AUSTRALIAN RAIL TRACK CORPORATION LTD

Discipline: Engineering (Track & Civil) **Category: Standard**

Drawing Standard for Plans Showing Horizontal Alignment

ETD-00-01

Applicability

New South Wales	✓	**CRIA (NSW CRN)**	

Primary Source

ARTC NSW Standard TEP 24

Document Status

Version	Date Reviewed	Prepared by	Reviewed by	Endorsed	Approved
1.1	18 Jun 10	Standards	Manager Standards	Exec Manager SS&P 21/06/2010	CEO

Amendment Record

Version	Date Reviewed	Clause	Description of Amendment
1.0	01 Dec 09		Implementation draft. Supersedes NSW Standard TEP 24 v1.2
1.1	18 Jun 10		Banner added regarding mandatory requirements in other documents and alternative interpretations.

Contents

Mandatory requirements also exist in other documents.

Where alternative interpretations occur, the Manager Standards shall be informed so the ambiguity can be removed. Pending removal of the ambiguity the interpretation with the safest outcome shall be adopted.

1 Scope

This specification outlines the minimum requirements for the following plans defining horizontal track alignment:

- Working plans
- Per way design plans
- Layout and set out plans
- Engineering survey plans.

2 General

Drawing practice, plan sizes, symbols and abbreviations are to comply with AS 1100 Part 401 unless specified otherwise in this standard.

The Sydney end of the railway line is to be to the left of the drawing. Each track is to be shown either by a centreline or by two parallel lines each representing a rail. A north point is to be shown on the plan view.

Co-ordinate grid marks are to be shown. The Easting and Northing of these marks is to be shown around the perimeter of the drawing.

Framepoint co-ordinates are to be to 3 decimal places and derived in accordance with ETD-00-03 Alignment Surveys.

All dimensions are to be in metres shown to 3 decimal places (ie, to the nearest millimetre) except for superelevation which is to be shown in millimetres.

All angles and bearings are to be shown to the nearest second in the form DD^{o} MM' SS".

If a large project is covered by several standard size plans, then the information on each plan should overlap the adjoining plan sufficiently to make each plan self-contained. For example by providing the co-ordinates of the overlapping endpoints, the need to refer to more than one plan may be avoided.

3 Title Block & Notation Information

The title block is to be located either:

- Along the bottom of the drawing; or
- In the bottom right hand corner with other notations located above it.

The first method is preferred for standard size drawings and the latter method is preferred for roll plans.

The information required in the title block or as notation includes:

1) Title or name of the drawing including:
    - Locality
    - Content
    - Project title
    - Kilometrage from and to
    - Line
2) The name of the contractor and section that has drawn the plan.

3) Dated signatures or initials to verify and approve the quality at the various stages of design, drawing and checking and to attest that those people accept certain responsibilities for the content and presentation of the plan. These responsibilities should be formally set out for quality assurance purposes.
4) Drawing number - to be placed in the bottom right hand corner.
5) Scales expressed as a ratio: horizontal and vertical.
6) Amendment reference: description, date and signature/initial.
7) Horizontal co-ordinate origin including:
   - system (eg, ISG)
   - origin or mark/s adopted include Easting and Northing
   - source eg, field sheet or Lands Department
   - Accuracy classification as defined by ETD-00-04.
8) Vertical datum details if required should include:
   - datum (eg, AHD) as defined by ETD-00-04
   - mark adopted and its reduced level
   - source eg, Lands Department
9) Kilometrage details including:
   - Origin eg, TP monument
   - Km adopted
   - Source.
10) References to related drawings, field sheets and files.
11) CAD design file number.

4 Horizontal Alignment Detail

As per ETD-00-03 the TP, TRS, CTP, CTRS and the centre co-ordinates only are to be used to define the horizontal geometry. All other information is 'redundant' and is included on drawings for field checking purposes only.

The minimum information to be included on drawings is outlined below.

4.1 Framepoints

- Co-ordinates (E, N)
- Kilometrage (km)
- Tangent point (TP)
- Transition point (TRS)
- Compound tangent point (CTP)
- Compound transition point (CTRS)
- Centre of circle (CENTRE or ⊙)
- Bend (BEND)

4.2 Non-Transitioned Curve

- Radius (R)
- Circular arc length (ARC)

4.3 Transitioned Curve

- Radius (R)
- Circular arc (ARC)
- Transition detail
  - x_c (x_c)
  - Transition length (L)
  - m (m)
- Design superelevation, mm (Ea)
- Design speed (Vm) for both high speed and normal trains.

4.4 Compound Transition Curve

- Full xc (x_c)
- Partial transition length (L)
- m (m)

4.5 Straights

- Straight Length (STR)
- Bearing, calculated between TPs to the nearest second

4.6 Kilometrage

- The kilometrage of centreline frame points to the nearest mm.
- A "running" kilometrage each 100 metre interval and kilometre, shown by a circle and double circle respectively in the centreline of the down main track.
- The kilometrage is to be drawn such that it can be read facing Sydney on the plan.
- Kilometrage adjustments are to be shown as per ETD-00-03.

5 Per Way Detail

Turnout information is to include:

- Turnout framepoint co-ordinates (E,N) including:
- Points (PTS)
- Main line crossing (XING ML)
- Turnout crossing (XING T/O)
- Rail weight eg, 60kg
- Turnout length (TOL)
- Crossing rate, Catalogue No. eg, 1 in 8.25, XL 284
- Point's location is to be marked by a short transverse line.

Track centres are to be shown.

Each track is to be identified eg, Down Main.

All proposed track alterations are to be highlighted.

6 Other Detail

Survey control mark location, type, E, N, and reduced level are to be shown.

When required the railway boundary (or its approximate location) is to be shown and labelled appropriately.

All adjacent structures relevant to the horizontal alignment should be shown.

Centreline clearances to structures should be shown where required. The Structure Gauge adopted should be stated.

7 Scales

The recommended scales are:

1:4000	-	Working plans
1:2000	-	Deviation proposal plans
1:1000	-	Non-detailed yard layouts
1:500	-	Detailed layouts and general setting out
1:200	-	Detailed setting out