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Standard

Labels for OHW Structures

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Standard Approval

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Document Control

Version	Summary of Change
1.0	First issue

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Preface

The Asset Standards Authority (ASA) develops, controls, maintains, and publishes standards and documentation for transport assets for New South Wales, using expertise from the engineering functions of the ASA and industry.

ASA publications comprise network and asset standards for NSW Rail Assets and include RailCorp engineering standards that were previously managed by RailCorp until July 2013.

This standard supersedes RailCorp standard EP 08 16 00 01 SP *Labels for OHW* Structures, Version 4.0.

The changes to previous content include:

- updates to reflect organisational changes and resulting changes in responsibilities
- minor amendments and clarification to content
- conversion of the standard to ASA numbering, format and style

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1. Scope and application

Overhead wiring structures are provided with labels to:

- identify each support and registration location on layouts, profiles, cross sections, and other overhead wiring design documents
- provide reference to critical locations, such as feeding structures, switches, overlaps, section insulators, on 1500 V sectioning diagrams
- provide reference to critical locations on electrical safety documents, such as 1500 V Authorities, Electrical Permits to Work
- provide references to locations in incident reports

They may also be used by staff of other disciplines, such as train drivers, for the purpose of identifying locations in the rail corridor.

This document sets out the requirements for the determination of overhead wiring structure numbers, as well as the requirements for the installation and maintenance of the structure labels.

2. Reference documents

Australian and international standards

AS/NZS 1734:1997 Aluminium and aluminium alloys – Flat sheet, coiled sheet and plate

AS 1743:2001 Road signs – Specifications

AS 1744:1975 Standard alphabets for road signs

AS 2700:2011 Colour standards for general purposes

Transport standards as published on ASA site

EP 08 00 00 01 SP Overhead wiring standards for the electrification of new routes

EP 08 00 00 02 SP Overhead wiring maintenance standards

ESC 210 Track Geometry and Stability

Other Transport standards

EP 00 00 00 00 MP Electrical Maintenance Plan

Drawings

EL 0518727 Railway overhead wiring – Labels for OHW structures – Details

3. Terms and definitions

The following definitions apply in this document:

AEO Authorised Engineering Organisation

ASA Asset Standards Authority

OHW Overhead wiring

4. Overhead wiring structure numbers

Overhead wiring structure numbers are provided to give a unique reference name to each overhead wiring support or registration location. This provision ensures that there will not be any ambiguity when staff is directed to a specific location.

4.1 Convention and format

An overhead wiring structure label shall be an alphanumeric code consisting of a prefix with one to three letters, followed by a number.

The prefix is assigned by the ASA Lead Electrical Engineer to denote the line on which the structure is located. Table 1 and Table 2 in Appendix A list the prefixes that are currently used in the RailCorp network, and the meaning of the prefixes when they were introduced.

The number in the label denotes the nominal distance, in kilometres, of the structure from a reference location at Central.

For example, the structure label 'SW13+351' denotes that the structure is on the Illawarra Line and located at a nominal distance of 13.351 km from the reference location. A '+' sign is used instead of a decimal point. The '+' sign distinguishes the 'Electrical kilometrage' from track kilometrage (see section 4.5). The difference between the two can be quite large at some locations.

All structure labels shall have three digits after the '+' sign. All digits after the third are to be truncated. Some existing structure labels have four digits after the '+' sign. These structure numbers should be truncated to three decimal places when the existing labels are replaced.

4.2 Distance between adjacent structures

The 'distance' between adjacent structures is the straight line distance between the points of intersection of the Down Main track centreline and the centrelines of the structures. See Figure 1.

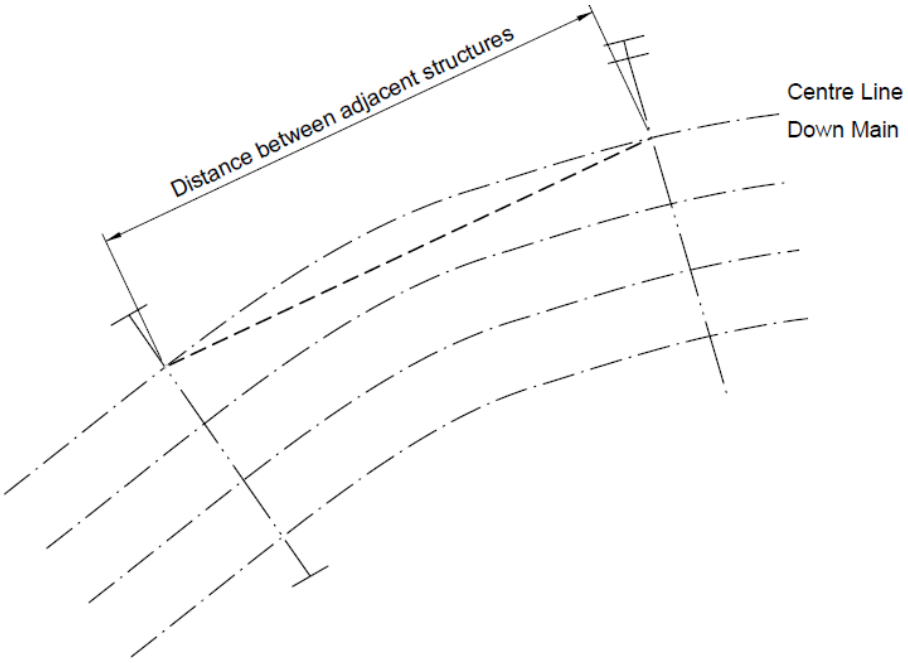

Figure 1 - Distance between adjacent structures

4.3 Determination of new structure numbers

The numbering of new structures shall be determined by the overhead wiring designer.

4.3.1 New structures in existing network

The number of a new structure shall be determined from the number of the nearest adjacent existing structure on the same line, and the distance between the two structures.

4.3.2 New electrification

Structure numbers on a new electrification route shall be determined by referencing the number of the existing structure that is nearest to the start (Sydney end) of the new line. The 'distance' of the first structure on the new route is the sum (L1 + L2) of the following straight line distances:

- from the reference existing structure to the junction between the Down Main tracks of new and existing lines (L1). Note that L1 is a negative number if the reference existing structure is located on the country side of the junction
- from the junction between the new and existing lines to the new structure (L2)

See Figure 2.

Numbers for successive structures are determined from the distance to the adjacent structure on the Sydney side.

The prefix of all structures along a new electrification route shall be approved by the ASA Lead Electrical Engineer. The prefix of the first few structures supporting the overhead wiring over the new line may not have the prefix for the new line. See section 4.4 and Figure 3.

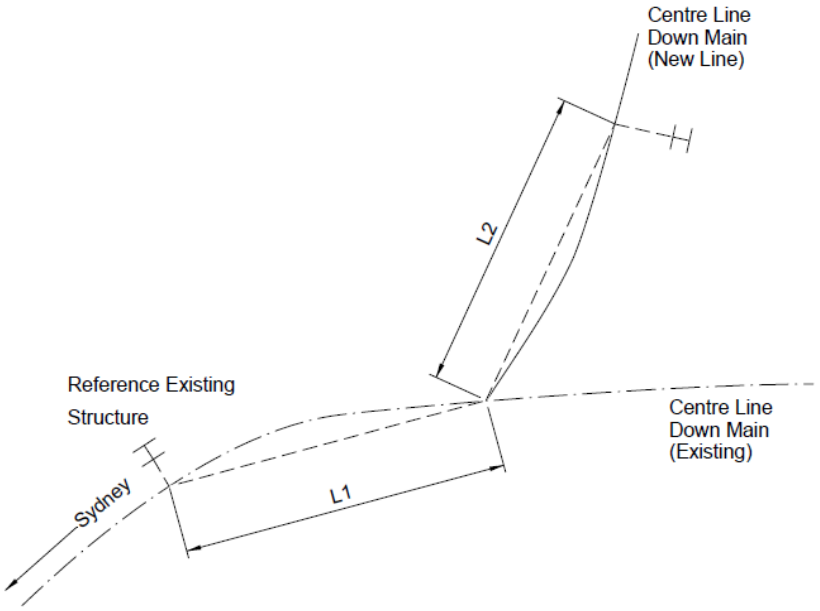

Figure 2 - Determination of structure number for new electrification route

4.4 Application

The following applies to the provision of structure numbers:

- there shall only be one structure number associated with an overhead wiring structure, that is, all labels on the different masts of a portal structure shall have the same number and prefix
- structures on the same line and located opposite to each other shall have the same number (based on the Down track)
- a structure on the country side shall always have a larger structure number. The only exception allowed is at junctions. The prefix of the structure number shall be changed with such exception. See Figure 4.

To comply with the above requirements, the difference in successive structure numbers may differ from the actual bay length. This discrepancy shall be clearly indicated on the overhead wiring layout by a note adjacent to the relevant bay, example, '54 m Actual'.

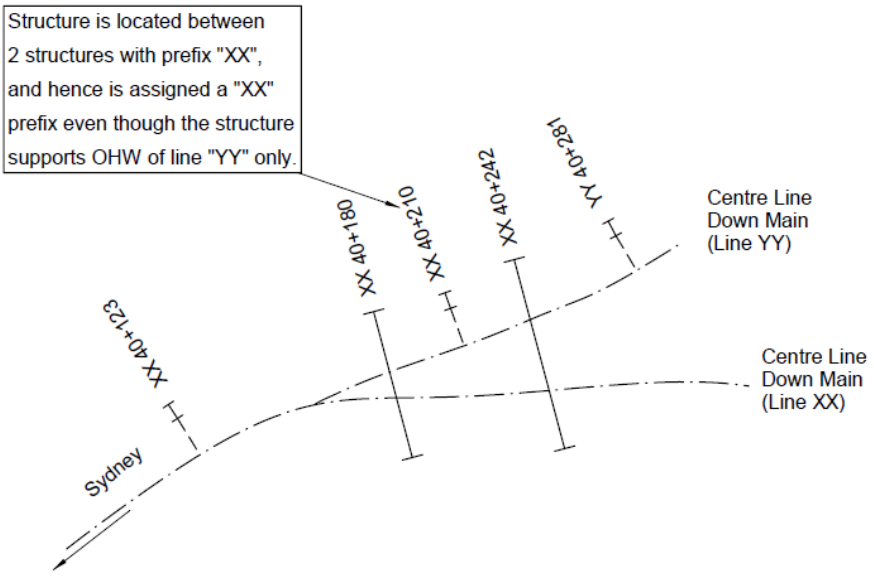

Figure 3 - Structure number prefixes at junctions

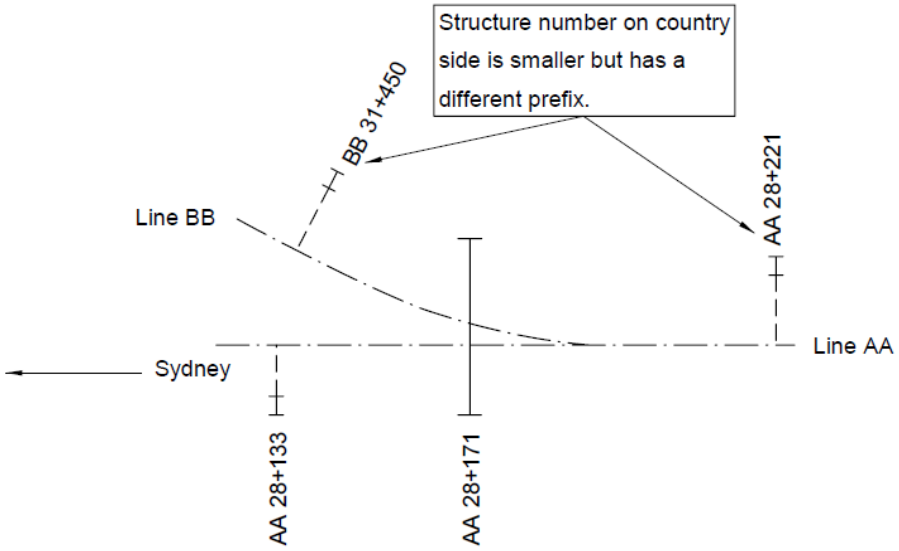

Figure 4 - Structure numbers at junctions

4.5 Overhead wiring structure numbers and track kilometrage

While the number in an overhead wiring structure label denotes the nominal distance of the structure from a reference location at Central, this number is not the same as the track kilometrage. See ESC 210 for the determination of track kilometrage.

Overhead wiring structure numbers shall be regarded as a label for the structure only.

5. Manufacturing details

5.1 Labels for overhead wiring masts, portals and cantilever masts

Overhead wiring structure labels shall be manufactured in accordance with Drawing EL0518727.

5.1.1 Material

The label shall be manufactured from 70 mm x 1.6 mm marine grade aluminium sheet in accordance with AS 1743:2001 and AS/NZS 1734:1997.

5.1.2 Background

The label background shall be non-reflective yellow in accordance with AS 1743:2001 and AS 2700:2011.

5.1.3 Lettering

The label lettering shall be black, 60 mm high, Series C in accordance with AS 1744:1975. The '+' symbol shall be black and 40 mm high.

The letters shall be vertically aligned with a space of 20 mm between letters.

5.1.4 Attachment holes

Where specified on the order, three 5.5 mm attachment holes are to be drilled in each label as shown on Drawing EL 0518727. See section 6.3.

5.2 Labels for other structures

Labels for other overhead wiring structures shall be manufactured in accordance with Drawing EL 0518727. Where site-specific constraints do not allow the use of standard labels, labels specific to the project or location shall be detailed by the overhead wiring designer, and accepted by the relevant AEO.

6. Installation

6.1 Provision of labels

Overhead wiring structure labels shall be fitted to all structures that anchor, support or register overhead wiring conductors and associated equipment, including:

- overhead wiring masts and / or wood poles
- overhead wiring portals
- overhead wiring cantilever masts
- overhead wiring attachment points from overline bridges and airspace structures

- overhead wiring attachments (drop verticals, catenary support brackets, pull off brackets) in tunnels
- anchors on walls or structures
- structures supporting feeder cables
- structures for the mounting of overhead wiring switches

An overhead wiring structure shall be fitted with a label satisfying the requirements of this document prior to the energisation of overhead wiring and/or associated equipment on the structure.

6.2 Position of labels

6.2.1 Overhead wiring masts, portals and cantilever masts

Labels are to be provided on each mast of the structure and facing the direction of traffic on the track adjacent to the mast. Labels shall be provided on both faces of the mast for:

- single track lines
- where the mast is located between tracks with opposite directions of traffic
- where bi-directional traffic is normally applicable to the track adjacent to the mast

Where an access road is present, a label facing the access road shall also be provided on the mast closest to the access road.

Where possible, the label is to be positioned at a height of between 3 m and 4 m above ground level to avoid graffiti.

See Figure 5, Figure 6 and Figure 7 for examples.

Where other equipment, such as weight tension regulator and 1500 V switch arrangement, on the mast may obstruct the sighting of the label when it is placed in the position specified above, the label may be placed facing the track.

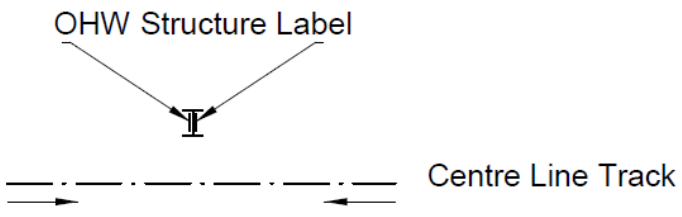

Figure 5 - Locations of labels for single line

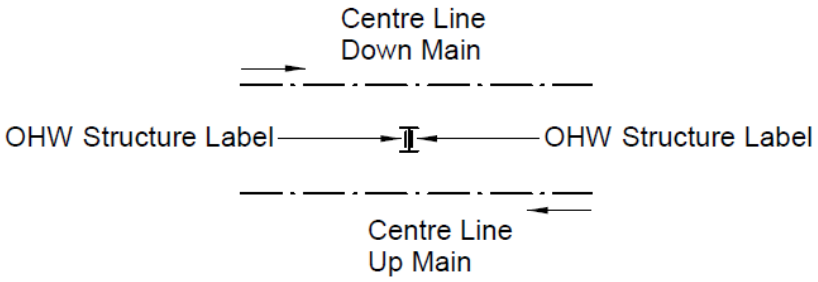

Figure 6 - Locations of labels for single mast located between tracks

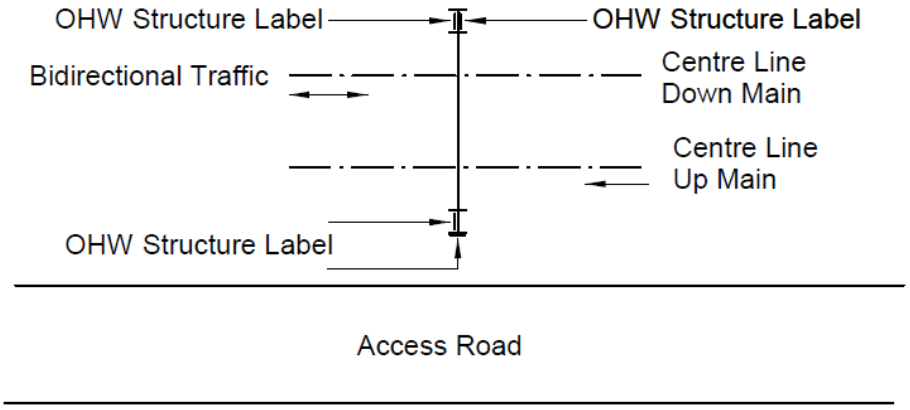

Figure 7 - Locations of labels on portal mast where an access road is present

6.2.2 Other structures

The position of labels for other structures shall be specified by the overhead wiring designer. The specified position shall be such that the risk of damage to the label by graffiti is minimised.

6.3 Attachment of labels

Labels are to be attached to structures so that their edges do not protrude beyond the edges of the structure surface.

Labels are to be attached vertically to overhead wiring structures with "Selleys roof and gutter neutral cure silicone sealant" or ASA-approved equivalent. Surfaces shall be cleaned in accordance with the sealant manufacturer's instructions prior to the application of the sealant.

Sufficient sealant shall be applied to the back of the label to ensure contact between dissimilar metals is prevented.

Where the attachment surface is not suitable for attachment by sealants, the labels may be attached by screws or nails. These labels shall be ordered with three pre-drilled holes as shown on Drawing EL0518727.

7. Maintenance

Overhead wiring structure labels are to be maintained in accordance with EP 00 00 00 00 MP *Technical Maintenance Plan*. The overhead wiring maintainer shall ensure that:

- all overhead wiring structures supporting live overhead wiring and/or associated equipment are fitted with labels in accordance with this document
- labels are clearly visible and that there are no obstructions to the sighting of the labels
- OHW structure numbers shown on the labels are identical to those shown on layouts, other design documents, and 1500 V sectioning diagrams

Appendix A – OHW structure label prefixes

Table 1 lists the OHW structure labels for main lines and Table 2 lists OHW structure labels for goods lines, sidings and yards.

Table 1 - OHW structure label prefixes – Main Lines

Prefix	Line and locations	Meaning when first used
AL	Airport Line (Prince Alfred to Wolli Creek)	Airport Line
B	Bankstown Line (Meeks Road to Sefton)	Bankstown
CC	Carlingford Line	Clyde to Carlingford
CE	Central to Goulburn St	City East
CI	City Inner	City Inner
CK	Illawarra (Coniston to Kiama)	Coniston to Kiama
CO	City Outer	City Outer
DES	Down Eastern Suburbs (Central to Bondi Junction)	Down Eastern Suburbs
DIR	Down Illawarra Relief (Erskineville to Central)	Down Illawarra Relief
DS	Down Shore (Central to Argyle)	Down Shore
EH	East Hills Line (East Hills to Glenfield)	East Hills
FL	Homebush Bay West Fork	Flemington to Lidcombe
G	Old South (Granville to Cabramatta)	Granville
GB	South West Rail Link (SWRL)	Glenfield to Bringelly
H	Main North (Strathfield to Hornsby)	Hornsby
HB	Homebush Bay Loop	Homebush Bay
HW	Homebush Bay West Fork	Homebush Bay West Fork
LL	Lidcombe Loop	Lidcombe Loop
MH	North Shore Line (Waverton to Hornsby)	Milsons Point to Hornsby
ML	Epping to Chatswood Rail Link (ECRL)	Macquarie Line
MS	Main Suburban (Macdonaldtown to Granville)	Main Suburban
N	Main North (Hornsby to Newcastle)	Newcastle
NS	North Shore (Argyle to Waverton)	North Shore
R	Richmond Line	Richmond
S	South (Lidcombe to Glenlee)	South
SC	Cronulla	Sutherland to Cronulla
SL	Western Line (Granville to Bowenfels)	Sydney to Lithgow
SW	Illawarra (Central to Coniston) / Main Suburban (Central to Macdonaldtown)	Sydney to Waterfall
TE	East Hills Line (Turrella to East Hills)	Turrella to East Hills
UES	Up Eastern Suburbs (Central to Bondi Junction)	Up Eastern Suburbs
UIR	Up Illawarra Relief (Erskineville to Central)	Up Illawarra Relief
US	Up Shore (Central to Argyle)	Up Shore
WP	Port Kembla (Coniston to Port Kembla)	Wollongong to Port Kembla

Table 2 - OHW structure label prefixes – Goods Lines, Sidings and Yards

Prefix	Line and locations	Meaning when first used
B	Sydney Yard	Bankstown Line
BL	Goods (Campsie to Flemington West Junction)	Belmore to Lidcombe
BW	Goods (Marrickville to Tempe)	
E	Enfield Yard	Enfield
E	Eveleigh Yard	Eveleigh
E	Goods Line (Chullora to Sefton West Junction)	
ES	Chullora South Fork	
F	Flemington Yard / Flemington Goods	Flemington
FE	Enfield East Fork	
GL	Goods Line (Sydenham to Meeks Road West Junction)	
HL	North Strathfield Goods	Homebush Loop
IH	Inner Harbour Balloon Loop (Port Kembla)	Inner Harbour
LW	Chullora Sigway Branch	
M	Mortdale Maintenance Centre	Mortdale
MH	North Sydney Car Siding Branch and Sidings	Milsons Point to Hornsby
PK	Port Kembla Balloon Loop	Port Kembla
RC	Ropes Creek Sidings	Ropes Creek
SD	Sandown Branch	Sandown