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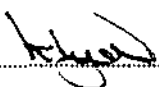
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Issue	E1
Date	September 2005

Business Process Document

Specification for computer aided design formats for electrification and plant documentation

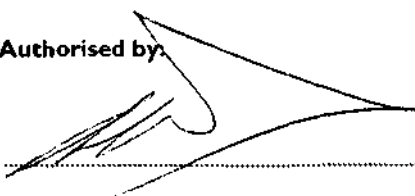
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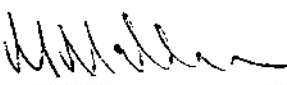
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Issue record

Issue	Date	Comments
EI	September 2005	New standard

Implementation

28 September 2005

Compliance

This Network Rail specification is mandatory and must be complied with by Network Rail and its contractors from 28 September 2005.

When this specification is implemented, it is permissible for all projects, which have formally completed GRIP Level 4, to continue to comply with the Issue of any relevant Network Rail standards current when GRIP Level 4 was reached and not to comply with requirements contained herein unless the head of electrification and fixed plant has stipulated otherwise in the accompanying briefing note.

Where the head of electrification and fixed plant has specified that all projects will comply with the requirements, specific authority not to comply can be sought in the usual manner using the appropriate non-compliance authority processes described in Network Rail standard, [NR/SP/STP/045](#) Managing the process for non-compliance authority (formerly RT/LS/P/045).

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Supply

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Contents

1	Purpose	5
2	Scope	5
3	Reference documentation	5
4	Definitions	6
5	CAD software	8
6	Preparation of drawings	8
6.1	General	8
6.2	Scales	9
6.3	Sheet size, orientation and folding	9
6.4	Margins and borders	10
6.5	Text in drawings	10
6.6	Line styles	11
6.7	The use of colour	11
6.8	Standard levels	11
6.9	Cells and cell libraries	12
6.10	Dimensioning	12
7	Drawing title block	12
7.1	General	12
7.2	Sequential number	13
7.3	Issue status	13
7.4	Revision number	14
8	Types of drawings	14
9	Checking and approval of drawings	15
10	Design changes to drawings	16
11	Deliverables	16
Appendix I	Title block first line – drawing type examples	17
Appendix II	Example discipline code	18
Appendix III	Typical abbreviations	19
Appendix IV	Drawing attributes	20
Appendix V	Drawing symbology	21

Ref:	NR/SP/ELP/27300
Issue:	E1
Date:	September 2005

Appendix VI A1/A0 Title Block

22



1 Purpose

The purpose of this document is to ensure that CAD documentation is consistent in appearance and format. The processes described in this specification shall be applied to any 'drawing' which includes any document that is wholly or primarily graphical in nature.

2 Scope

This document is applicable to the production of all CAD documentation for E&P projects whether created by the E&P CAD team or 3rd parties (individual contractors and their sub-contractors, or consultants).

Excluded from the scope of this document are drawings associated with Overhead Line, Conductor Rail, Negative Bonding, Comprehensive Track Diagrams, Signalling drawings, and Substation Operations Diagrams, which are special cases and must comply with the requirements of the Network Records Group (NRG) specifications and any other relevant Network Rail standards.

3 Reference documentation

BS 8888	Technical product documentation (TPD). Specification for defining, specifying and graphically representing products
BS EN 60617	Graphical symbols for diagrams
BS EN 61346	Industrial systems, installations and equipment and industrial products. Structuring principles and reference designations
BS EN ISO 5457	Technical Product Documentation - Sizes & layout of drawing sheets
BS EN ISO 9431	Construction Drawings – Spaces for drawing and for text, and title blocks on drawing sheets
BS EN ISO 128-21	Technical drawings – General principles of presentation. Preparation of lines by CAD systems

Any requests to deviate from this specification must be made to the E&P CAD Manager prior to commencement of work.

4 Definitions

MicroStation	CAD application software from Bentley Systems Inc. The standard CAD platform for Network Rail.
AutoCAD	CAD application software from Autodesk Inc.
CAD	Computer Aided Design. A generic term for drawing production and design using specialist computer graphics application software.
CAD Data	CAD file(s) containing graphic data.
Cell	A graphic element(s) saved as a complex shape within a “cell library” for repeated insertion in one or more CAD files.
Block	AutoCAD’s equivalent of MicroStation cell above.
BS EN	British Standard Euro Norm
Colour Table	A file that maps colours to graphic elements. When attached to a CAD file it determines which colour is displayed for each graphic element in the file; consequently, changing the colour table can change the appearance of the graphics.
DGN Format	MicroStation file format. Commonly termed “design file”.
DWG Format	AutoCAD file format.
Drawing	A graphical depiction of an asset or design, enclosed in an approved drawing border, displaying a drawing number in accordance with the approved convention and carrying a signature of authorisation. Generally a 2D file, although sometimes details extracted from a 3D model.
2D, 3D Graphics	2D - graphical information defined in the X and Y directions. 3D - graphical information defined in the X, Y and Z directions.
Drawing File	A CAD file from which a drawing is plotted. The drawing file may often contain no more than title block text and general annotation as ‘active’ graphics – with the rest of the drawing information residing in other files that are attached to it as Reference Files.

DXF	Drawing Exchange Format. A CAD file exchange format developed by Autodesk Inc. for its AutoCAD drafting software. DXF files are ASCII records of all objects in a drawing file.
E&P	Electrification & Plant
GIS	Geographical Information System
ISO	International Organisation For Standardisation
Level	A virtual plane in the MicroStation file on which graphics are placed. Each file can contain many levels. Elements on a level may be manipulated independently to those on another level.
Layer	AutoCAD's equivalent of level above.
MARLIN	Mapping Assets Rail & Land Information reference system
Model file	A CAD file containing 2D or 3D graphics depicting an asset design layout etc. that is not composed as a drawing but may form the basis of one or more drawings by being attached as a Reference File using clipped boundaries to one or more Drawing Files.
MP&I	Major Projects & Investment
Packager	Bentley product within MicroStation that will produce a zipped folder of all source data and files that will recreate a CAD drawing on another computer system
Pack & Go	Autodesk product within AutoCAD that will produce a zipped folder of all source data and files that will recreate a CAD drawing on another computer system
Pen Table	A macro used by Bentley's IPlot plotting software to modify how elements appear on the plot by testing each element against a set of conditions and modifying its appearance from the default if the element matches the conditions.
Raster File	A raster file is produced when a drawing or graphic is electronically scanned. The resulting image quality may be soft or blurry as it is made up of a pattern of very small dots (pixels).
Reference File	A CAD file attached to another CAD file by means of the MicroStation 'Reference File' facility.
X-Ref	AutoCAD's equivalent to Reference File.