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SAFETY SIGNS AND INFORMATION PLATES FOR OVERHEAD LINES

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PURPOSE AND SCOPE

This document forms part of a suite of documents which define National Grid's functional and performance requirements for new plant and equipment.

This specification covers the material, symbols, colours and text of Safety Signs, Property Plates, Tower Number Plates, Circuit Identification Plates, Helicopter Plates, Flight Obstruction Plates and Non-Standard Design Plates. There is also guidance for the attachment requirements of the Plates to Towers.

Circuit Colour Plates - Shall be 2mm minimum thickness polycarbonate.

Property Plates, No Plates, Danger of Death Signs and Non Standard Design Plates – Shall be 4mm minimum thickness polycarbonate with supporting brackets.

Helicopter Plates and Flight Obstruction Plates - Shall be vitreous enamel with supporting brackets.

PART 1 – PROCEDURAL

1 GENERAL REQUIREMENTS

1.1 Polycarbonate Plates

Property Plates, No Plates, Danger of Death Signs and Non Standard Design Plates for transmission towers shall be manufactured from 4mm Polycarbonate with each corner having a generous radius. The plates shall be coloured to match the British Standard (BS) colours given in table 1. The materials used shall be stable to ultra violet light and shall not fade to an illegible level within 20 years. The plates shall be impact resistant to BS EN 356:2000.

1.2 Vitreous Enamel Plates

Helicopter Plates and Flight Obstruction Plates for transmission towers shall be manufactured from vitreous enamelled, iron plate of 1.5mm thickness to BS EN 1516 grade grey cast iron. The plates shall have the corners cropped about 13mm to an approximate 45° angle. The plates, including edges, shall be enamelled to a thickness which would enable the impact test requirements in BS 1344 Part 21:1993 to be met and also to provide protection against corrosion for at least 20 years. All materials and processes shall be stable to ultra violet light and not fade to an illegible level within 20 years. The plates shall be coloured to match the British Standard (BS) colours given in table 1.

Details of plates are shown in Appendix A. All plates shall bear the year of manufacture and the manufacturers mark on the reverse side and shall be contained in protective packing for transport.

The signs shall be supported by steel straps suspended from a tower member using 'J' bolts and clamps, See Figure 7. The steel straps used to support the plates shall be to BS EN 10025 grade FE430A or equivalent and galvanised to BS EN 1461 or equivalent. All bolts passing through the plates shall be fitted with washers in the order shown in Figures 2 and 7. The plates shall be hung so as to present the sign text as horizontally as possible.

Plate Type	Background Colour	Legend Colour
Telephone and property number plate	White (BS 5252: 00 E 55)	Red (BS 5252: 04 E 53)
Tower number plate	White (BS 5252: 00 E 55)	Red (BS 5252: 04 E 53)
Circuit identification plates See 1.3 for Colour and shape specification	Post Office red (BS 381C: 538) French blue (BS 381C: 166) Lemon (BS 381C: 355) Grass green (BS 381C: 218) Dark violet (BS 381C: 796) Light orange (BS 381C: 557) White (BS 381C) Black (BS 381C)	
Flight obstruction plates (helicopter patrol)	White (BS 5252: 00 E 55)	Red stripes (BS 5252: 04 E 53)
Helicopter patrol plates	White (BS 5252: 00 E 55)	Black (BS 5252: 00 E 53)
Safety Sign plates, English, and English and Welsh versions	Yellow (BS 381 C)	Black (BS 5252: 00 E 53)
Non-Standard Design Plates	White (BS 5252: 00 E 55)	Black (BS 5252: 00 E 53)

Table 1 - Tower Plates, Colours and Commodity Codes for Existing Designs

1.3 Safety Signs

Safety signs shall be designed in accordance with Figure 8A in Appendix A, with dual language for use in Wales (see figure 8B). Two safety signs shall be fitted to **Non-Vulnerable** towers and four shall be fitted to **Vulnerable** towers as required by the Energy Networks Association Technical Specification 43-90.

Table 1 lists the relevant colours.

Safety signs shall be fitted to each tower in the positions shown in Section 6, Figure 4.

1.4 Telephone Number and Tower Identification Plates

Telephone Number plates and Tower Identification plates shall be designed in accordance with Figures 9 and 10 respectively. Telephone number plates shall have the Tower Identification Plates attached and centred at the bottom.

Table 1 identifies the relevant colours.

Telephone Number and Tower Identification plates shall be fitted to each tower in the position shown in Section 6, Figure 3. A tower that has been assessed as vulnerable may require Telephone Number and Tower Identification plates to be fitted in more than one location on the tower. This will be at the discretion of the National Grid engineer and will be specified for each contract.

1.5 Circuit Identification Plates

Circuit Identification Plates shall be designed in accordance with Figure 11. The colours and shapes shown in Figure 11 are for example only. Actual colours/shapes shall be under the control of the Network Operations Centre (NOC) and will be specified in the line contract. The NOC shall be consulted for approval of new Circuit Identification Plates to ensure no conflict with existing circuits.

Wristlets consisting of a watch type strap and coloured panel shall also be issued for each circuit and shall have the same colours and shapes as the circuit they represent.

Table 1 identifies the relevant colours.

Circuit Identification Plates shall be fitted, when required, in the positions shown in Section 6, Figure 1.

1.6 Non-Standard Design Plates

Non-Standard Design plates shall be designed in accordance with Figure 12. Non-Standard design plates shall be fitted on towers where significant modifications to the line design have been made after construction or during refurbishment. This usually occurs as a result of redesign for operation at a higher conductor rated temperature but shall also be used for towers with parallel sided inserts or for any other non-standard applications which require the attention of linesmen working on the tower.

Table 1 identifies the relevant colours.

Non-Standard Design plates shall be fitted to the relevant towers in the positions shown in Section 6, Figure 5.

1.7 Helicopter Patrol Plates and Flight Obstruction Plates

Helicopter Patrol plates and Flight Obstruction plates shall be designed in accordance with Figures 13 and 14 respectively.

Helicopter Patrol plates shall be fitted to every tower whose number ends in 0 or 5.

Flight Obstruction plates shall be fitted on the three towers before an obstruction (typically a tall river crossing tower, telecoms/radio masts or Back-Staying wires). A National Grid **Overhead Line** Engineer shall be consulted for clarification of the requirements of an individual route. The Flight Obstruction plates shall indicate proximity to the obstruction by displaying three, two or one diagonal red stripe or stripes.

Table 1 identifies the relevant colours.

Helicopter Patrol plates and Flight Obstruction plates shall be fitted to the relevant towers as indicated in Section 6, Figure 6.

1.8 Flag Brackets and Flags

Flag brackets and flags shall be unique to each circuit. The designs shall be under the control of the NOC and will be specified in the line contract.

Note - Where there are issues with plates being obscured from view, fouling, or (in the case of a plate backing directly on to the steelwork) the edges extending beyond the edge of the tower steelwork, then the plate should be moved to another position under the guidance of a supervising engineer in consultation with Asset Engineering as appropriate.

2 FORMS AND RECORDS

Not applicable.

PART 2 - DEFINITIONS AND DOCUMENT HISTORY

3 DEFINITIONS

See TGN (E) 194 for guidance on the classification of Vulnerable and Non-Vulnerable towers.

4 AMENDMENTS RECORD

Issue	Date	Summary of Changes / Reasons	Author(s)	Approved By (Inc. Job Title)
2	September 1993			Mike Humphries General Manager Technology and Science Division
3	February 1999	New Information Signs added		John Scott General Manager Engineering and Technology
4	July 2007	Title change due to ACD's being moved to new document (TS 3.4.27). Removed references to NS-E4. Added reference to PS and TGN. Added data and references relevant for Polycarbonate plates. BS EN 1461 supersedes BS 729	Mark Simmons/ Dan Anderson Asset Management	Edgar Goddard Electricity Network Investment Manager
5	December 2007	Figure 2 updated to show additional steel washer	David Clutterbuck	Edgar Goddard Electricity Network Investment Manager
6	February 2010	Purpose and scope updated. Figure 2 updated to show only 1 steel washer	Neil Loftus Asset Management	David Wright Electricity Network Investment Manager