

## Company Directive

### ENGINEERING SPECIFICATION EE SPEC: 129/2

#### Wood Poles and Associated Timber Products for Overhead Lines

##### Summary

This document specifies the selection and treatment of wood poles stay & foundation blocks, and other ancillary timbers for use on or in association with National Grid Electricity Distribution (NGED) overhead network and is based on ENATS 43-88 issue 7 February 2021.

**Author:** Mike Chapman

**Implementation Date:** August 2022

**Approved by**



**Carl Ketley-Lowe**  
**Engineering Policy Manager**

**Date:** 3<sup>rd</sup> August 2022

<b>Target Staff Group</b>	Applicable Staff include, Network Services Teams and their contractors involved in OH Pole Construction, Refurbishment / Reconductoring or Installations / Replacement of new or existing poles, Purchasing, Logistics, Specifier, Senior Nominated persons, manufacturers and suppliers.
<b>Impact of Change</b>	<b>Amber</b> - The changes have an impact on current working practices that are not safety critical - Staff to be briefed following the issue of a TBX133 which explains changes in detail.
<b>Planned Assurance checks</b>	Assurance checks shall be carried out in accordance with Section 7.

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## **IMPLEMENTATION PLAN**

### **Introduction**

This document specifies the selection and treatment of wood poles stay and foundation blocks, and other ancillary timbers for use on or in association with NGEDs overhead network and is based on ENATS 43-88 issue 7 February 2021.

### **Main Changes**

1. Legislation currently allows the use of creosote treated electricity poles, however there are limitations in their use i.e. they are not to be used in schools, outdoor recreational areas, gardens and where there is a risk of frequent skin contact by the public. See POL: OH4.
2. The EU Biocidal Products Regulations (BPR) have identified creosote as an active substance for substitute. At present however a suitable substitute is not available that would give industry the desired service life.

Whilst NGED currently purchases alternative copper (green / tannalised) treated poles their use under REACH has been sporadic as such the changes within this document further facilitate both the use of current copper treated poles in environments outlined under REACH and when a suitable alternative is available the move away from existing copper treatment and creosote treated LV poles.

To help facilitate the above it will be necessary to

1. Alter Fig 14 fabrication for LV OH construction only; this will also become a non-stock item and will need to be ordered as when required using a separate non stock order.
  2. Introduce Fig 19 Creosote treated LV ABC pole
  3. Change Fig 72206 pole reference to Fig 20 copper LV ABC pole.
3. In order to reduce handling of creosote treated products the opportunity is also being taken to introduce a requirement that brace & stay blocks are also copper treated.

### **Impact of Changes**

Because of the need to run existing stocks down Network Services are unlikely to see any impact until around quarter 3-4 2022 at which time a TBX133 will be issued this will explain the specific transitional changes required in more detail, it includes.

- Brace & Stay blocks will now be treated with Copper rather than creosote thereby reducing handling risks associated with creosote treated blocks
- Fig 14 poles traditionally suitable for use for LV openwire having 300mm spacing's and HV light construction will now only be suitable for LV. These once stocks are run down will need to be ordered as non-stock using the non-stock item number.
- Stocked new medium class Fig. 19 creosote treated LV Poles are introduced,
- Fig 20 Copper treated LV ABC poles will need be used as outlined in POL: OH4.
- Brace / stay blocks will no longer be treated with creosote. It should be noted that during transition old creosote stocks will be run down before copper treated are released this may in Network Services seeing a mixture of both treatments when they place an order.

It is anticipated that once the new alternatively treated poles are available and introduced it will:-

- Allow easier compliance with Legislation
- Provide better service life expectancy to the existing copper treated poles.
- Allow NGED to better monitor the performance of the alternative treated poles so a more considered decision can be taken on their future wider use.

### **Implementation Actions**

The changes in this document have been covered by the issue of POL: OH4 and TBX133 and there is no formal requirement by Network Services to brief staff however where it is necessary to re-brief staff [TBX 133 Use of creosote poles in restricted use areas & changes relating to the new wood pole contract](#) can be used.

Network Services are reminded that poles shall be stored in accordance with ST: EN2F and disposed of in accordance with ST: EN3C.

This specification has been updated and shall be used during contract tender process by the Specifier, Senior Nominated Person and Purchasing.

With immediate affect suppliers / manufacturers to start marking poles with NGED.

### **Implementation Timetable**

Tender process was concluded in spring 2022 and poles and blocks are now being fabricated to this specification in readiness for the issue of POL: OH4 & TBX133.

This issue will come into force on 16<sup>th</sup> September 2022 in conjunction with the changes to POL: OH4 and the issue of TBX133.

## REVISION HISTORY

Document Revision & Review Table		
Date	Comments	Author
03/08/2022	<ul style="list-style-type: none"> <li>• Document has gone through a major restructure so that it is aligned as far as practicable with the layout of ENA TS 43-88 issue 7.</li> <li>• In particular section 11 has been adjusted so as to allow the use of copper alternative e.g. oil treatment processes. Furthermore clause 11.7 places a specific requirement on the supplier to provide all relevant environmental information on the treatment process.</li> <li>• The revised document also introduces               <ul style="list-style-type: none"> <li>○ That Fig 14 creosote treated poles should only be used on LV OH construction.</li> <li>○ Fig 19 LV creosote treated poles introduced</li> <li>○ That Fig 72206 changed to Fig 20</li> <li>○ That Fig 20 LV poles, stay and foundation blocks shall be treated with a copper / alternative treatment.</li> </ul> </li> <li>• Referencing to Western Power Distribution / WPD changed to National Grid Electricity Distribution / NGED</li> </ul>	Mike Chapman
04/8/2016	<ul style="list-style-type: none"> <li>• Clause 3.5.1, Appendix A1 &amp; A3 - Reference to figure number that should be used when treating copper treated poles changed from Fig 14 to Fig 72206.</li> <li>• A paragraph has also been included in 3.5.1 for the manufacturer to, where instructed by NGED, apply additional protection to the butt end of copper treated poles. Further instructions on handling and transportation can be found by following this <a href="#">link</a>.</li> <li>• Fig 1, 2, 14 and appendix B1 has been amended to clarify that it is the 'Class' of pole that is required at the gouge mark rather than the diameter.</li> </ul>	Mike Chapman
01/07/2015	New Specification	Mike Chapman

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## **1.0 SCOPE**

This document specifies the selection and treatment of wood poles, stay blocks, brace blocks and other ancillary timbers for use on or in association with NGEDs overhead network and is based on ENATS 43-88 issue 7 February 2021.

## **2.0 REFERENCES**

This Specification makes reference to and should be used in conjunction with, the following documents:

ENATS 43-88                      Selection and Treatment of Wood Poles and Associated Timber for Issue 7: 2021 Overhead Lines.

BS EN 14229:2010      Wood poles for overhead lines.

## **3.0 NGED REQUIREMENTS**

This equipment specification has been structured so that it is aligned to the general flow and requirements of ENA TS 43-88 Issue 7.

Where information is included against clause then this is either to outline or emphasise specific NGED requirements or to provide additional information to that provided in ENA TS 43-88.

In the event of conflicting requirements preference shall be in the following order of consideration:

1.    EE 129 - NGEDs Wood Pole Equipment Specification
2.    ENATS 43-88, Issue 7 2021 - Selection and treatment of Wood Poles and Associated Timber for Overhead Lines.
3.    BS EN 14229: 2010 – Structural Timber – Wood Poles for Overhead Lines
4.    Appropriate European or National Standards

## **4.0 SELECTION**

### **4.1 SPECIES AND ORIGIN FOR POLES**

As a general rule all standard NGED wood poles shall be fabricated using Scots Pine (Pinus Sylvestris).

The origin of Pinus Sylvestris wood poles shall be sourced from a tree population whose southern border occurs at 60° latitude.

Where it is necessary to supply Douglas Fir (Pseudotsuga Menziesii) poles then this shall be only after agreement has been sought from a NGED Overhead Line Engineer, where approved these poles shall be impregnated using standard AWPAC4.

## **5.0 GENEAL REQUIREMENTS**

### **5.1 Bending strength and modulus of elasticity**

NGED uses deterministic designs in accordance with BS EN 50341-2-9 Approach 3 and as such requires the Modulus of Rupture (bending strength) and Modulus of Elasticity expressed as a mean value i.e.  $f_{\text{mean}}$  and  $E_{0,\text{mean}}$ .

With the minimum average values supplied being

- $f_{\text{mean}} = 52.4 \text{ N/mm}^2$
- $E_{0,\text{mean}} = 9718 \text{ N/mm}^2$

Suppliers shall at the time of tender declare and provide documentary evidence that supports the declaration of the characteristic bending strength and the characteristic modulus of elasticity together with the minimum mean diameter at 1.5 m from the butt and the minimum diameter at the tip for the lengths of pole supplied.

Furthermore, on every delivery made the supplier shall provide in the documents accompanying the wood pole the details outlined in Figure ZA.2 from BS EN 14229.

### **5.2 Size**

All poles shall comply with the minimum diameters and lengths quoted in Appendix A after dressing.

An additional class known as 'Medium Stout' are included in this specification. These shall be marked on the pole as MS.

### **5.3 Additional Characteristics**

#### **Knots**

A single knot shall not have a diameter in excess of 6.4% of the circumference of the pole at the position of the knot

A minimum distance between adjacent rings of knots shall be 300mm. The distance shall be measured between the edges of the knots.

The maximum sum of all knot diameters in any 300mm length of wood pole, shall not exceed 24% of the circumference of the wood pole at the midpoint of the 300mm length.

### **5.4 Rate of Growth**

#### **5.4.1 Growth Rings**

There shall be a minimum of 8 growth rings per 25mm. The combination of the light coloured early wood and the darker coloured late wood form a single growth ring.

Measurements shall be taken at the tip within 50mm of the circumference.

#### **5.4.2 Juvenile Wood**

The diameter of the juvenile wood shall not exceed 50% of the pole diameter when measured at the tip. Juvenile wood is the area inside the 12th ring from the pith.

### **5.5 Straightness**

A Double Sweep or a short crook is not permitted.

### **5.6 Bark pockets and rind galls**

Bark pockets and rind galls shall be subject to the following dimensional limitations

a) Length — 0.4 times the nominal pole diameter.

b) Width — 0.5 times the nominal pole diameter.

c) Depth — 0.05 times the nominal pole diameter.



## **5.7 Mechanical damage**

Mechanical damage shall not extend to a depth of the wood pole that reduces the diameter by more than 5 % of the diameter at any cross section, when measured in accordance with 6.6. No more than two occurrences of mechanical damage shall be permitted and no part of these shall be less than 500 mm apart.

At no part of the end to end process shall the pole be allowed to drop.

## **5.8 Ring and Stare Shake**

The tip shall be free from ring shake or star shakes with 3 or more points.

At the butt, one complete ring or one star shake shall be acceptable, provided that not more than two points extend to within 5 mm from the wood pole circumference. If they extend to the circumference they shall not extend along the wood pole more than 500 mm from the butt.

## **5.9 Fissures**

Seasoning fissures along the grain of the wood pole are expected and may not be recognised as defects

providing they do not have a depth greater than half the diameter at one point along the wood pole or does not exceed 50 % of the length of the wood pole.

The combined width of all fissures at any section perpendicular to the longitudinal axis shall not exceed 12 mm.

## **5.10 Sources**

Wood poles shall not be manufactured from trees subjected to snow breakage, frost damage, wind-fall or from forests damaged by fire.

## **5.11 Decay and insects**

Other than as permitted by ENA TS 43-88 wood poles shall be sound and free from decay and attack by insects.

## **5.12 Included Sapwood**

The minimum sapwood thickness shall be 25mm.

## **5.13 Cracks**

Cracks across the wood pole and the grain shall not be permitted.

## **6.0 SEASONING**

### **6.1 Stacking**

It will be the responsibility of the Supplier to inform NGED of the measures to be taken to maintain the quality of the poles prior to treatment.

### **6.2 Moisture Content**

The moisture content of **all** poles shall be ascertained in accordance with ENA TS 43-88 Clause 6.2.

After seasoning if a manufacturer as part of treatment process intends to pre-warm batches of poles together, the methodology to be used shall be outlined at the time of tender and agreed with NGED.

The moisture content of all poles within the charge shall not be greater than 25% unless the moisture is determined by the oven dry method outlined in ENA TS 43-88 clause 6.2.2 at which time a moisture content of 28% is permitted.

All poles within a charge shall have a moisture content that is within a 5% range; this is to reduce the possibility of over drying individual poles.

Subject to ENA TS 43-88 clause 6.2.1 suppliers shall provide information relating to moisture content of all poles at the time of delivery.

### **6.3 Borings**

The requirements of ENA TS 43-88 6.3 shall apply.

### **6.4 Permeability**

Pre-warming immediately prior to preservation to improve permeability to WEI Type B and C creosote is permissible and preferable to the addition of naphthalene to thin the creosote. However the methodology to be used shall be agreed with NGED.

## **7.0 EVALUATION OF CONFORMITY**

### **7.1 General**

The requirements of ENA TS 43-88 7.1 shall apply.

### **7.2 Type testing**

At time of tender the supplier shall provide details of type testing that indicates that the supplied wood poles meet the required performance characteristics outlined in clause 5.1 of this document.

### **7.3 Factory production Control**

#### **7.3.1 General**

The manufacturer shall establish, document and maintain a Factory Production Control system to ensure that each type of treated wood pole and ancillary product delivered to NGED conforms to the requirements outlined in this specification.

Quality Control inspectors shall be provided with National Grid Electricity Distribution quality requirements, defect acceptance criteria, fabrication details which shall be visible at each inspection location.

The information shall be provided in the inspector's native language and shall include diagrams as appropriate.

#### **7.3.4 FPC for preservative treated products**

The requirements of ENA TS 43-88 7.3.4 shall apply.

#### **7.3.5 Factory inspection**

NGED may wish to witness type, sample and routine tests, or carry out a factory acceptance visit either before a contract starts or where this is not possible during the contract period.

Where the visit is carried out during the contract period it shall coincide with the manufacture of NGED specified wood pole products, as such when required adequate notice of tests and manufacturing programmes shall be given to the NGED so that suitable arrangement can be made.

The cost of one visit by two NGED personnel during a contract period shall be borne by the supplier and included in the tender costs.

### **7.3.6 Continuous Surveillance**

Pursuant to the requirements of BE EN14229 7.3.6 NGED reserves the right to carry out periodic factory visits during the contract period to monitor that continuous surveillance, assessment and approval of factory production control is being carried out or when significant changes in the production process including impregnation process are being introduced.

### **7.3.7 Finished Products**

A 100% inspection shall be made of finished products so as to ensure they meet NGEDs requirements at this time all poles shall be tested to ensure there no delamination has occurred.

At time of tender the manufacturer shall confirm how it intends to carry out the test to check for delamination in finished products.

## **8.0 MARKING**

### **8.1 General**

Marking shall be carried out by gouging, branding, or routing or an alternative method that conforms to the requirements outlined in 8.2 below with the information outlined in Appendix B.

### **8.2 Alternative Method of Marking**

European standards require more information to be included on the pole than is practicable by the traditional methods of gouging, branding or routing.

Therefore, as an alternative to gouging, branding or routing, the supplier may provide the information specified in Appendix B using a suitable alternative information disc, plate or label that is preservative, treatment, UV resistant, environment and cattle proof.

The information plate shall be recessed so that plate is just below the surface of the pole and placed in line with the crossarm bolt holes 3m from the butt so as to act as the gouge mark.

If a plate is used a second identical plate shall be fixed 6m from the pole butt in line with the crossarm bolt hole. This is to provide a secondary method of identification in the event of theft of, or damage to the plate at the 3m mark.

### **8.3 Marking on the butt**

Regardless of the method used to mark the poles for ease of identification when stacked the pole shall also be marked on its butt with the pole length, grade and GA Figure No together with year and month of manufacture.

### **8.4 Marking Legibility**

Whatever form of marking is employed the marking shall remain legible for the life time of the pole.

The supplier shall at the time of tender confirm with evidence how this will be achieved with their chosen method of marking.

### **8.5 Traceability**

The supplier shall mark all poles in such a way so as to ensure traceability.

The supplier shall at the time of tender confirm with evidence how this traceability will be achieved and how far back in the in the process this traceability will be.

## **9.0 FABRICATION**

### **9.1 General**

All dressing, notching, pre-cutting and boring of the wood pole shall be completed before preservative treatment.

### **9.2 Douglas Fir Preparation**

The requirements of ENA TS 43-88 9.2 shall apply.

### **9.3 Pole Tips**

Pole tips shall be fabricated in accordance with the GA drawings outlined in Appendix A.

### **9.4 Drilling**

All holes shall be drilled to NGEDs dimensions and care must be taken to ensure that all holes in the same plane are through, and perpendicular to, the central axis of the pole.

Holes drilled within 1m of the pole top shall not be nearer than 25mm to any shake. This shall be measured between the hole edge and the closest side of the shake after preservation.

Holes in the same plane shall have tolerances between the hole centres of + / - 3 mm maximum.

The crossarm bolt holes shall be in the same plane as any sweep in the pole.

Once the drilling process has been complete all holes shall be checked to ensure they are in the correct plane and within tolerance.

### **9.5 Scarfing**

All scarfing shall be to NGEDs dimensions outlined in Appendix A.

### **9.6 Marking Application**

Marking described in Clause 8 shall be applied to the pole surface. If a disc or label is to be employed, this is to be recessed just below the outer surface of the pole and be of smallest possible dimensions so that a minimum volume of wood is cut away.

### **9.7 Sawing and Machining**

The requirements of ENA TS 43-88 9.7 shall apply.

### **9.8 Fabrication of Two Member Poles**

The individual members of 'H', 'A', Rutter, or twin structures shall be matched.

Where non-standard (i.e. drawing not included within this document) requests are made the appropriate NGED Drawing will be supplied at the time of each order. National Grid Electricity Distribution requires that these structures be pre-assembled, complete with brace and key blocks and if required, with steelwork and/or cross bonding to ensure fabrication and trussing dimensions are compatible.

The trussing tackle, and associated components, must be clearly and indelibly identified and delivered with the poles for which it has been adjusted to fit.

Where requested with the order, additional holes may be needed to accommodate to allow the installation of pole steps.

## **10.0 PRESERVATIVE TREATMENT (CREOSOTE)**

### **10.1 General**

The requirements of ENA TS 43-88 10.1 shall apply.

### **10.2 Condition of Timber**

The requirements of ENA TS 43-88 10.2 shall apply.

### **10.3 Treatment cycle**

The requirements of ENA TS 43-88 10.3 shall apply.

### **10.4 Creosote quality**

The requirements of ENA TS 43-88 10.4 shall apply.

### **10.5 Requirements for Preservative Treatment**

The requirements of ENA TS 43-88 10.5 shall apply.

### **10.6 Bleeding poles**

#### **10.6.1 General**

At time of tender, the supplier shall inform NGED on their procedures for identifying, segregating and re-treating bleeding poles.

Unless agreed with NGED in advance, NGED requires creosoted treated poles to be stacked for a minimum period of **three months** before delivery.

Any pole that still displays bleeding must be re-washed, in the pressure vessel, and if still in the same condition must be rejected.

Bleeding poles must not be dispatched and poles that subsequently bleed before erection shall, by arrangement, be returned for re-treatment. See Table 10.6.2 below.

The re-treatment of bleeding poles shall be carried out on a charge comprising of bleeding poles only.

### 10.6.2 National Grid Electricity Distribution evaluation test for bleeding poles.

This test shall be carried out by placing a hand covered in a light coloured cotton glove or cloth on the pole and the results assessed against Table 'Bleeding Pole Classification' below.

A vinyl or latex glove should be worn on the hand to protect the tester from any creosote soaking through the cotton glove/cloth.

Residue shall mean creosote which has soaked into the fibres of the cotton glove/cloth.

Slight surface discolouration of the glove/cloth shall not count as residue.

<b>Table 10.6.2 - Bleeding Pole Classification</b>			
<b>Category Number</b>	<b>Result of Test</b>	<b>Comments</b>	<b>Action</b>
A	Dry, no residue on glove/cloth	Any part of the pole	Accept
B	Dry, no residue on glove/cloth	Any part of the pole except the knots. Wet areas of creosote around knots are acceptable.	Accept
C	Dry, no residue on glove/cloths	Any part of the pole Up to 40% of pole surface may be covered in dried solidified creosote residue (tar).	Accept
D	Dry, no residue on glove/cloths	Any part of the pole Over 40% of pole surface is covered in dried solidified creosote residue (tar).	Reject
E	Wet, residue soaked into glove/cloth	Any part of the pole except the knots. Definite thin film of creosote and possibly in patches or strips	Reject
F	Wet, residue soaked into glove/cloth	Any part of the pole except the knots. Whole pole has a thin layer of creosote over the entire surface area	Reject
G	Wet, residue soaked into glove/cloth	Any part of the pole except the knots. Thick wet tar in strips or patches.	Reject

### 10.7 When specified by the purchaser, re-treated bleeding poles shall be stored for an agreed period of time, prior to delivery.

Any retreated poles shall be stored for a minimum period of 6 months prior to delivery.



## **10.8 Pollution Prevention Measures**

After treatment all poles shall be stacked and stored so as remove the risk of creosote migrating into the surrounding area; this should be generally in accordance with ST: EN2F. At time of tender the supplier should indicate how they will achieve this at their storage facilities.

## **11.0 COPPER / ALTERNATIVE PRESERVATIVE TREATMENT**

### **11.1 General**

When indicated in Appendix A2 poles and blocks shall be fabricated in accordance with ENA TS 43-88 Clause 11 with a copper / alternative preservative treatment which is either water soluble or oil based process or a combination of both.

The treatment process, including its constituent parts shall meet the requirements of EU Biocidal Products Regulations and must be registered for use in the United Kingdom.

### **11.2 Condition of Timber**

The requirements of ENA TS 43-88 11.2 shall apply.

### **11.3 Copper/alternatively treated preservative**

The requirements of ENA TS 43-88 11.3 shall apply.

### **11.4 Requirements for Copper / Alternative Preservation Treatment**

The minimum retention shall be in accordance with the requirements of BS 8417 Table 4 for a 40-year service life.

The treatment cycle shall be such as to give complete penetration of the sapwood to penetration class NP5.

At time of tender the supplier shall provide details of the copper / alternative treatment process together with kg/m<sup>3</sup> loadings of the different elements and any other supporting evidence of life expectancy outlined in clause 11.4.

**Note: Given its poor performance since its introduction poles treated with AC500 are no longer accepted by NGED**

### **11.5 Drying and Maintenance of Copper Treated Pole Condition**

The requirements of ENA TS 43-88 11.5 shall apply.

## **11.6 Additional Protection**

So as to mitigate some of the risks of the premature onset of ground level decay, when instructed to do so in writing by NGED, poles shall be fabricated with an additional means of protection applied to the butt end of the pole; which as a minimum shall be continuous from 100mm above ground to 600mm below ground level as indicated in Fig 20.

At time of tender, the supplier shall indicate what the intended additional protection comprises of, how it will be applied to ensure it is sealed against the ingress of air and water, and that it is robust and resilient to damage during [transportation, handling and installation](#). They should also supply any corroborating information that backs up any claims to life extension.

## **11.7 Environmental Impact**

At times of tender / supply any copper / alternative treated poles will need to be assessed by NGEDs Environment Team so as to determine the impact on the environment with their use. To aid with this all constituent parts of the treatment including type of oil used in the process where applicable shall be declared by the supplier / manufacturer together with reports that indicate the

- Leaching Rate of the finished product
- Density / Specific gravity of the oil when compared to water
- Safety Data Sheets for the finished product
- Storage requirements of the finished product
- Biocidal Products Regulations Certification
- Restrictions / limitations of use on environmentally sensitive locations (i.e. near watercourses, high water table, SSSI etc.)
- Any additional relevant information regarding end of life disposal

## **12.0 RE-TREATMENT**

The requirements of ENA TS 43-88 12 shall apply.

## **13.0 SOFTWOODS**

### **13.1 Stay, Brace and Foundation Blocks**

All Blocks shall be treated with the copper / alternative treatment process outlined in Section 11.

## **14.0 HARDWOODS**

The requirements of ENA TS 43-88 14 shall apply.

## **15.0 PROVISION OF INFORMATION**

### **15.1 Type Tests**

The manufacturer / suppliers shall at the time of tender or one off supply provide Current Type Test Reports that verify the wood pole characteristics outlined in Clause 5.1 have been met.

### **15.2 Quality Control**

The manufacturer / supplier shall provide details of their Factory Production Control and Quality Management Systems together with any accreditation.

This information shall include a detailed flow chart of the end to end manufacturing and quality control process.

### **15.3 ENA TS 43-88 Declaration of Conformance**

The manufacturer / supplier shall declare conformance or otherwise for all wood poles and associated products supplied, clause by clause, in accordance with ENA TS 43-88 Annex H.

## APPENDIX A1 - Standard Pole Sizes

### A1.1 HV Poles

<b>Medium Grade Single Creosoted HV Poles</b>				
<b>Item code</b>	<b>Length</b>	<b>Fig No.</b>	<b>Minimum Top Diam.</b>	<b>Minimum Dia. 1.5m from Butt (mm)</b>
	<b>(m)</b>		<b>(mm)</b>	
60847	8	1	145	210
60848	8.5	1	150	215
60849	9	1	150	220
60850	9.5	1	150	225
60851	10	1	150	230
60852	10.5	1	150	235
60853	11	1	150	240
60854	11.5	1	150	245
60855	12	1	150	250
60856	13	1	160	260
60857	14	1	160	275

<b>Medium Stout Grade Single Creosoted HV Poles</b>				
<b>Item code</b>	<b>Length</b>	<b>Fig No.</b>	<b>Minimum Top Diam.</b>	<b>Minimum Dia. 1.5m from Butt (mm)</b>
	<b>(m)</b>		<b>(mm)</b>	
60151	10	1	170	260
60152	11	1	175	270
60153	12	1	180	285
60154	13	1	185	295

<b>Stout Grade Single Creosoted HV Poles (look at schedule)</b>				
<b>Item code</b>	<b>Length</b>	<b>Fig No.</b>	<b>Minimum Top Diam.</b>	<b>Minimum Dia. 1.5m from Butt (mm)</b>
	<b>(m)</b>		<b>(mm)</b>	
30070	8.5	1	190	265
30071	9	1	190	275
30072	9.5	1	190	280
30073	10	1	190	285
30074	10.5	1	190	290
30075	11	1	190	295
30076	11.5	1	190	300
30077	12	1	190	305
30079	13	1	195	320
30081	14	1	195	335
30083	15	1	195	350
30085	16	1	200	365
43580	17	1	200	375

<b>Extra Stout Grade Single Creosoted HV Poles</b>				
<b>Item code</b>	<b>Length</b>	<b>Fig No.</b>	<b>Minimum Top Diam.</b>	<b>Minimum Dia. 1.5m from Butt (mm)</b>
	<b>(m)</b>		<b>(mm)</b>	
50077	9	1	190	300
50078	9.5	1	190	305
50079	10	1	210	310
50080	10.5	1	210	315
50081	11	1	215	320
50082	11.5	1	215	330
50083	12	1	215	335
50084	13	1	215	350
50085	14	1	220	365
50086	15	1	220	375

<b>Medium Grade Matched 'H' Creosoted HV Poles</b>				
<b>Item code</b>	<b>Length</b>	<b>Fig No.</b>	<b>Minimum Top Diam.*</b>	<b>Minimum Dia. 1.5m from Butt (mm)</b>
	<b>(m)</b>		<b>(mm)</b>	
42640	8.5	2	175	215
42641	9	2	175	220
42642	9.5	2	175	225
42643	10	2	175	230
42644	10.5	2	175	235
42645	11	2	175	240
42646	11.5	2	175	245
42647	12	2	175	250
42648	13	2	175	260
42649	14	2	175	275

<b>Stout Grade Matched 'H' Creosoted HV Poles</b>				
<b>Item code</b>	<b>Length</b>	<b>Fig No.</b>	<b>Minimum Top Diam.*</b>	<b>Minimum Dia. 1.5m from Butt (mm)</b>
	<b>(m)</b>		<b>(mm)</b>	
42650	8.5	2	230	265
42651	9	2	230	275
42652	9.5	2	230	280
42653	10	2	230	285
42654	10.5	2	230	290
42655	11	2	230	295
42656	11.5	2	230	300
42657	12	2	230	305
42658	13	2	230	320
42659	14	2	230	335
42660	15	2	230	350
42661	16	2	230	365
60258	17	2	230	375
60259	18	2	230	390

<b>Extra Stout Grade Matched 'H' Creosoted HV Poles</b>				
<b>Item code</b>	<b>Length</b>	<b>Fig No.</b>	<b>Minimum Top Diam.*</b>	<b>Minimum Dia. 1.5m from Butt (mm)</b>
	<b>(m)</b>		<b>(mm)</b>	
60260	16	2	230	390

\* Minimum stout pole top dia. taken from the requirements of ENATS 43-40

## A1.2 LV Poles

<b>Medium Grade Creosote Preserved LV Open Wire Poles*</b>				
<b>Item code</b>	<b>Length</b>	<b>Fig No.</b>	<b>Minimum Top Diam.</b>	<b>Minimum Dia. 1.5m from Butt (mm)</b>
	<b>(m)</b>		<b>(mm)</b>	
63400	8	14	145	210
63401	8.5	14	150	215
63402	9	14	150	220
63403	9.5	14	150	225
63404	10	14	150	230
63405	10.5	14	150	235
63406	11	14	150	240
63407	11.5	14	150	245
63408	12	14	150	250
63409	13	14	160	260
63410	14	14	160	275

\* Non Stock - Made to Order

<b>Medium Grade Creosote LV Poles</b>				
<b>Item code</b>	<b>Length</b>	<b>Fig No.</b>	<b>Minimum Top Diam.</b>	<b>Minimum Dia. 1.5m from Butt (mm)</b>
	<b>(m)</b>		<b>(mm)</b>	
63331	8	19	145	210
63332	8.5	19	150	215
63333	9	19	150	220
63334	9.5	19	150	225
63335	10	19	150	230
63336	10.5	19	150	235
63337	11	19	150	240
63338	11.5	19	150	245
63339	12	19	150	250
63340	13	19	160	260
63341	14	19	160	275

<b>Medium Grade Copper / Alternative Treatment LV Poles</b>				
<b>Item code</b>	<b>Length</b>	<b>Fig No.</b>	<b>Minimum Top Diam.</b>	<b>Minimum Dia. 1.5m from Butt (mm)</b>
	<b>(m)</b>		<b>(mm)</b>	
37125	8	20	145	210
37130	8.5	20	150	215
37424	9	20	150	220
37132	9.5	20	150	225
37133	10	20	150	230
37109	10.5	20	150	235
37426	11	20	150	240
63342	11.5	20	150	245
63343	12	20	150	250

<b>Stout Grade Copper / Alternative Treatment LV Poles*</b>				
<b>Item code</b>	<b>Length</b>	<b>Fig No.</b>	<b>Minimum Top Diam.</b>	<b>Minimum Dia. 1.5m from Butt (mm)</b>
	<b>(m)</b>		<b>(mm)</b>	
63264	9	20	190	275
63265	9.5	20	190	280
63266	10	20	190	285
63267	10.5	20	190	290
63268	11	20	190	295
63269	12	20	190	305

\* Non stock made to order

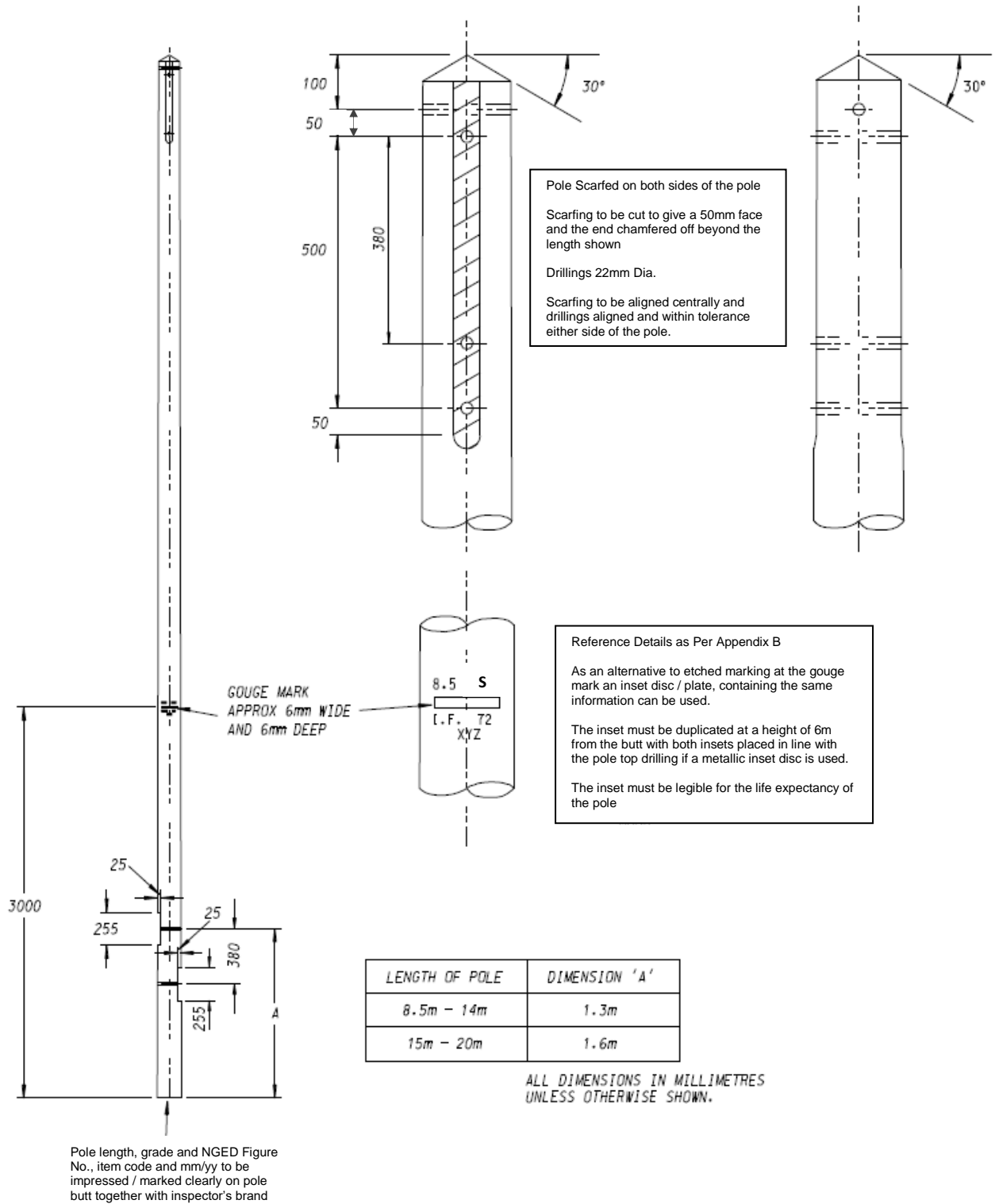


## APPENDIX A2 – Blocks, Plugs, Boards, Posts and Rails

Note: unless otherwise stated items shall be Copper / Alternative Treated

Blocks, Plugs, Boards, Posts & Rails					
Item code	Descriptor	Fig / Drawing No.	Length mm	Width mm	Depth mm
30092	Type 1 Stay Block	439103	850	250	125
30091	Type 2 Stay Block	439103	1300	250	125
NS	Type 3 Foundation Block	439103	1500	250	125
NS	Type 4 Foundation Block	439103	2500	250	125
30093	Type 1 'H' Pole Brace Block	439112	2600	250	125
30094	Type 2 'H' Pole Brace Block	439112	3000	300	150
50105	Wood Pole Plug 12mm (Mattson Borer size 3)	Appendix A5 – Item 1	50	12	
50106	Wood Pole Plug 22mm	Appendix A5 – Item 3	75	24	
36508	33kV Cable Backboard & Lid 'H' Pole Arrangement (Creosote Treated)	438920	As Per Drawing		
52297	Wood Post (Creosote Treated)	E115	2100	150	75
52298	Plain Wood Rails (Creosote Treated)	E115	2500	87	38
52299	Pointed Wood Post (Creosote Treated)	E115	1800	87	38

# APPENDIX A3 - General Arrangement Pole Drawings



OH4T Fig 1 - Single Pole Drillings, Scarfing & Marking

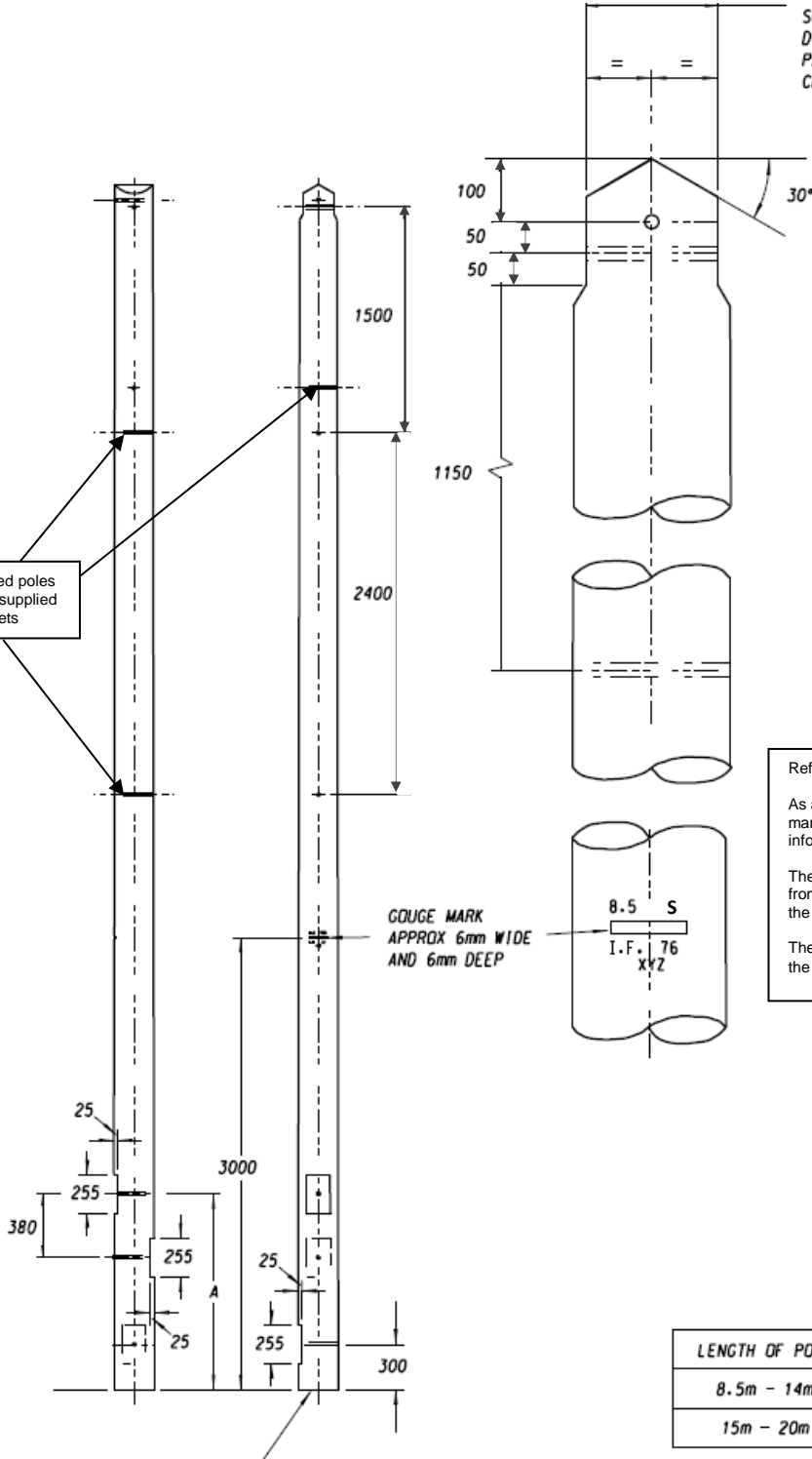
Med 155 Min 205 Max  
Stout 210 Min 230 Max

SCARF TO EXACT  
DIMENSION - PROVIDE  
PARALLEL SURFACES  
CHAMFERED OFF AT ENDS

H Poles to be matched  
All Holes Drilled 22mm dia.  
Scarfing to be aligned  
centrally and drillings aligned  
and within tolerance either  
side of the pole.

When requested poles  
to be drilled & supplied  
with trussing sets

Reference Details as Per Appendix B  
As an alternative to etched marking at the gouge  
mark an inset disc / plate, containing the same  
information can be used.  
The inset must be duplicated at a height of 6m  
from the butt with both insets placed in line with  
the pole top drilling if a metallic inset disc is used.  
The inset must be legible for the life expectancy of  
the pole



Pole length, grade and NGED Figure  
No., item code and mm/yy to be  
impressed / marked clearly on pole  
butt together with inspector's brand

LENGTH OF POLE	DIMENSION 'A'
8.5m - 14m	1.3m
15m - 20m	1.6m

ALL DIMENSIONS IN MILLIMETRES  
UNLESS OTHERWISE SHOWN.

OH4T Fig 2 - H Pole Drilling, scarfing & Marking

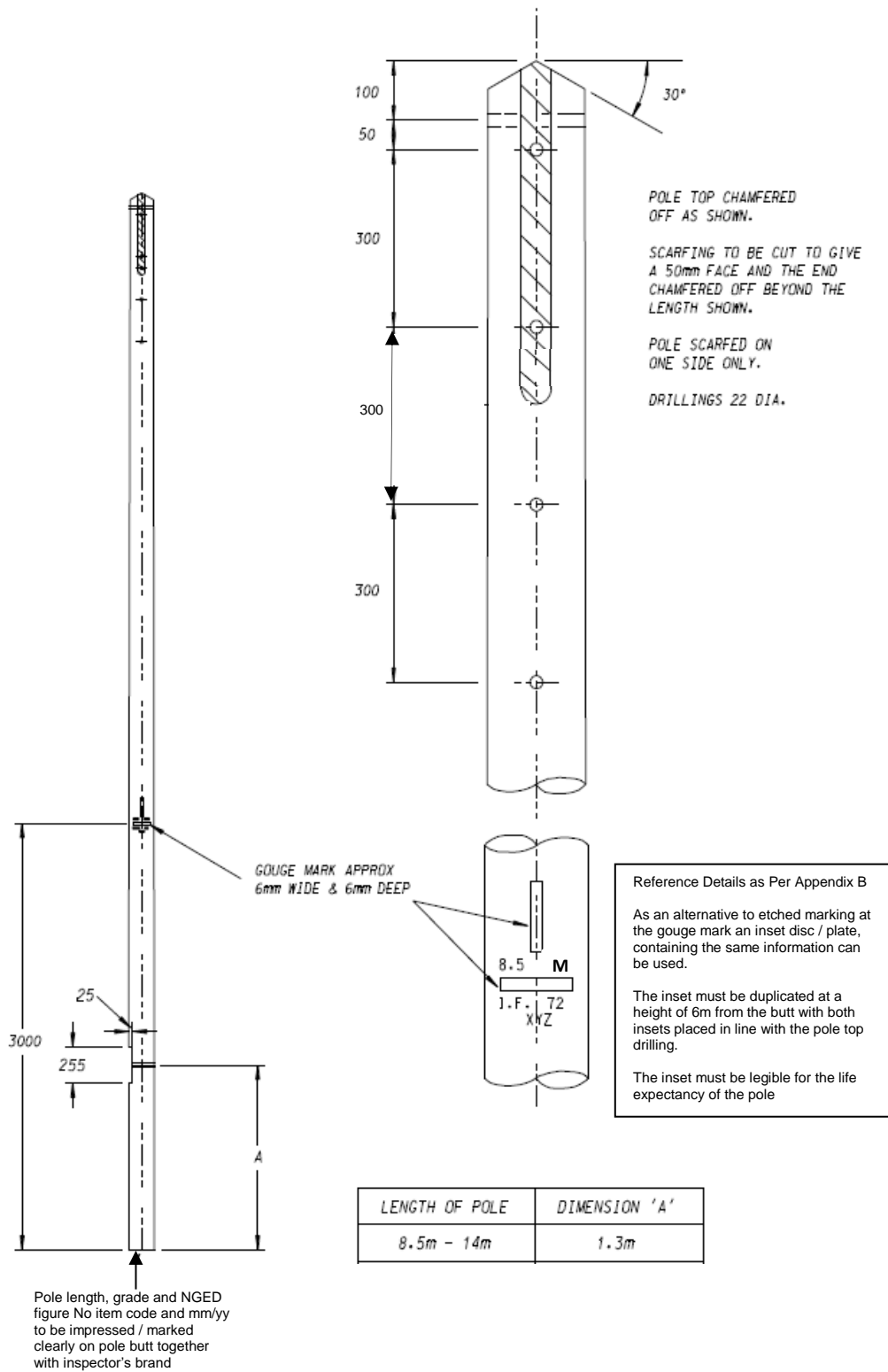


Fig 14 - LV Open Wire Lines Single Pole Drillings to ESI 43-30 (Creosote Treated) (Non Stock)

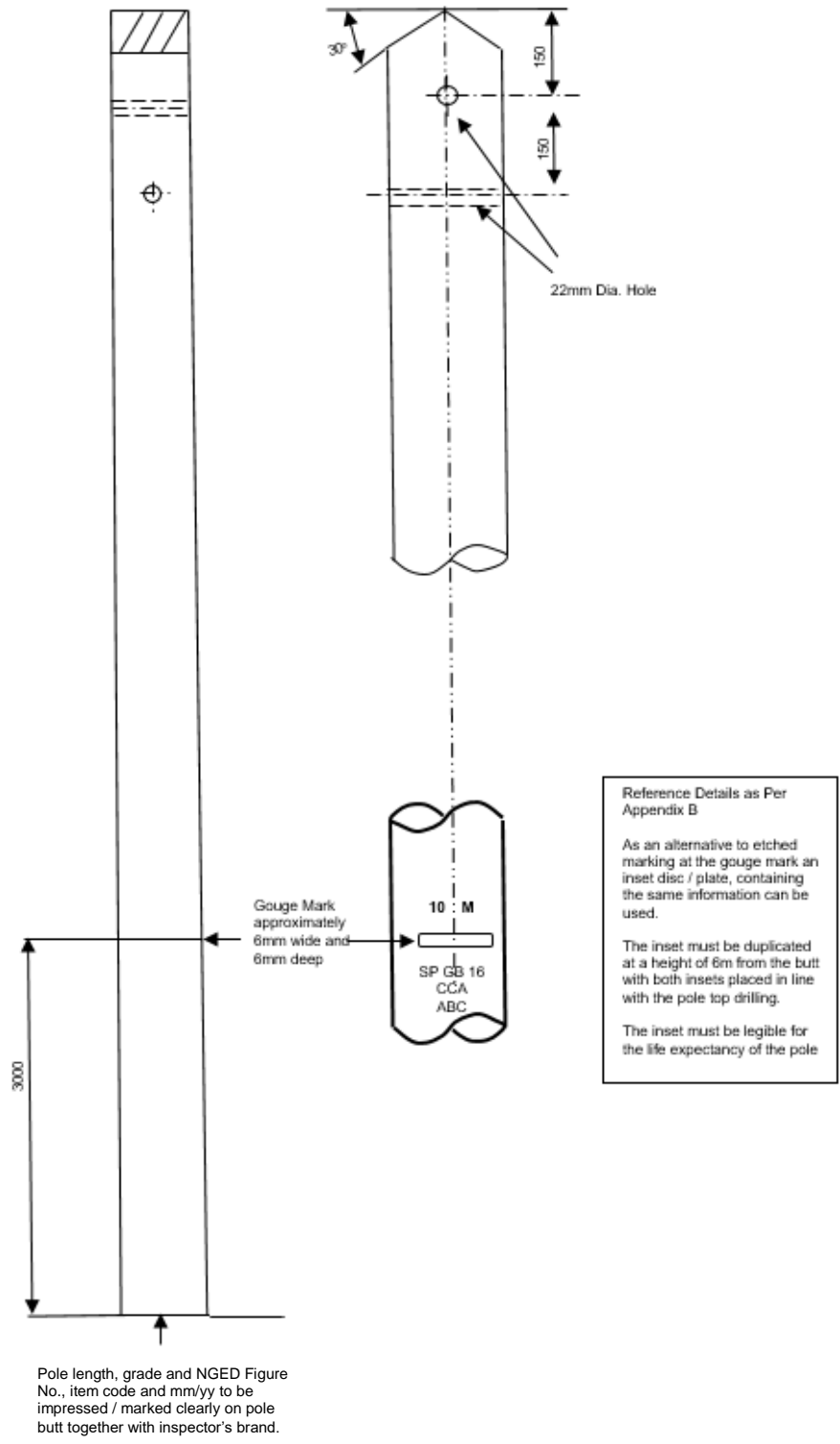


Fig 19 - LV Pole (Creosote Treated) (Based on ENATS 431201)  
 Can be used on Openwire but will need to be drilled as required on site

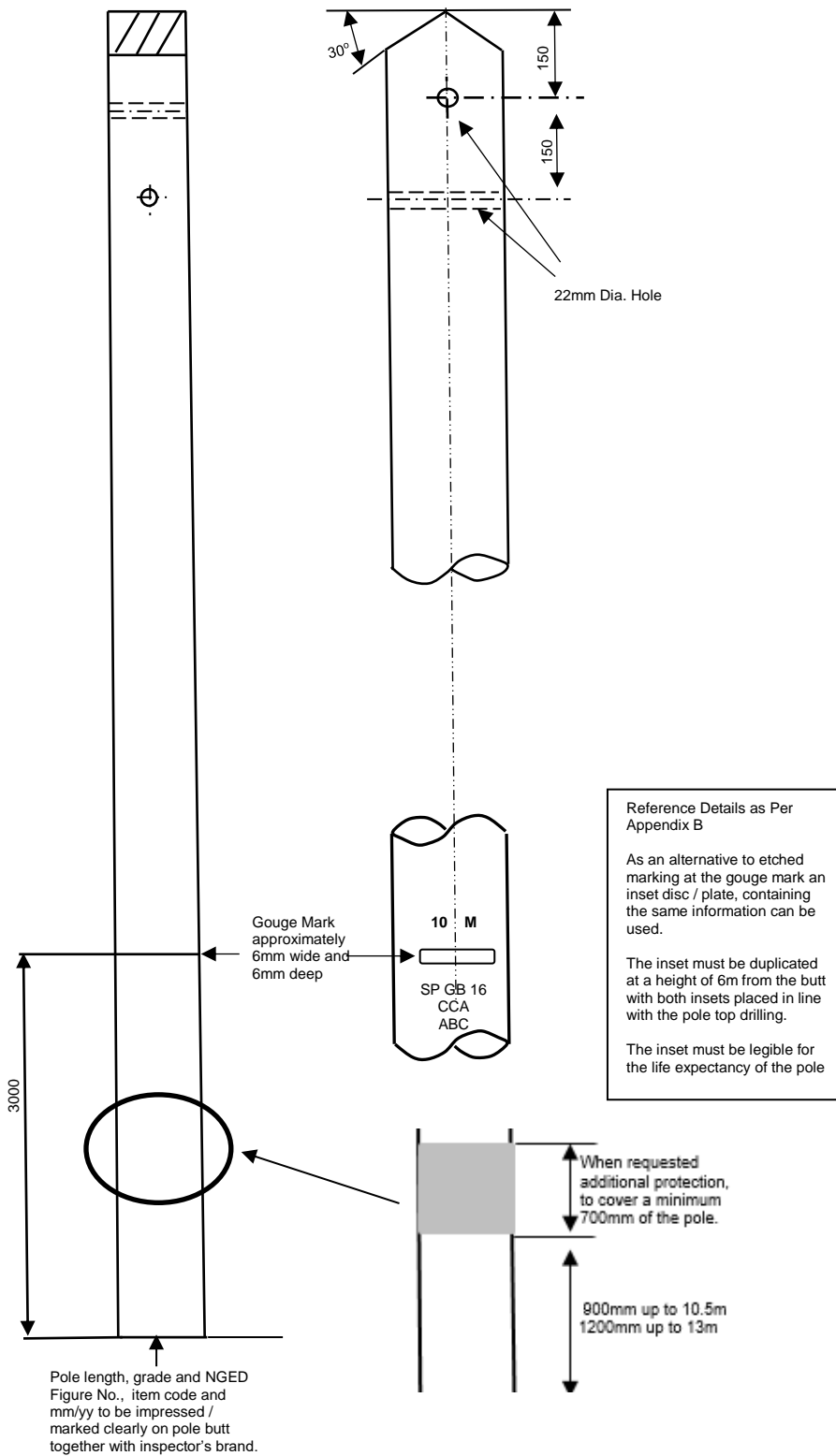
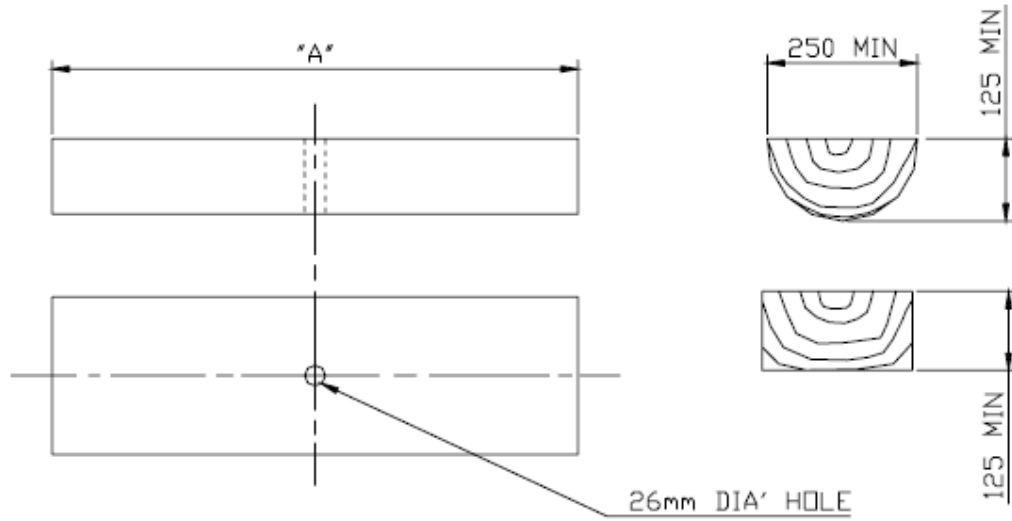


Fig 20 – LV Pole (Copper / Alternative Treated) (Based on ENATS 431201)  
Can be used on Openwire but will need to be drilled as required on site

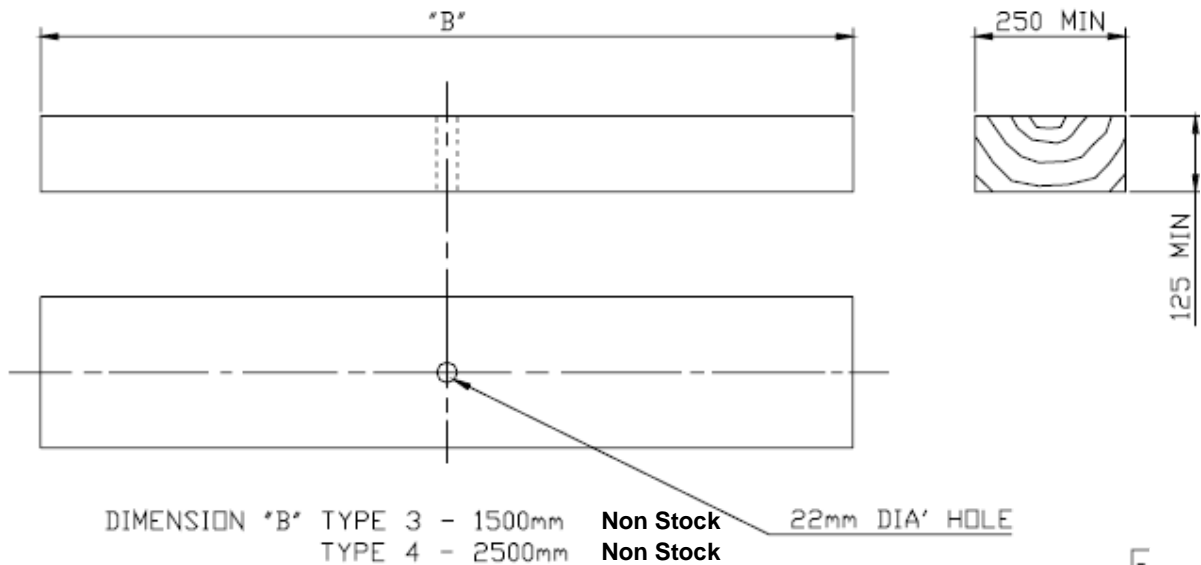
**APPENDIX A4 - Blocks, Plugs, Boards, Posts and Rails**

STAY BLOCKS



DIMENSION '\*A\*' TYPE 1 - 850mm Item 30092  
 TYPE 2 - 1300mm Item 30091

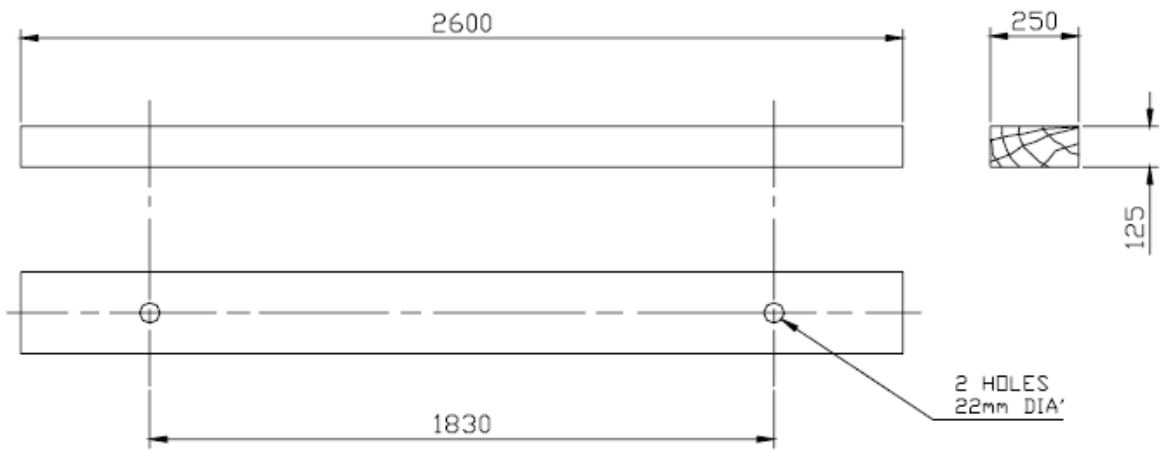
FOUNDATION BLOCKS



DIMENSION '\*B\*' TYPE 3 - 1500mm **Non Stock**  
 TYPE 4 - 2500mm **Non Stock**

Fig. 439103 - Wood Stay and Foundation Blocks (Copper / Alternative Treated)

TYPE 1    Item 30093



TYPE 2    Item 30094

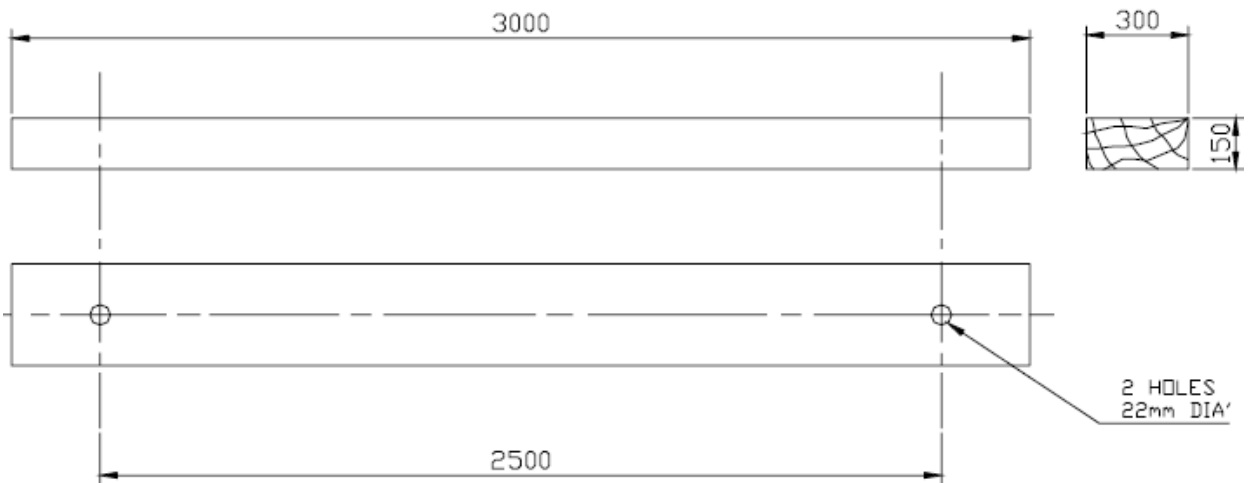
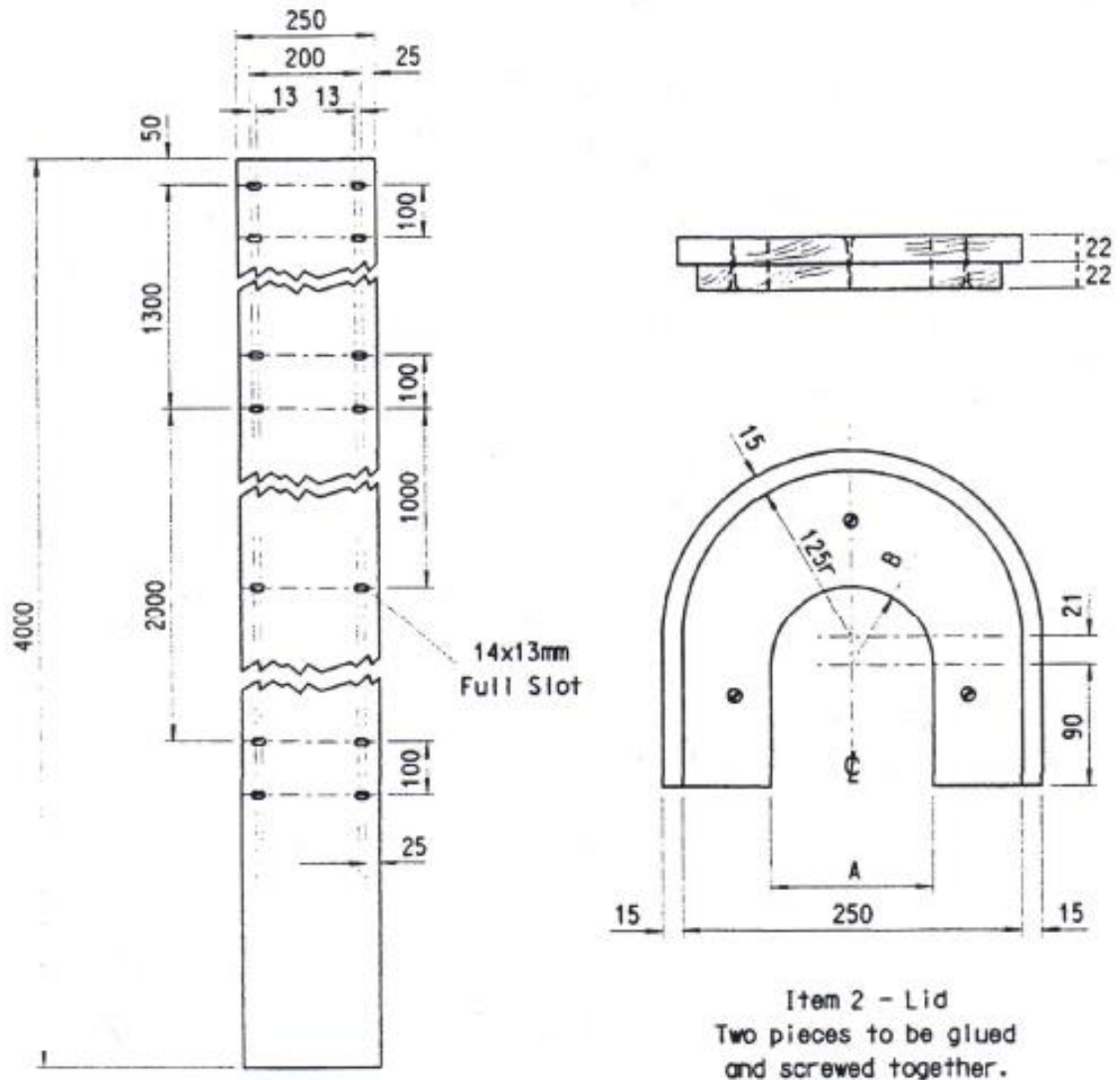


Fig. 439112 – Wood Brace Blocks for ‘H’ Poles (Copper / Alternative Treated)





3x185sq.mm s/c    A=120  
  B=60

3x400sq.mm s/c    A=130  
  B=65

- Notes
1. All dimensions in millimetres.
  2. To be manufactured from Deal, timber to be straight grained and free from large shakes and knots.
  3. To be creosoted to BS 913 after manufacture.

Fig 438920 - 33kV Cable Backboard & Lid 'H' Pole Arrangement (Creosote Treated)  
Item 36508

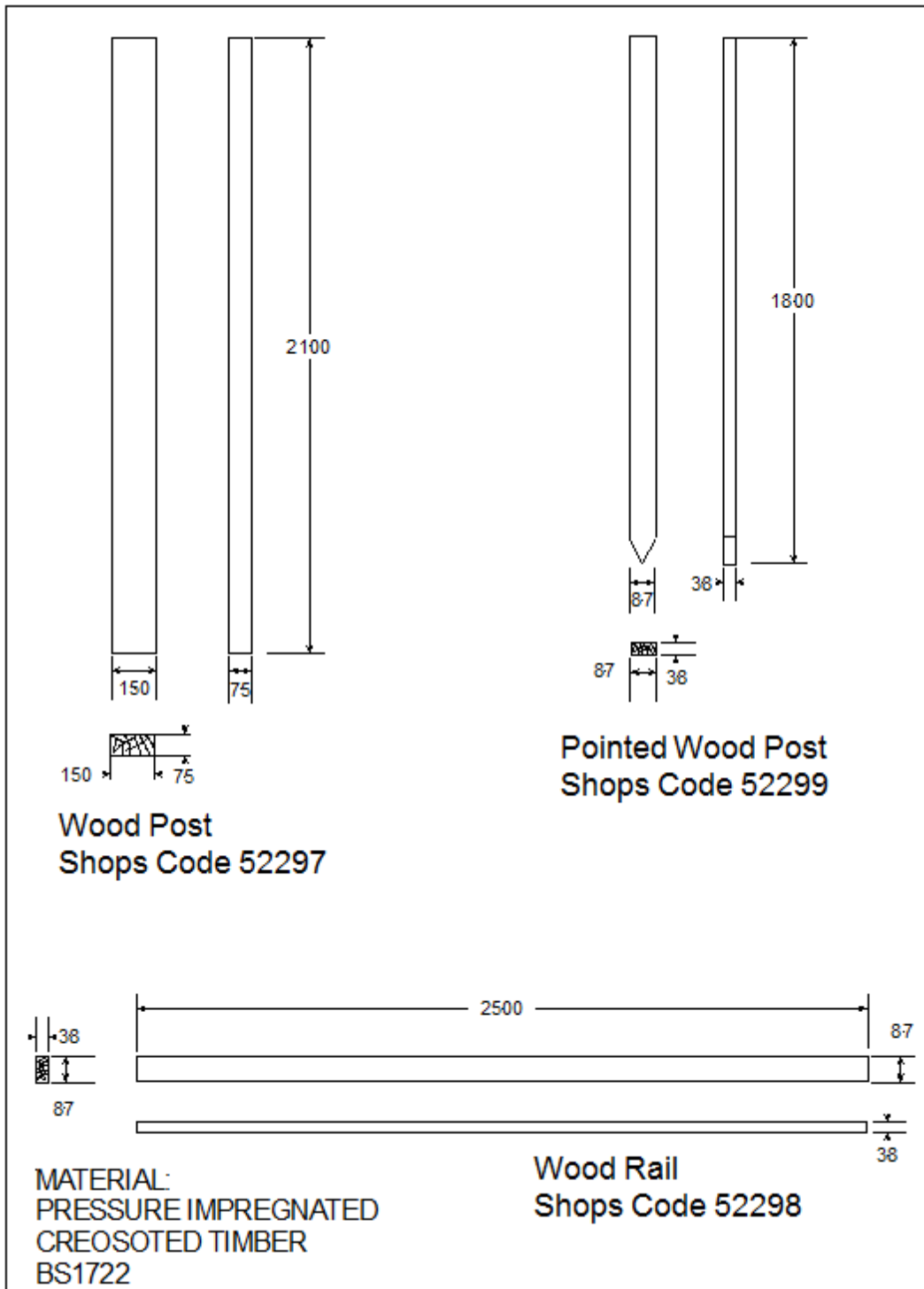
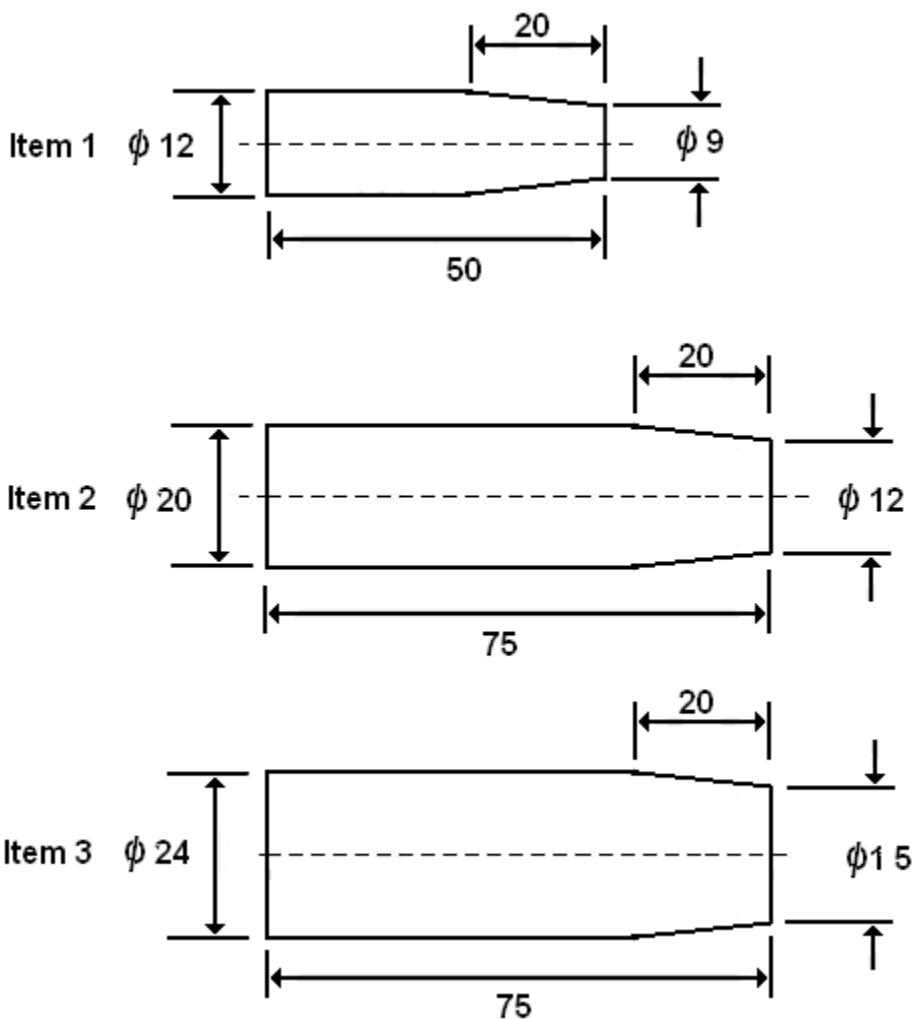


Fig E115 - Post & Rail Fencing (Creosote Treated)

## APPENDIX A5 - Wood Pole Plugs



### APPLICATION

Item 1 E5 Code 50105 for plugging holes made with the Mattson size No. 3 increment borer

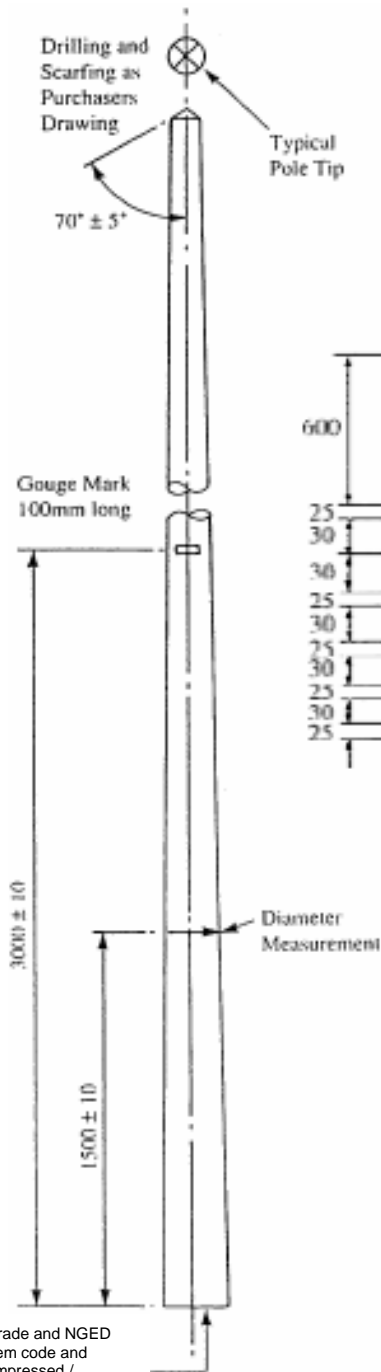
Item 2 for plugging unused LV pole holes (18mm dia)

Item 3 E5 Code 50106 for plugging unused HV pole holes (22mm dia)

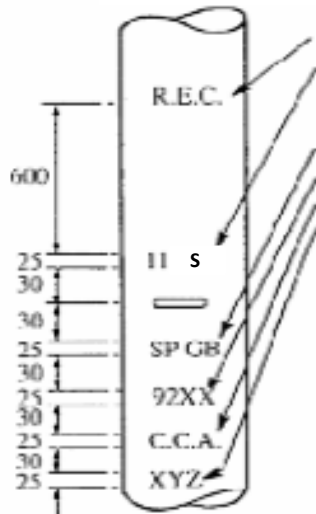
### MATERIAL:

Hardwood (e.g. Beech / Ramin) straight grained and free from knots, pressure metal oxide treated as BS 4072.

## APPENDIX B1 - Marking by Routing, Gouging, Branding



Typical layout



### MARKING GENERALLY AS BS EN 12510

1. Ownership mark – i.e. NGED
2. Length and class of pole - e.g. 10.5S (10.5 metre stout), 10.5MS (10.5 metre medium stout)
3. Species and origin – i.e. (PS) Pinus Sylvestris, (SE) Sweden, (NO) Norway, (FI) Finland
4. Month and year of preservation – e.g. 11-2015
5. Preservative – Type
6. Initials of supplier and fabrication plant
7. Each pole to be passed by an inspector and stamped accordingly.
8. Overall Length and class of pole to be marked on the butt
9. CE mark

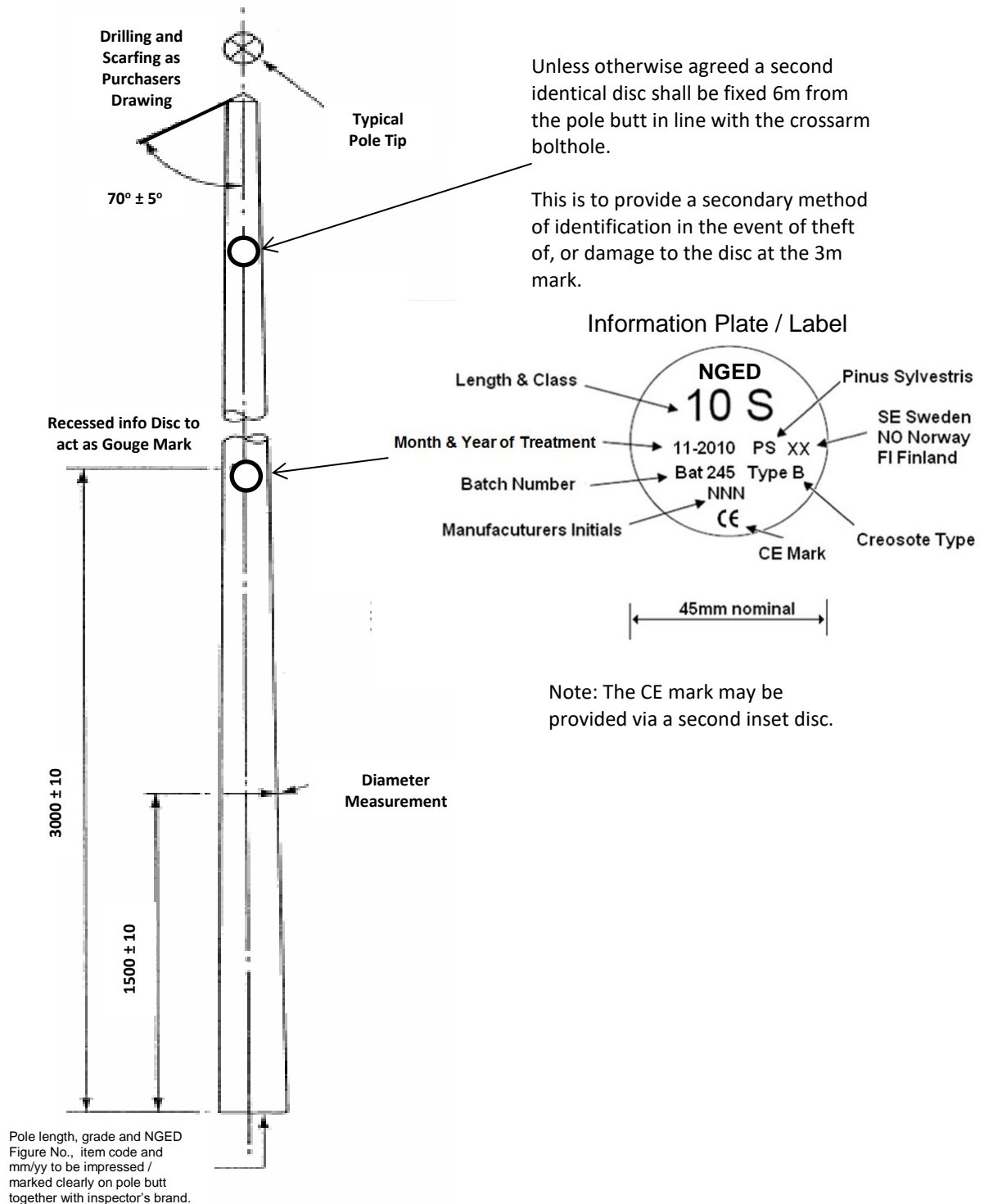
SPECIES CODE		COUNTRY OF ORIGIN	
Corsican Pine	PN	United Kingdom	GB
Douglas Fir	PM	Canada	CA
Lodgepole Pine	PC	Finland	FI
Larch, Dunkeld	LE	Norway	NO
Larch, European		Sweden	SE
Larch, Japanese		South Africa	SA
Norway Spruce	PA	United States of America	US
Redwood or Scots Pine	PS		
Sitka Spruce	PSI		
Western Red Cedar	TP		

All dimensions in millimetres

Pole length, grade and NGED Figure No., item code and mm/yy to be impressed / marked clearly on pole butt together with inspector's brand.

**APPENDIX B2 - Marking of inset information disc, plate or label that is preservative, treatment, UV resistant, environment and cattle proof.**

The information disc shall be placed 3m from the butt to act as the gouge mark.



## APPENDIX C

### UNGRADED WOOD POLE QUALITY GUIDANCE

[Appendix C Wood pole quality inspection crib sheet.doc](#)

## APPENDIX D

[ENACTS 43-88 Issue 7:2021](#)

## APPENDIX E

### SUPERSEDED DOCUMENTATION

This document supersedes EE SPEC: 129/1 dated September 2016 which has now been withdrawn.

## APPENDIX F

### RECORD OF COMMENT DURING CONSULTATION

No comments received.

## APPENDIX G

### KEY WORDS

None