prepared and issued specifically to satisfy the requirements of the new regulations. The specification (EATS 43-40), used a new approach to overhead line design. The approach taken matches the maximum likely weather related load at specific locations with the strength capability of the weakest component.

Specific to the EATS 43-40 design is the conductor's capability to withstand the loads pertaining to the wind-ice factors. This is obviously dependent on the conductor tensions and the span length at that time. Calculations based on clashing models determine at what conductor spacing and what span length the conductors will clash with the applied loads likely for that environment. Again the limits are found for a conductor in that geographical area, and the basic span can be specified.

In brief the three main issues for overhead line design using the models described are:

- (a) Maximum Conductor Weight (MCW).
- (b) Maximum Conductor Pressure (MCP).
- (c) Maximum Conductor Tension (MCT).

The following information provides relative design criteria and limitations in relation to the environmental loads adopted in the methodology of EATS 43-40, and as applied to the use of covered conductors in EATS 43-121. The EATS 43-121 Excel workbook has been used to generate this data.

For environmental conditions, a 2C weather zone has been adopted as the most severe conditions likely to be applied to overhead lines in Electricity North West geographical area. A "Short" and "Long" span facility has been adopted in the past for bare conductors. This was to provide, where possible, flexibility for wayleaves and planning engineers during the initial routing of overhead lines. This approach has also been adopted here.

The following design criteria have been applied to all calculations carried out.

Weather Zone 2C $2 = 380\text{N/m}^2$ (55 mph)
 $C = 15\text{mm}$ Radial Ice Accretion

EATS 43-40 methodology applied.

Withstand Factors used are: 2.0 on Strut Loading
 1.6 on Windspan Loading with 2 blocks fitted
 2.5 on Stays Capability
 2.5 on Steel work and Pin Insulators.

Maximum Downpull and Uplift capability for all structure configuration is $1: 10$ gradient of 5.71°

Calculations assume all three conductors loaded to the above parameters.

50mm^2 (50CC) Covered Conductor with a vibration limit of 17.5% UTS,
 Basic Span 90m
 Maximum Span 120m
 Occasional Maximum 140m

120mm^2 (120CC) Covered Conductor with a vibration limit of 20% UTS,
 Basic Span 120m
 Maximum Span 140m

185mm^2 (185CC) Covered Conductor with a stand vibration limit of 20% UTS,
 Basic Span 120m
 Maximum Span 140m

Wind Span, Foundation and Strut Load Capability

Table 6 of [Appendices C1](#), [C2](#) and [C3](#) detail design information relating to the wood pole requirements when using the conductors specified in a 2C environment. This information has been extracted and presented in the design tables under "Support Class". With reference to Table 6, it can be seen that the medium pole windspan/foundation limits are often below the basic spans required for this design and are therefore not classified as suitable under Support Class in most circumstances. A withstand factor of 1.6 has been used in calculating these values to give long term protection through natural degradation of the wood and the wide distribution of residual strength provided from wood poles.

Three foundation types referenced from EATS 43-40 have been considered in the table: Good; Good/Average; and Average/Poor. The stability of the ground conditions in these areas will affect the windspan values and this has been reflected in the values given. All wood poles are fitted with 2 wood blocks at the foundation to assist in the stability of the wood poles used.

The maximum strut loadings for each pole grade and size are also provided in this table. These values relate directly to the maximum strut load values calculated in the stay strut loadings in Tables 7 and 8. The values given in Table 6 should never be exceeded when determining what pole size/grade should be chosen. This information has been taken into account in the design specification sheet (Tables 1, 2 and 3) under Support Class.

It should be noted that when H-poles are to be considered, the wind span values provided can be doubled as the load is shared between the two wood poles.

Single and H-Pole Stay Capabilities

Using the parameters detailed in Tables 7 and 8 of Appendices C1 – C3, the maximum angles of line deviation are provided for both single and H pole structures applying one, two, three or four stays.

It should be noted that the maximum angles of deviation shown in Tables 7 and 8 are based on the strength of the stays, this however may or may not be the limiting constraint. Should the maximum limits of the crossarms be the limiting constraint, the figures detailed in Tables 7 and 8 must be reduced to comply with the maximum allowable on the crossarms.

The above information has been taken into consideration in Tables 1 – 3 of Appendices C1 – C3 of this document.

Wood Pole Strut Loading

The maximum strut loading imposed on a structure is due to the combination of both horizontal and vertical stresses. The stay's ability to counteract the stresses imposed are compounded onto the pole. The wood poles are then chosen based on the maximum allowable strut load detailed in Table 6. Tables 9 and 10 of Appendices C1 – C3 indicate the loads that would be applied to each structure if the stay combination were to be used in the field under extreme conditions. A wood pole can only be utilised if the strut loading detailed in Tables 9 or 10 falls below the pole selected from Table 6.

C1 For Line Design Using conductor, 50 MM² (50CC)

Recommended Span 90m

Maximum Span 120m

Occasional Long Span 140m

NOTE:

No further calculations should be needed if the overhead line is designed and constructed within the parameters given in [tables 1, 2](#) and [3](#).

Table 1: In Line Structures

DRAWING NUMBER (Refer to Section 5)	UU General Arrangements based on EA Drawings	SUPPORT TYPE	SUPPORT CLASS	PIN TYPE
4312103	I-40002-GA-001/002/014/015/020/021/ 028/029/040/041	Inter	Medium	10kN
4312106	I-40002-GA-003/004/030/031/032/033	Section	Stout	-
*4312113	I-40002-GA-005/006/034/035	H Section	Stout	-

- Occasional Long Span of 140m support specified for this use is 4312113. It is important to check the windspan values for the appropriate ground condition for each pole selected, reference Table 6.

Table 2: Angle Structures

DRAWING NUMBER (Refer to Section 5)	UU General Arrangements based on EA Drawings	SUPPORT TYPE	SUPPORT CLASS	PIN TYPE	MAXIMUM LINE DEVIATION	MINIMUM STAY ANGLE
4312103	I-40002-GA-001/ 002/014/015/020/ 021/028/029/040/041	Pin Angle	Medium<13m Stout	10kN	5 25	1 x 45 1 x 30
4312108	I-40002-GA-003/004	Section Angle	Stout Stout up to & including 14m	- -	43 60	1 x 45 2 x 45
4312113	I-40002-GA-005/ 006/034/035	H Section Angle	Stout	-	60	2 x 30

Table 3: Terminal Structures

DRAWING NUMBER (Refer to Section 5)	UU General Arrangements based on EA Drawings	SUPPORT TYPE	SUPPORT CLASS	MINIMUM STAY ANGLE
4312112	I-40002-GA-011/012/013	Tee Off	Stout	2 x 45
4312110	I-40002-GA-007/008/016/017/018/ 019/022/023/024/025/036/037/038/039	Terminal	Stout	2 x 45

50cc Design

Table 4: 50 mm² (50CC) Design Sag/Tension (17.5% UTS)

Conductor Code Name	50CC
Basic / Recommended Span (m)	90.00
Temperature Shift for Creep (°C)	0.00 insert minus sign as necessary
Equivalent Percentage Increase in Tension (%)	0.00 at 15°C
Required Percentage Increase in Tension (%)	0.00 at 15°C

TEMP (°C)	TENSION (kgf)	DESIGN SAG (m) FOR SPAN LENGTH (m)								
		60.00	70.00	80.00	90.00	100.00	110.00	120.00	130.00	140.00
-5.60	309.41	0.32	0.44	0.57	0.72	0.89	1.08	1.28	1.50	1.74
0.00	279.48	0.35	0.48	0.63	0.80	0.98	1.19	1.42	1.66	1.93
5.00	255.19	0.39	0.53	0.69	0.87	1.08	1.30	1.55	1.82	2.11
10.00	233.36	0.42	0.58	0.75	0.95	1.18	1.43	1.70	1.99	2.31
15.00	214.03	0.46	0.63	0.82	1.04	1.28	1.55	1.85	2.17	2.52
20.00	197.09	0.50	0.68	0.89	1.13	1.40	1.69	2.01	2.36	2.73
25.00	182.38	0.54	0.74	0.97	1.22	1.51	1.82	2.17	2.55	2.96
30.00	169.64	0.58	0.79	1.04	1.31	1.62	1.96	2.33	2.74	3.18
35.00	158.60	0.62	0.85	1.11	1.40	1.73	2.10	2.50	2.93	3.40
40.00	149.03	0.66	0.90	1.18	1.49	1.85	2.23	2.66	3.12	3.62
45.00	140.69	0.70	0.96	1.25	1.58	1.95	2.37	2.81	3.30	3.83
50.00	133.38	0.74	1.01	1.32	1.67	2.06	2.49	2.97	3.48	4.04
55.00	126.94	0.78	1.06	1.39	1.75	2.17	2.62	3.12	3.66	4.25
60.00	121.22	0.82	1.11	1.45	1.84	2.27	2.74	3.27	3.83	4.45
65.00	116.13	0.85	1.16	1.52	1.92	2.37	2.87	3.41	4.00	4.64
70.00	111.56	0.89	1.21	1.58	2.00	2.46	2.98	3.55	4.17	4.83
75.00	107.44	0.92	1.25	1.64	2.07	2.56	3.10	3.69	4.33	5.02
80.00	103.71	0.95	1.30	1.70	2.15	2.65	3.21	3.82	4.48	5.20

50CC Erection

Table 5: 50 mm² (50CC) Erection Sag/Tension (17.5% UTS)

Conductor Code Name	50CC
Basic / Recommended Span (m)	90.00
Temperature Shift for Creep (°C)	-10.00 Insert minus sign as necessary
Equivalent Percentage Increase in Tension (%)	19.24 at 15°C
Required Percentage Increase in Tension (%)	0.00 at 15°C

TEMP (°C)	TENSION (kgf)	ERECTION SAG (m) FOR SPAN LENGTH (m)								
		60.00	70.00	80.00	90.00	100.00	110.00	120.00	130.00	140.00
-5.60	368.87	0.27	0.37	0.48	0.60	0.75	0.90	1.07	1.26	1.46
0.00	334.72	0.30	0.40	0.53	0.67	0.82	0.99	1.18	1.39	1.61
5.00	306.08	0.32	0.44	0.58	0.73	0.90	1.09	1.29	1.52	1.76
10.00	279.48	0.35	0.48	0.63	0.80	0.98	1.19	1.42	1.66	1.93
15.00	255.19	0.39	0.53	0.69	0.87	1.08	1.30	1.55	1.82	2.11
20.00	233.36	0.42	0.58	0.75	0.95	1.18	1.43	1.70	1.99	2.31
25.00	214.03	0.46	0.63	0.82	1.04	1.28	1.55	1.85	2.17	2.52
30.00	197.09	0.50	0.68	0.89	1.13	1.40	1.69	2.01	2.36	2.73
35.00	182.38	0.54	0.74	0.97	1.22	1.51	1.82	2.17	2.55	2.96
40.00	169.64	0.58	0.79	1.04	1.31	1.62	1.96	2.33	2.74	3.18
45.00	158.60	0.62	0.85	1.11	1.40	1.73	2.10	2.50	2.93	3.40
50.00	149.03	0.66	0.90	1.18	1.49	1.85	2.23	2.66	3.12	3.62
55.00	140.69	0.70	0.96	1.25	1.58	1.95	2.37	2.81	3.30	3.83
60.00	133.38	0.74	1.01	1.32	1.67	2.06	2.49	2.97	3.48	4.04
65.00	126.94	0.78	1.06	1.39	1.75	2.17	2.62	3.12	3.66	4.25
70.00	121.22	0.82	1.11	1.45	1.84	2.27	2.74	3.27	3.83	4.45
75.00	116.13	0.85	1.16	1.52	1.92	2.37	2.87	3.41	4.00	4.64
80.00	111.56	0.89	1.21	1.58	2.00	2.46	2.98	3.55	4.17	4.83

Table 6: Pole Data for 50 mm² (50CC)

Length (m)	Grade	Top Dia (mm)	Dia 1.5m from Butt (mm)	Planting Depth (mm)	Single Pole Strut Strength (kgf)	Maximum Wind Span Length for Specified Pole (m)		
						Good	Good/Av	Av/Poor
9.00	MEDIUM	150.00	220.00	1800.00	7617.15	98	98	98
10.00	MEDIUM	150.00	230.00	1800.00	6334.80	98	98	98
11.00	MEDIUM	150.00	240.00	1800.00	5420.96	99	99	99
12.00	MEDIUM	150.00	250.00	1800.00	4743.07	99	99	99
13.00	MEDIUM	160.00	260.00	2400.00	5211.90	102	102	102
14.00	MEDIUM	160.00	275.00	2400.00	4819.99	109	109	109
15.00	MEDIUM	165.00	290.00	2400.00	4816.04	117	117	117
16.00	MEDIUM	170.00	305.00	2400.00	4841.69	125	125	125
17.00	MEDIUM	180.00	320.00	2400.00	5190.29	135	135	135
18.00	MEDIUM	180.00	330.00	2400.00	4819.29	136	136	136
20.00	MEDIUM	180.00	360.00	3000.00	4657.67	147	147	147
22.00	MEDIUM	190.00	380.00	3000.00	4643.31	156	156	156
9.00	STOUT	190.00	275.00	1800.00	19146.01	196	196	172
10.00	STOUT	190.00	285.00	1800.00	15667.06	191	191	153
11.00	STOUT	190.00	295.00	1800.00	13198.72	189	189	138
12.00	STOUT	190.00	305.00	1800.00	11377.07	187	187	125
13.00	STOUT	195.00	320.00	2400.00	11702.60	195	195	195
14.00	STOUT	195.00	335.00	2400.00	10624.20	202	202	202
15.00	STOUT	195.00	350.00	2400.00	9773.39	207	207	207
16.00	STOUT	200.00	365.00	2400.00	9580.85	216	216	208
17.00	STOUT	200.00	375.00	2400.00	8757.54	214	214	195
18.00	STOUT	200.00	390.00	2400.00	8282.08	219	219	183
20.00	STOUT	200.00	415.00	3000.00	7632.93	221	221	221
22.00	STOUT	200.00	435.00	3000.00	6741.63	218	218	218
24.00	STOUT	200.00	470.00	3000.00	6501.87	229	229	229

Withstand Factor of 1.6 on Windspan Values

Table 7: Single Pole Stay Capability

	INPUT	
Conductor Code Name (if any)	50CC17.5%	
Conductor Tension (MWT / MCT) (kgf)	1000	
Wind Pressure / Wind Co-ordinate (N/m ²)	380	
Wind Load per Metre / MCP (kg/m)	1.5	
Maximum Span Length (m)	140	
Number of Conductors	3	
Factor of Safety	2.5	
Wind Assumed on 18m STOUT Pole	y	
Where two stays are used, calculation is based on 2m separation between stays at ground level.		
MAXIMUM ANGLE OF LINE DEVIATION		
Angle of Stay Slope	Grade 1150 1x7/4.00 (Stay strength 10299)	Grade 1150 2x7/4.00 (Stay Strength 10299)
30	26	60
35	32	60
40	38	60
45	43	60

Table 8: H-Pole Stay Capability

	INPUT	
Conductor Code Name (if any)	50CC17.5%	
Conductor Tension (MWT / MCT) (kgf)	1000	
Wind Pressure / Wind Co-ordinate (N/m ²)	380	
Wind Load per Metre / MCP (kg/m)	1.5	
Maximum Span Length (m)	140	
Number of Conductors	3	
Factor of Safety	2.5	
Wind Assumed on 18m STOUT Pole	y	
<p>Where one stay per limb of H-pole is required, enter User Defined Stay(s) and cross check strut strength from H STRUT using 4 Stays loading for angle of deviation. Where two stays used, calculation based on 2m separation between stays at ground level.</p>		
MAXIMUM ANGLE OF LINE DEVIATION		
Angle of Stay Slope	Grade 1150 3x7/4.00 (Stay strength 10299)	Grade 1150 4x7/4.00 (Stay Strength 10299)
30	60	60
35	60	60
40	60	60
45	60	60

Table 9: Single Pole Strut Loading

		INPUT			
Conductor Code Name (if any)		50CC17.5%			
Conductor Tension (MWT/MCT) (kgf)		1000.00			
Wind Pressure / Wind Co-ordinate (N/m ²)		380.00			
Iced Conductor Weight / MCW (kg/m)		1.50			
Wind Load per Metre / MCP (kg/m)		1.50			
Maximum Span Length (m)		140.00			
Number of Conductors		3.00			
Factor of Safety		2.00			
Wind Assumed on 18m STOUT Pole		y			
Longitudinal Load in Conductor (kgf)		6000.00			
Transverse Load [Normal to Span] (kgf)		1260.00			
Vertical Load [No Downpull] (kgf)		1704.00			
Vertical Load with Downpull 1: 10.00 (kgf)		2898.04			
Pole Wind Load (kgf)		179.63			
STRUT LOAD in POLE with ONE or TWO STAYS (kgf)					
Line Angle (Degrees)	Stay Angle (Degrees)				
	30.00	35.00	40.00	45.00	
Downpull 1: 10.00					
0.00	5392	4954	4614	4338	
5.00	6296	5700	5236	4860	
10.00	7195	6441	5854	5379	
15.00	8086	7176	6468	5893	
20.00	8968	7903	7074	6402	
25.00	9838	8621	7673	6905	
30.00	10697	9328	8264	7401	
35.00	11541	10024	8845	7888	
40.00	12369	10707	9414	8366	
45.00	13179	11375	9972	8834	
50.00	13971	12028	10517	9291	
55.00	14742	12664	11048	9736	
60.00	15491	13282	11563	10169	

Table 10: H-Pole Strut Loading

		INPUT			
Conductor Code Name (if any)		50CC17.5%			
Conductor Tension (MWT/MCT) (kgf)		1000.00			
Wind Pressure / Wind Co-ordinate (N/m ²)		380.00			
Iced Conductor Weight / MCW (kg/m)		1.50			
Wind Load per Metre / MCP (kg/m)		1.50			
Maximum Span Length (m)		140.00			
Number of Conductors		3.00			
Factor of Safety		2.00			
Wind Assumed on 18m STOUT Pole		y			
Longitudinal Load in Conductor (kgf)		6000.00			
Transverse Load [Normal to Span] (kgf)		1260.00			
Vertical Load [No Downpull] (kgf)		1704.00			
Vertical Load with Downpull 1: 10.00 (kgf)		2898.04			
"H" Structure Wind Load (kgf)		269.44			
STRUT LOAD in POLE with THREE STAYS (kgf) (60% of Line Load for Inner Pole - Worst Case)					
Line Angle (Degrees)	Stay Angle (Degrees)				
	30.00	35.00	40.00	45.00	
Downpull 1: 10.00					
0.00	3038	2760	2543	2367	
5.00	3581	3207	2916	2680	
10.00	4120	3652	3287	2991	
15.00	4655	4093	3655	3300	
20.00	5184	4529	4019	3605	
25.00	5707	4960	4378	3907	
30.00	6222	5384	4733	4204	
35.00	6728	5802	5081	4497	
40.00	7225	6211	5423	4784	
45.00	7711	6612	5758	5064	
50.00	8186	7004	6085	5339	
55.00	8649	7386	6403	5606	
60.00	9098	7756	6712	5865	

Table 10: H-Pole Strut Loading (Continued)

STRUT LOAD in POLE with FOUR STAYS (kgf) (50% of Line Load for Each Pole)				
Line Angle (Degrees)	Stay Angle (Degrees)			
	30.00	35.00	40.00	45.00
Downpull 1: 10.00				
0.00	2774	2541	2360	2214
5.00	3226	2914	2672	2475
10.00	3675	3285	2981	2734
15.00	4121	3652	3287	2992
20.00	4562	4015	3591	3246
25.00	4997	4374	3890	3497
30.00	5426	4728	4185	3745
35.00	5848	5076	4476	3989
40.00	6262	5418	4761	4228
45.00	6667	5752	5040	4462
50.00	7063	6078	5312	4690
55.00	7449	6396	5577	4913
60.00	7824	6705	5835	5129
65.00	8186	7004	6085	5339
70.00	8537	7293	6326	5541
75.00	8875	7572	6558	5736
80.00	9198	7839	6781	5923
90.00	9802	8337	7197	6272

C2 For Line Design Using conductor, 120 MM² (120CC)

Recommended Span 120m

Maximum Span 140m

Table 1: In Line Structures

DRAWING NUMBER (Refer to Section 5)	UU General Arrangements based on EA Drawings	SUPPORT TYPE	SUPPORT CLASS	PIN TYPE
4312103	I-400O2-GA-001/002/014/015/020/021/ 028/029/040/041	Inter	Stout	10kN
4312106	I-400O2-GA-003/004/030/031/032/033	Section	Stout	-
*4312113	I-400O2-GA-005/006/034/035	H Section	Stout	-

It is important to check the windspan values for the appropriate ground condition for each pole selected, reference Table 6.

Table 2: Angle Structures

DRAWING NUMBER (Refer to Section 5)	UU General Arrangements based on EA Drawings	SUPPORT TYPE	SUPPORT CLASS	PIN TYPE	MAXIMUM LINE DEVIATION	MINIMUM STAY ANGLE
4312103	I-400O2-GA-001/ 002/014/015/020/ 021/028/029/040/041	Pin Angle	Stout	10kN	16	1 x 30
4312108	I-400O2-GA-003/004	Section Angle	Stout Stout<14m	- -	30 40	1 x 45 2 x 45
4312113	I-400O2-GA-005/ 006/034/035	H Section Angle	Stout Stout<14m	- -	60	3 x 45 4 x 30

Table 3: Terminal Structures

DRAWING NUMBER (Refer to Section 5)	UU General Arrangements based on EA Drawings	SUPPORT TYPE	SUPPORT CLASS	MINIMUM STAY ANGLE
4312112	I-400O2-GA-011/012/013	Tee Off	Stout<11m	2 x 45
4312110	I-400O2-GA-007/008/016/017/018/ 019/022/023/024/025/036/037/038/039	Terminal	Stout<11m	2 x 45
4312114	I-400O2-GA-009/010/026/027/042/ 043/044/045	H-Terminal	Stout	2 x 45

120CC Design

Table 4: 120 mm² (120CC) Design Sag/Tension (20% UTS)

Conductor Code Name	50CC
Basic / Recommended Span (m)	120.00
Temperature Shift for Creep (°C)	0.00 insert minus sign as necessary
Equivalent Percentage Increase in Tension (%)	0.00 at 15°C
Required Percentage Increase in Tension (%)	0.00 at 15°C

TEMP (°C)	TENSION (kgf)	DESIGN SAG (m) FOR SPAN LENGTH (m)								
		60.00	70.00	80.00	90.00	100.00	110.00	120.00	130.00	140.00
-5.60	856.43	0.23	0.31	0.40	0.51	0.63	0.76	0.90	1.06	1.23
0.00	783.22	0.25	0.34	0.44	0.56	0.69	0.83	0.99	1.16	1.35
5.00	721.96	0.27	0.36	0.48	0.60	0.74	0.90	1.07	1.26	1.46
10.00	665.10	0.29	0.40	0.52	0.65	0.81	0.98	1.16	1.37	1.58
15.00	613.01	0.32	0.43	0.56	0.71	0.88	1.06	1.26	1.48	1.72
20.00	565.92	0.34	0.47	0.61	0.77	0.95	1.15	1.37	1.61	1.86
25.00	523.80	0.37	0.50	0.66	0.83	1.03	1.24	1.48	1.73	2.01
30.00	486.48	0.40	0.54	0.71	0.89	1.10	1.34	1.59	1.87	2.17
35.00	453.59	0.43	0.58	0.76	0.96	1.18	1.43	1.71	2.00	2.32
40.00	424.70	0.46	0.62	0.81	1.03	1.27	1.53	1.82	2.14	2.48
45.00	399.34	0.48	0.66	0.86	1.09	1.35	1.63	1.94	2.27	2.64
50.00	377.03	0.51	0.70	0.91	1.15	1.43	1.73	2.05	2.41	2.79
55.00	357.34	0.54	0.74	0.96	1.22	1.50	1.82	2.17	2.54	2.95
60.00	339.91	0.57	0.77	1.01	1.28	1.58	1.91	2.28	2.67	3.10
65.00	324.41	0.60	0.81	1.06	1.34	1.66	2.00	2.39	2.80	3.25
70.00	310.55	0.62	0.85	1.11	1.40	1.73	2.09	2.49	2.93	3.39
75.00	298.09	0.65	0.88	1.15	1.46	1.80	2.18	2.60	3.05	3.53
80.00	286.85	0.67	0.92	1.20	1.52	1.87	2.27	2.70	3.17	3.67

120CC Erection

Table 5: 120 mm² (120CC) Erection Sag/Tension (20% UTS)

Conductor Code Name	120CC
Basic / Recommended Span (m)	120.00
Temperature Shift for Creep (°C)	-15.00 Insert minus sign as necessary
Equivalent Percentage Increase in Tension (%)	27.77 at 15°C
Required Percentage Increase in Tension (%)	0.00 at 15°C

TEMP (°C)	TENSION (kgf)	ERECTION SAG (m) FOR SPAN LENGTH (m)								
		60.00	70.00	80.00	90.00	100.00	110.00	120.00	130.00	140.00
-5.60	1070.82	0.18	0.25	0.32	0.41	0.50	0.61	0.72	0.85	0.98
0.00	988.20	0.20	0.27	0.35	0.44	0.54	0.66	0.78	0.92	1.07
5.00	916.88	0.21	0.29	0.38	0.47	0.59	0.71	0.84	0.99	1.15
10.00	848.37	0.23	0.31	0.41	0.51	0.63	0.77	0.91	1.07	1.24
15.00	783.22	0.25	0.34	0.44	0.56	0.69	0.83	0.99	1.16	1.35
20.00	721.96	0.27	0.36	0.48	0.60	0.74	0.90	1.07	1.26	1.46
25.00	665.10	0.29	0.40	0.52	0.65	0.81	0.98	1.16	1.37	1.58
30.00	613.01	0.32	0.43	0.56	0.71	0.88	1.06	1.26	1.48	1.72
35.00	565.92	0.34	0.47	0.61	0.77	0.95	1.15	1.37	1.61	1.86
40.00	523.80	0.37	0.50	0.66	0.83	1.03	1.24	1.48	1.73	2.01
45.00	486.48	0.40	0.54	0.71	0.89	1.10	1.34	1.59	1.87	2.17
50.00	453.59	0.43	0.58	0.76	0.96	1.18	1.43	1.71	2.00	2.32
55.00	424.70	0.46	0.62	0.81	1.03	1.27	1.53	1.82	2.14	2.48
60.00	399.34	0.48	0.66	0.86	1.09	1.35	1.63	1.94	2.27	2.64
65.00	377.03	0.51	0.70	0.91	1.15	1.43	1.73	2.05	2.41	2.79
70.00	357.34	0.54	0.74	0.96	1.22	1.50	1.82	2.17	2.54	2.95
75.00	339.91	0.57	0.77	1.01	1.28	1.58	1.91	2.28	2.67	3.10
80.00	324.41	0.60	0.81	1.06	1.34	1.66	2.00	2.39	2.80	3.25

Table 6: Pole Data for 120 mm² (120CC) (20%UTS)

Length (m)	Grade	Top Dia (mm)	Dia 1.5m from Butt (mm)	Planting Depth (mm)	Single Pole Strut Strength (kgf)	Maximum Wind Span Length for Specified Pole (m)		
						Good	Good/Av	Av/Poor
9.00	MEDIUM	150.00	220.00	1800.00	7617.15	87	87	87
10.00	MEDIUM	150.00	230.00	1800.00	6334.80	87	87	87
11.00	MEDIUM	150.00	240.00	1800.00	5420.96	88	88	88
12.00	MEDIUM	150.00	250.00	1800.00	4743.07	89	89	89
13.00	MEDIUM	160.00	260.00	2400.00	5211.90	91	91	91
14.00	MEDIUM	160.00	275.00	2400.00	4819.99	97	97	97
15.00	MEDIUM	165.00	290.00	2400.00	4816.04	104	104	104
16.00	MEDIUM	170.00	305.00	2400.00	4841.69	111	111	111
17.00	MEDIUM	180.00	320.00	2400.00	5190.29	121	121	121
18.00	MEDIUM	180.00	330.00	2400.00	4819.29	122	122	122
20.00	MEDIUM	180.00	360.00	3000.00	4657.67	131	131	131
22.00	MEDIUM	190.00	380.00	3000.00	4643.31	139	139	139
9.00	STOUT	190.00	275.00	1800.00	19146.01	175	175	154
10.00	STOUT	190.00	285.00	1800.00	15667.06	171	171	137
11.00	STOUT	190.00	295.00	1800.00	13198.72	168	168	123
12.00	STOUT	190.00	305.00	1800.00	11377.07	167	167	111
13.00	STOUT	195.00	320.00	2400.00	11702.60	174	174	174
14.00	STOUT	195.00	335.00	2400.00	10624.20	180	180	180
15.00	STOUT	195.00	350.00	2400.00	9773.39	185	185	185
16.00	STOUT	200.00	365.00	2400.00	9580.85	193	193	185
17.00	STOUT	200.00	375.00	2400.00	8757.54	191	191	174
18.00	STOUT	200.00	390.00	2400.00	8282.08	195	195	164
20.00	STOUT	200.00	415.00	3000.00	7632.93	197	197	197
22.00	STOUT	200.00	435.00	3000.00	6741.63	194	194	194
24.00	STOUT	200.00	470.00	3000.00	6501.87	204	204	204

Withstand Factor of 1.6 on Windspan Values

Table 7: Single Pole Stay Capability

	INPUT	
Conductor Code Name (if any)	120CC20%	
Conductor Tension (MWT / MCT) (kgf)	1416.9	
Wind Pressure / Wind Co-ordinate (N/m ²)	380	
Wind Load per Metre / MCP (kg/m)	1.681	
Maximum Span Length (m)	140	
Number of Conductors	3	
Factor of Safety	2.5	
Wind Assumed on 18m STOUT Pole	y	
Where two stays are used, calculation is based on 2m separation between stays at ground level.		
MAXIMUM ANGLE OF LINE DEVIATION		
Angle of Stay Slope	Grade 1150 1x7/4.00 (Stay strength 10299)	Grade 1150 2x7/4.00 (Stay Strength 10299)
30	17.00	44.00
35	21.00	54.00
40	25.00	60.00
45	29.00	60.00

Table 8: H-Pole Stay Capability

	INPUT
Conductor Code Name (if any)	120CC20%
Conductor Tension (MWT / MCT) (kgf)	1416.9
Wind Pressure / Wind Co-ordinate (N/m ²)	380
Wind Load per Metre / MCP (kg/m)	1.681
Maximum Span Length (m)	140
Number of Conductors	3
Factor of Safety	2.5
Wind Assumed on 18m STOUT Pole	y
Where one stay per limb of H-pole is required, enter User Defined Stay(s) and cross check strut strength from H STRUT using 4 Stays loading for angle of deviation. Where two stays used, calculation based on 2m separation between stays at ground level.	
MAXIMUM ANGLE OF LINE DEVIATION	
Angle of Stay Slope	Grade 1150 3x7/4.00 (Stay strength 10299)
30	77
35	90
40	90
45	90
	Grade 1150 4x7/4.00 (Stay Strength 10299)
30	90
35	90
40	90
45	90

Table 9: Single Pole Strut Loading

				INPUT
Conductor Code Name (if any)				120CC20%
Conductor Tension (MWT/MCT) (kgf)				1416.9
Wind Pressure / Wind Co-ordinate (N/m ²)				380
Iced Conductor Weight / MCW (kg/m)				1.854
Wind Load per Metre / MCP (kg/m)				1.681
Maximum Span Length (m)				140.0
Number of Conductors				3
Factor of Safety				2.0
Wind Assumed on 18m STOUT Pole				y
Longitudinal Load in Conductor (kgf)				8501.5
Transverse Load [Normal to Span] (kgf)				1412.0
Vertical Load [No Downpull] (kgf)				2001.3
Vertical Load with Downpull 1: 10.00 (kgf)				3693.2
Pole Wind Load (kgf)				179.6
STRUT LOAD in POLE with ONE or TWO STAYS (kgf)				
Line Angle (Degrees)	Stay Angle (Degrees)			
	30.00	35.00	40.00	45.00
Downpull 1: 10.00				
0.00	6450	5966	5590	5285
5.00	7732	7024	6472	6025
10.00	9007	8075	7350	6761
15.00	10273	9119	8221	7492
20.00	11527	10152	9083	8216
25.00	12766	11174	9936	8931
30.00	13989	12182	10777	9637
35.00	15193	13175	11605	10332
40.00	16375	14150	12419	11015
45.00	17534	15105	13216	11684
50.00	18667	16040	13996	12338
55.00	19772	16951	14756	12976
60.00	20847	17837	15496	13597

Table 10: H-Pole Strut Loading

		INPUT		
Conductor Code Name (if any)		120CC20%		
Conductor Tension (MWT/MCT) (kgf)		1416.9		
Wind Pressure / Wind Co-ordinate (N/m ²)		380		
Iced Conductor Weight / MCW (kg/m)		1.854		
Wind Load per Metre / MCP (kg/m)		1.681		
Maximum Span Length (m)		140.0		
Number of Conductors		3		
Factor of Safety		2.0		
Wind Assumed on 18m STOUT Pole		y		
Longitudinal Load in Conductor (kgf)		8501.5		
Transverse Load [Normal to Span] (kgf)		1412.00		
Vertical Load [No Downpull] (kgf)		2001.3		
Vertical Load with Downpull 1: 10.00 (kgf)		3693.2		
"H" Structure Wind Load (kgf)		269.4		
STRUT LOAD in POLE with THREE STAYS (kgf) (60% of Line Load for Inner Pole - Worst Case)				
Line Angle (Degrees)	Stay Angle (Degrees)			
	30.00	35.00	40.00	45.00
Downpull 1: 10.00				
0.00	3594	3287	3049	2855
5.00	4363	3922	3578	3300
10.00	5128	4553	4105	3741
15.00	5888	5179	4627	4180
20.00	6640	5799	5145	4614
25.00	7384	6412	5656	5043
30.00	8117	7017	6161	5467
35.00	8840	7613	6658	5884
40.00	9549	8198	7146	6294
45.00	10244	8771	7625	6695
50.00	10924	9331	8093	7088
55.00	11587	9878	8549	7470

60.00	12232	10410	8993	7843
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Table 10: H-Pole Strut Loading (Continued)

STRUT LOAD in POLE with FOUR STAYS (kgf) (50% of Line Load for Each Pole)				
Line Angle (Degrees)	Stay Angle (Degrees)			
	30.00	35.00	40.00	45.00
Downpull 1: 10.00				
0.00	3303	3047	2849	2687
5.00	3944	3576	3290	3057
10.00	4581	4102	3728	3426
15.00	5214	4623	4164	3791
20.00	5841	5140	4595	4153
25.00	6461	5651	5021	4511
30.00	7072	6155	5442	4864
35.00	7674	6652	5856	5211
40.00	8265	7139	6263	5552
45.00	8845	7617	6662	5887
50.00	9411	8084	7052	6214
55.00	9964	8540	7432	6533
60.00	10501	8983	7802	6843

C3 For Line Design Using Conductor, 185 MM² (185CC)

Recommended Span 120m

Maximum Span 140m

Table 1: In Line Structures

DRAWING NUMBER (Refer to Section 5)	UU General Arrangements based on EA Drawings	SUPPORT TYPE	SUPPORT CLASS	PIN TYPE
4312103	I-400O2-GA-001/002/014/015/020/021/ 028/029/040/041	Inter	Stout	10kN
4312106	I-400O2-GA-003/004/030/031/032/033	Section	Stout	-
*4312113	I-400O2-GA-005/006/034/035	H Section	Stout	-

It is important to check the windspan values for the appropriate ground condition for each pole selected, reference [Table 6](#).

Table 2: Angle Structures

DRAWING NUMBER (Refer to Section 5)	UU General Arrangements based on EA Drawings	SUPPORT TYPE	SUPPORT CLASS	PIN TYPE	MAXIMUM LINE DEVIATION	MINIMUM STAY ANGLE
4312103	I-400O2-GA-001/ 002/014/015/020/ 021/028/029/040/041	Pin Angle	Stout	10kN	10	1 x 30
4312108	I-400O2-GA-003/004	Section Angle	Stout	-	13	1 x 45
4312113	I-400O2-GA-005/ 006/034/035	H Section Angle	Stout	-	45	3 x 40

Table 3: Terminal Structures

DRAWING NUMBER (Refer to Section 5)	UU General Arrangements based on EA Drawings	SUPPORT TYPE	SUPPORT CLASS	MINIMUM STAY ANGLE
4312114	I-400O2-GA-009/010/026/027/042/ 043/044/045	H-Terminal	Stout	4 x 40

185CC Design

Table 4: 185 mm² (185CC) Design Sag/Tension (20% UTS)

Conductor Code Name	185CC
Basic / Recommended Span (m)	120.00
Temperature Shift for Creep (°C)	0.00 insert minus sign as necessary
Equivalent Percentage Increase in Tension (%)	0.00 at 15°C
Required Percentage Increase in Tension (%)	0.00 at 15°C

TEMP (°C)	TENSION (kgf)	DESIGN SAG (m) FOR SPAN LENGTH (m)								
		60.00	70.00	80.00	90.00	100.00	110.00	120.00	130.00	140.00
-5.60	1407.06	0.20	0.27	0.36	0.45	0.56	0.67	0.80	0.94	1.09
0.00	1286.85	0.22	0.30	0.39	0.49	0.61	0.73	0.87	1.03	1.19
5.00	1184.91	0.24	0.32	0.42	0.53	0.66	0.80	0.95	1.11	1.29
10.00	1089.00	0.26	0.35	0.46	0.58	0.72	0.87	1.03	1.21	1.41
15.00	999.97	0.28	0.38	0.50	0.63	0.78	0.95	1.13	1.32	1.53
20.00	918.52	0.31	0.42	0.54	0.69	0.85	1.03	1.22	1.44	1.67
25.00	845.04	0.33	0.45	0.59	0.75	0.92	1.12	1.33	1.56	1.81
30.00	779.56	0.36	0.49	0.64	0.81	1.00	1.21	1.44	1.69	1.96
35.00	721.79	0.39	0.53	0.69	0.88	1.08	1.31	1.56	1.83	2.12
40.00	671.13	0.42	0.57	0.75	0.94	1.16	1.41	1.68	1.97	2.28
45.00	626.86	0.45	0.61	0.80	1.01	1.25	1.51	1.79	2.11	2.44
50.00	588.19	0.48	0.65	0.85	1.08	1.33	1.61	1.91	2.24	2.60
55.00	554.34	0.51	0.69	0.90	1.14	1.41	1.71	2.03	2.38	2.76
60.00	524.62	0.54	0.73	0.95	1.21	1.49	1.80	2.14	2.52	2.92
65.00	498.40	0.56	0.77	1.00	1.27	1.57	1.90	2.26	2.65	3.07
70.00	475.15	0.59	0.81	1.05	1.33	1.64	1.99	2.37	2.78	3.22
75.00	454.44	0.62	0.84	1.10	1.39	1.72	2.08	2.48	2.91	3.37
80.00	435.88	0.65	0.88	1.15	1.45	1.79	2.17	2.58	3.03	3.51

185CC Erection

Table 5: 185 mm² (185CC) Erection Sag/Tension (20% UTS)

Conductor Code Name	185CC
Basic / Recommended Span (m)	120.00
Temperature Shift for Creep (°C)	-15.00 Insert minus sign as necessary
Equivalent Percentage Increase in Tension (%)	28.69 at 15°C
Required Percentage Increase in Tension (%)	0.00 at 15°C

TEMP (°C)	TENSION (kgf)	ERECTION SAG (m) FOR SPAN LENGTH (m)								
		60.00	70.00	80.00	90.00	100.00	110.00	120.00	130.00	140.00
-5.60	1751.79	0.16	0.22	0.29	0.36	0.45	0.54	0.64	0.75	0.87
0.00	1619.96	0.17	0.24	0.31	0.39	0.48	0.58	0.69	0.82	0.95
5.00	1505.20	0.19	0.25	0.33	0.42	0.52	0.63	0.75	0.88	1.02
10.00	1393.91	0.20	0.27	0.36	0.45	0.56	0.68	0.81	0.95	1.10
15.00	1286.85	0.22	0.30	0.39	0.49	0.61	0.73	0.87	1.03	1.19
20.00	1184.91	0.24	0.32	0.42	0.53	0.66	0.80	0.95	1.11	1.29
25.00	1089.00	0.26	0.35	0.46	0.58	0.72	0.87	1.03	1.21	1.41
30.00	999.97	0.28	0.38	0.50	0.63	0.78	0.95	1.13	1.32	1.53
35.00	918.52	0.31	0.42	0.54	0.69	0.85	1.03	1.22	1.44	1.67
40.00	845.04	0.33	0.45	0.59	0.75	0.92	1.12	1.33	1.56	1.81
45.00	779.56	0.36	0.49	0.64	0.81	1.00	1.21	1.44	1.69	1.96
50.00	721.79	0.39	0.53	0.69	0.88	1.08	1.31	1.56	1.83	2.12
55.00	671.13	0.42	0.57	0.75	0.94	1.16	1.41	1.68	1.97	2.28
60.00	626.86	0.45	0.61	0.80	1.01	1.25	1.51	1.79	2.11	2.44
65.00	588.19	0.48	0.65	0.85	1.08	1.33	1.61	1.91	2.24	2.60
70.00	554.34	0.51	0.69	0.90	1.14	1.41	1.71	2.03	2.38	2.76
75.00	524.62	0.54	0.73	0.95	1.21	1.49	1.80	2.14	2.52	2.92
80.00	498.40	0.56	0.77	1.00	1.27	1.57	1.90	2.26	2.65	3.07

Table 6: Pole Data for 185 mm² (185CC) (20%UTS)

Length (m)	Grade	Top Dia (mm)	Dia 1.5m from Butt (mm)	Planting Depth (mm)	Single Pole Strut Strength (kgf)	Maximum Wind Span Length for Specified Pole (m)		
						Good	Good/Av	Av/Poor
9.00	MEDIUM	150.00	220.00	1800.00	7617.15	78	78	78
10.00	MEDIUM	150.00	230.00	1800.00	6334.80	78	78	78
11.00	MEDIUM	150.00	240.00	1800.00	5420.96	78	78	73
12.00	MEDIUM	150.00	250.00	1800.00	4743.07	79	79	79
13.00	MEDIUM	160.00	260.00	2400.00	5211.90	81	81	81
14.00	MEDIUM	160.00	275.00	2400.00	4819.99	86	86	86
15.00	MEDIUM	165.00	290.00	2400.00	4816.04	93	93	93
16.00	MEDIUM	170.00	305.00	2400.00	4841.69	99	99	99
17.00	MEDIUM	180.00	320.00	2400.00	5190.29	107	107	107
18.00	MEDIUM	180.00	330.00	2400.00	4819.29	108	108	108
20.00	MEDIUM	180.00	360.00	3000.00	4657.67	117	117	117
22.00	MEDIUM	190.00	380.00	3000.00	4643.31	123	123	123
9.00	STOUT	190.00	275.00	1800.00	19146.01	156	156	137
10.00	STOUT	190.00	285.00	1800.00	15667.06	152	152	122
11.00	STOUT	190.00	295.00	1800.00	13198.72	150	150	109
12.00	STOUT	190.00	305.00	1800.00	11377.07	148	148	99
13.00	STOUT	195.00	320.00	2400.00	11702.60	155	155	142
14.00	STOUT	195.00	335.00	2400.00	10624.20	160	160	131
15.00	STOUT	195.00	350.00	2400.00	9773.39	164	164	122
16.00	STOUT	200.00	365.00	2400.00	9580.85	171	171	165
17.00	STOUT	200.00	375.00	2400.00	8757.54	170	170	154
18.00	STOUT	200.00	390.00	2400.00	8282.08	173	173	146
20.00	STOUT	200.00	415.00	3000.00	7632.93	175	175	175
22.00	STOUT	200.00	435.00	3000.00	6741.63	173	173	173
24.00	STOUT	200.00	470.00	3000.00	6501.87	181	181	181

Withstand Factor of 1.6 on Windspan Values

Table 7: Single Pole Stay Capability

	INPUT	
Conductor Code Name (if any)	185CC20%	
Conductor Tension (MWT / MCT) (kgf)	1967.3	
Wind Pressure / Wind Co-ordinate (N/m ²)	380	
Wind Load per Metre / MCP (kg/m)	1.890	
Maximum Span Length (m)	140	
Number of Conductors	3	
Factor of Safety	2.5	
Wind Assumed on 18m STOUT Pole	y	
Where two stays are used, calculation is based on 2m separation between stays at ground level.		
MAXIMUM ANGLE OF LINE DEVIATION		
Angle of Stay Slope	Grade 1150 1x7/4.00 (Stay strength 10299)	Grade 1150 2x7/4.00 (Stay Strength 10299)
30	12	31
35	15	37
40	18	43
45	20	49

Table 8: H-Pole Stay Capability

	INPUT	
Conductor Code Name (if any)	185CC20%	
Conductor Tension (MWT / MCT) (kgf)	1967.3	
Wind Pressure / Wind Co-ordinate (N/m ²)	380	
Wind Load per Metre / MCP (kg/m)	1.890	
Maximum Span Length (m)	140	
Number of Conductors	3	
Factor of Safety	2.5	
Wind Assumed on 18m STOUT Pole	y	
<p>Where one stay per limb of H-pole is required, enter User Defined Stay(s) and cross check strut strength from H STRUT using 4 Stays loading for angle of deviation. Where two stays used, calculation based on 2m separation between stays at ground level.</p>		
MAXIMUM ANGLE OF LINE DEVIATION		
Angle of Stay Slope	Grade 1150 3x7/4.00 (Stay strength 10299)	Grade 1150 4x7/4.00 (Stay Strength 10299)
30	51	60
35	60	60
40	60	60
45	60	60

Table 9: Single Pole Strut Loading

		INPUT			
Conductor Code Name (if any)		185CC20%			
Conductor Tension (MWT/MCT) (kgf)		1967.27			
Wind Pressure / Wind Co-ordinate (N/m ²)		380.00			
Iced Conductor Weight / MCW (kg/m)		2.17			
Wind Load per Metre / MCP (kg/m)		1.89			
Maximum Span Length (m)		140.00			
Number of Conductors		3.00			
Factor of Safety		2.00			
Wind Assumed on 18m STOUT Pole		y			
Longitudinal Load in Conductor (kgf)		11803.64			
Transverse Load [Normal to Span] (kgf)		1587.39			
Vertical Load [No Downpull] (kgf)		2269.92			
Vertical Load with Downpull 1: 10.00 (kgf)		4618.94			
Pole Wind Load (kgf)		179.63			
STRUT LOAD in POLE with ONE or TWO STAYS (kgf)					
Line Angle (Degrees)		Stay Angle (Degrees)			
		30.00	35.00	40.00	45.00
Downpull 1: 10.00					
0.00	7680	7143	6725	6386	
5.00	9460	8611	7950	7414	
10.00	11233	10072	9170	8437	
15.00	12993	11524	10381	9454	
20.00	14738	12963	11581	10461	
25.00	16464	14386	12769	11458	
30.00	18169	15791	13942	12442	
35.00	19848	17176	15097	13411	
40.00	21499	18537	16233	14364	
45.00	23118	19872	17347	15299	
50.00	24702	21179	18438	16214	
55.00	26249	22454	19502	17107	
60.00	27756	23696	20538	17977	

Table 10: H-Pole Strut Loading

INPUT	
Conductor Code Name (if any)	185CC20%
Conductor Tension (MWT/MCT) (kgf)	1967.27
Wind Pressure / Wind Co-ordinate (N/m ²)	380.00
Iced Conductor Weight / MCW (kg/m)	2.17
Wind Load per Metre / MCP (kg/m)	1.89
Maximum Span Length (m)	140.00
Number of Conductors	3.00
Factor of Safety	2.00
Wind Assumed on 18m STOUT Pole	y
Longitudinal Load in Conductor (kgf)	11803.64
Transverse Load [Normal to Span] (kgf)	1587.39
Vertical Load [No Downpull] (kgf)	2269.92
Vertical Load with Downpull 1: 10.00 (kgf)	4618.94
"H" Structure Wind Load (kgf)	269.44
STRUT LOAD in POLE with THREE STAYS (kgf) (60% of Line Load for Inner Pole - Worst Case)	
Line Angle (Degrees)	Stay Angle (Degrees)
	30.00 35.00 40.00 45.00
Downpull 1: 10.00	
0.00	4239 3901 3637 3424
5.00	5308 4782 4372 4041
10.00	6371 5658 5104 4654
15.00	7427 6529 5831 5264
20.00	8474 7393 6551 5869
25.00	9510 8247 7264 6467
30.00	10533 9090 7968 7057
35.00	11540 9921 8661 7639
40.00	12531 10737 9342 8211
45.00	13502 11538 10011 8772
50.00	14453 12322 10665 9320
55.00	15381 13088 11303 9856
60.00	16285 13833 11925 10378

Table 10: H-Pole Strut Loading (Continued)

STRUT LOAD in POLE with FOUR STAYS (kgf) (50% of Line Load for Each Pole)				
Line Angle (Degrees)	Stay Angle (Degrees)			
	30.00	35.00	40.00	45.00
Downpull 1: 10.00				
0.00	3918	3635	3416	3238
5.00	4808	4370	4029	3752
10.00	5694	5100	4638	4264
15.00	6574	5826	5244	4772
20.00	7447	6545	5844	5276
25.00	8310	7257	6438	5774
30.00	9162	7960	7024	6266
35.00	10002	8652	7602	6751
40.00	10827	9333	8170	7227
45.00	11637	10000	8727	7695
50.00	12429	10653	9272	8152
55.00	13202	11291	9804	8599
60.00	13956	11912	10323	9033

Appendix D – Compiling Material Requirement/Ordering Information

D1 Introduction

This Appendix introduces the Excel Workbook 40002.xls. This Workbook basically presents the information necessary to compile the material requirement for a CCC line on a pole-by-pole basis, in order to reduce the work involved in generating and writing out a total material requirement by hand.

D1.1 Presentation of Information in the Workbook

The Workbook comprises two sheets: Line Schedule - Pole-by-Pole; Summary - Total Materials. The first sheet (Line Schedule - Pole-by-Pole) is the sheet that will be used to compile a total material requirement for any line on a pole-by-pole basis. The second sheet (Summary - Total Materials) is generated automatically from the data input into the first sheet.

D1.1.1 Line Schedule – Pole-by-Pole

Most materials required for building a CCC line are itemized down the left-hand columns of the sheet, together with drawing reference numbers and Commodity Code numbers. The area to the right of the list of materials is the working area of the sheet. Arbitrary pole numbers are assigned to each column in the working area. Where additional (unlisted) items are required from another specification (eg transformer to be selected from ES315), these items can be added to the copy of the workbook, under the appropriate heading.

D1.1.2 Summary – Total Materials

The information in this sheet is generated automatically from the data that are entered in the Line Schedule - Pole-by-Pole sheet. It comprises a repeat of the total materials down the left-hand side, followed by a total for the number of each item. (This will include any additional items added as in [D1.1.1.](#))

D2 Instructions for Using the Workbook

D2.1 Introduction

The workbook is designed as a quick means of compiling a sheet containing the total material requirement for a CCC line on a pole-by-pole basis. It is designed to be used in conjunction with the information contained in the specification and any other appropriate reference material. Because the Workbook is a simple and flexible means of entering data, it is possible to enter any values, hence errors, in any data cell. Equally, because it is simple, any errors (in data entry) should be self-evident after a quick check.

D2.2 Instructions

Use the Workbook as follows:

- (a) Open Workbook 40002.xls.
- (b) Save the Workbook in the appropriate project folder (name as required).
- (c) Identify a pole and corresponding material item, then enter number required in the appropriate cell.
- (d) Continue until the total material requirement for the line has been identified.

- (e) For additional items (refer to D1.1.1), refer to the appropriate specification and insert the details under the relevant heading.