R1 05 80 02 Technical Directive

Tata Steel CAD-Drawing Rules

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Intended for the Location IJmuiden

The latest version can be retrieved via Intranet at Tata Steel IJmuiden (ProjectNet).

Information and modifications:
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1 Preface

Version 6.2 has been released with the migration to AutoCAD 2015. It supersedes all previous versions.

The main deviation from version 6.1 concern:
- Drawings must be supplied in AutoCAD 2013 DWG-format (paragraphs 3.1).

Further the Tata Steel AutoCAD templates have been changed.

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2 Objective and validity

2.1 Objectives of these Instructions

The objectives of these Instructions are:
- Establishment of a uniform method of working in the use of CAD drawings for Tata Steel (IJmuiden site) in such a manner that all drawings can be filed by means of standard procedures.
- Reduction in the exchange problems.

These Instructions are to be used at all times in conjunction with any other common drawing regulations, as stipulated in Technical Directive R1058001

2.2 Application area

These Instructions apply to all personnel, Companies and Sub-contractors producing CAD drawings for Tata Steel (IJmuiden site).

2.3 Validity

These Instructions replace all previous versions.

2.4 Acceptance test

- The supplier must submit a set of test drawings at the outset of the design work.
- These test drawings must be representative of the drawing package to be submitted.
- If drawings are produced by subcontractors, the latter must also submit their drawings for approval.
- The test drawings must be produced in accordance with the stipulations in these Instructions.
- The test drawings will only be used as reference documents after acceptance by the CAD support department.

2.4.1 Deviations from these regulations

If, in exceptional circumstances, it is necessary to deviate from these Instructions this will only be permitted with the written approval of the CAD support department of Tata Steel.

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3 General regulations

3.1 CAD system

- Drawings must be produced in AutoCAD 2015 and supplied in DWG-format (2013).
- Other versions of AutoCAD and other CAD-systems are not acceptable.

3.2 Protection of information

- The Supplier is responsible for complete software management including maintaining backup copies until submission to, and written acceptance by, Tata Steel.

3.3 Transfer of information

3.3.1 Media

CAD drawings must be submitted on one of the following media forms:
- CD/DVD-ROM (preference)
- USB memory stick
- E-mail (for small files)

3.3.2 Compression

- Drawings submitted on CD/DVD-ROM must not be compressed.
- Drawings submitted by e-mail must be compressed in ZIP format.
- Any other forms of transfer, such as so-called self-extracting files (EXE), are not permitted.

3.4 Documentation

Written transmittal notices are to be used for the submission of all drawings. These transmittal notices must contain the following:

- The name of the recipient
- The revision status
- The title of the drawings
- Paper size of the drawings

3.5 Modification of CAD drawings

- CAD drawings may only be modified using the CAD system mentioned in paragraph 3.1. Conversion to other systems is not permitted.
- The drawings to be modified will be made available by Tata Steel. Files retained by the supplier must not be used.

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4 Structure of drawings

4.1 Introduction

With respect to the arrangement of the drawings three methods of working are permitted which are described next.
Anyhow in paperspace there must exist a tab named *Layout1* in which the drawing is displayed correctly. No other layouts may exist in paperspace.

4.2 Paperspace (preference)

With this method of working all geometry must be drawn at full size in modelspace. The Tata Steel drawing frame, dimensions and other annotations are added in paperspace *Layout1*.
The drawing is put together within one or more viewports in *Layout1*.
The viewports must be defined in the layer *Viewport*.
All viewports must be "Display locked".

4.3 Modelspace 1:1

With this method of working all geometry must be drawn at full size in modelspace. The Tata Steel drawing frame is scaled to the required size to encompass the drawing.
In paperspace, *Layout1* the drawing must be displayed correctly (fitting to the paper).

4.4 Modelspace scaled to paper size

With this method of working all geometry is drawn in modelspace. The Tata Steel drawing frame is inserted at full size (1:1). Drawings with a scale factor other than 1:1 must be scaled to fit the drawing frame used.
In paperspace, *Layout1* the drawing must be displayed correctly (fitting to the paper).

4.5 External references

- The use of X-refs is not permitted.
- The use of raster images is not permitted.
- Connections to other files by means of OLE are not permitted.
- Any other external connections are not allowed.

4.6 3D

The use of 3D is only permitted in consultation with, and with the written approval of the CAD support department of Tata Steel.

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4.7 *Wipe-Out*

The use of Wipe-Out is not permitted.

4.8 *Shapes*

The use of Shapes is not permitted.

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5 Colour / lineweight / linetype

5.1 Colour and lineweight

 Color dependant plotstyles are to be used at all times.. The colour numbers 1 up to and including 8 represent lineweights in accordance with the table below. To all other colour numbers no lineweight is attached. These can be used in drawings where colour has another function other than lineweight.

colour number	Colour	lineweight
1	Red	0.25 mm
2	Yellow	0.35 mm
3	Green	0.50 mm
4	Cyan	0.70 mm
5	Blue	0.25 mm
6	magenta	0.25 mm
7	White	0.25 mm
8	8	0.18 mm

5.2 Linetypes

Only linetypes from the default AutoCAD ACADISO.LIN file are permitted.

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6 Layers

6.1 Layer names, colour and linetype

The structure of layers must correspond with the table below.
These layers are available in all Tata Steel templates

Layer name	Colour	Lintype	Purpose
0	7 (white)	Continuous	insertion of blocks
018CONTINUOUS	8	Continuous	continuous lines (lineweight 0.18 mm)
018CENTER	8	CENTER	center lines (lineweight 0.18 mm)
018CENTER2	8	CENTER2	center lines (lineweight 0.18 mm)
018HIDDEN	8	HIDDEN	dash lines (lineweight 0.18 mm)
018HIDDEN2	8	HIDDEN2	dash lines (lineweight 0.18 mm)
018PHANTOM	8	PHANTOM	phantom lines (linweight 0.18 mm)
018PHANTOM2	8	PHANTOM2	phantom lines (linweight 0.18 mm)
018TXT	8	Continuous	text (height 1.8 mm)
025CENTER	1 (red)	CENTER	center lines (lineweight 0.25 mm)
025CENTER2	1 (red)	CENTER2	center lines (lineweight 0.25 mm)
025CONTINUOUS	1 (red)	Continuous	continuous lines (lineweight 0.25 mm)
025DASHDOT	1 (red)	DASHDOT	center lines (lineweight 0.25 mm)
025DASHDOT2	1 (red)	DASHDOT2	center lines (lineweight 0.25 mm)
025DASHED	1 (red)	DASHED	dash lines (lineweight 0.25 mm)
025DASHEDX2	1 (red)	DASHEDX2	dash lines (lineweight 0.25 mm)
025HIDDEN	1 (red)	HIDDEN	dash lines (lineweight 0.25 mm)
025HIDDEN2	1 (red)	HIDDEN2	dash lines (lineweight 0.25 mm)
025PHANTOM	1 (red)	PHANTOM	phantom lines (linweight 0.25 mm)
025PHANTOM2	1 (red)	PHANTOM2	phantom lines (linweight 0.25 mm)
025TXT	1 (red)	Continuous	text (height 2.5 mm)
035CONTINUOUS	2 (yellow)	Continuous	continuous lines (lineweight 0.35 mm)
035DASHED	2 (yellow)	DASHED	dash lines (lineweight 0.35 mm)
035DASHEDX2	2 (yellow)	DASHEDX2	dash lines (lineweight 0.35 mm)
035HIDDEN	2 (yellow)	HIDDEN	dash lines (lineweight 0.35 mm)
035HIDDEN2	2 (yellow)	HIDDEN2	dash line (lineweight 0.35 mm)
035TXT	2 (yellow)	Continuous	text (height 3.5 mm)
050CONTINUOUS	3 (green)	Continuous	continuous lines (lineweight 0.5 mm)
050TXT	3 (green)	Continuous	text (height 5.0 mm)
070CONTINUOUS	4 (cyan)	Continuous	continuous lines (lineweight 0.7 mm)
070TXT	4 (cyan)	Continuous	text (height 7.0 mm)
DIM	1 (red)	Continuous	dimensions
HATCH	8	Continuous	hatching
Defpoints	7 (white)	Continuous	definition points of dimensions etc.
VIEWPORT	5 (blue)	Continuous	viewports

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6.2 Properties of layers

The properties of all layers, with the exception of layer Viewport, must be set as defined in the table below:

Property	Setting
On/Off	On
Freeze/Thaw	Thaw
Lock/Unlock	Unlock
Plot/Don't Plot	Plot

Layer Viewport may be set 'Off' or 'Don't Plot'

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7 Text

All text must be placed in the appropriate layer, depending on height, (see table above).

7.1 Textstyles and fonts

Textstyle *STANDARD* with font *ISOCP* is to be used for all new drawings. Refer to Tata Steel templates.
Textstyle *ISOCT* with font *ISOCT* may be used in existing Tata Steel drawings.

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8 Dimensioning

8.1 General

All dimensions must be placed in layer Dim.

8.2 Dimension Styles

8.2.1 DimStyle TataSteel-Default

Only one DimStyle is available in Tata Steel templates, namely *TataSteel-Default*. This DimStyle must be used for:

- Dimensions in Paperspace (see 8.2.2).
- Creation of new DimStyles for dimensions in Modelspace (see 8.2.3).

The properties of DimStyle *TataSteel-Default* may not be changed.

Settings for DimStyle *TataSteel-Default*:

Property	Variable	Value
Alt precision	DIMALTD	3
Alt prefix and suffix	DIMAPOST	
Alt roundoff	DIMALTRND	0.0000
Alt scale factor	DIMALTF	0.0394
Alt tol precision	DIMALTTD	3
Alt tol zeroes	DIMALTTZ	0
Alt units	DIMALTU	2
Alt zeroes	DIMALTZ	0
Alternate units	DIMALT	Off
Angle format	DIMAUNIT	0
Angle precision	DIMADEC	2
Angle zero supression	DIMAZIN	2
Arc len symbol	DIMARCSYM	0
Arrow	DIMBLK	ClosedFilled
Arrow 1	DIMBLK1	ClosedFilled
Arrow 2	DIMBLK2	ClosedFilled
Arrow size	DIMASZ	2.5000
Center mark size	DIMCEN	2.5000
Decimal separator	DIMDSEP	,
Dim line color	DIMCLRD	1 (red)
Dim line ext	DIMDLE	0.0000
Dim line forced	DIMTOFL	On
Dim line linetype	DIMLTYPE	BYBLOCK
Dim line lineweight	DIMLWD	-2
Dim line spacing	DIMDLI	10.0000
Ext line 1 linetype	DIMLTEX1	BYBLOCK

Property	Variable	Value
Ext line 2 linetype	DIMLTEX2	BYBLOCK
Ext line color	DIMCLRE	1 (red)
Ext line extension	DIMEXE	0.7500
Ext line lineweight	DIMLWE	-2
Ext line offset	DIMEXO	2.0000
Fit: arrow and text	DIMATFIT	3
Fit: text movement	DIMTMOVE	0
Fixed ext line enabled	DIMFXLON	Off
Fixed ext line length	DIMFXL	1.0000
Fraction format	DIMFRAC	0
Large rad dim jog angle	DIMJOGANG	45.0000
Leader arrow	DIMLDRBLK	ClosedFilled
Length scale	DIMLFAC	1.0000
Length units	DIMLUNIT	2
No dim line 1	DIMSD1	Off
No dim line 2	DIMSD2	Off
No dim lines outside	DIMSOXD	Off
No ext line 1	DIMSE1	Off
No ext line 2	DIMSE2	Off
Overall scale	DIMSCALE	1.0000
Precision	DIMDEC	2
Roundoff	DIMRND	0.0000
Separate arrows	DIMSAH	Off
Text background color	DIMTFILLCLR	BYBLOCK
Text background enabled	DIMTFILL	0
Text color	DIMCLRT	2 (yellow)
Text height	DIMTXT	3.5000
Text inside	DIMTIX	Off
Text inside align	DIMTIH	Off
Text offset	DIMGAP	1.0000
Text outside align	DIMTOH	Off
Text pos hor	DIMJUST	0
Text pos vert	DIMTAD	1
Text prefix and suffix	DIMPOST	
Text style	DIMTXSTY	Standard
Tol dev lower	DIMTM	0.0000
Tol dev upper	DIMTP	0.0000
Tol deviation	DIMTOL	Off
Tol limits	DIMLIM	Off
Tol pos vert	DIMTOLJ	1
Tol precision	DIMTDEC	2
Tol text scale factor	DIMTFAC	0.7000
Tol zero suppression	DIMTZIN	8
Zero suppression	DIMZIN	8

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8.2.2 DimStyle for dimensions in Paperspace

The following rules apply for modelspace and paperspace methods of working, as further described in paragraph 4.2:

- All dimensions must be placed in paperspace.
- All dimensions must be in conformance with DimStyle *TataSteel-Default*.
- DIMSCALE and DIMLFAC may not be changed.
- Other variables may be changed by means of overrides.

8.2.3 DimStyles for dimensions in Modelspace

The following rules apply for the method of working by which the entire drawing is put in modelspace, as further described in paragraph 4.3 and 4.4,:

- All dimensions must be placed in modelspace.
- The creation of extra DimStyles is permitted however these new DimStyles must be based on the DimStyle TataSteel-Default .
- The structure of names of new DimStyles must be as follows:

> **`TataSteel-SCLxxx-LFACyyy`**

Where: xxx is the value of DIMSCALE and yyy is the value of DIMLFAC.
The decimal character must be replaced by an underscore.

Examples: **`TataSteel-SCL10-LFAC1`**
              `TataSteel-SCL2_5-LFAC2`
              Etc.

- Other variables may be changed by means of overrides.

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9 Hatching

- Only hatch patterns from the Tata Steel file ACADISO.PAT may be used,
- User-defined hatch patterns are not permitted.
- All hatchings must be placed in the layer *HATCH*.

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10 Templates

10.1 Use of templates

- All drawings must be produced on the basis of the Tata Steel supplied templates.
- Each prototype drawing must contain the drawing framework/drawing header in the form of a BLOCK. This BLOCK is entered as INSERT in layer 0 on co-ordinate (0,0).
- The BLOCK has attributes for the purpose of filling in the titleblock.

Modification of templates is not permitted:
- The composition of the BLOCK must not be changed.
- The name of the BLOCK must not be changed.
- The insertion point of the BLOCK must not be changed.
- The INSERT must not be converted (exploded) into loose components.
- The location of the INSERT in the drawing space (0,0) must not be changed.
- Attribute definitions must not be changed.

10.2 List of templates

10.2.1 Templates for modelspace drawings

Format	File name	Application
A0	A0-9000-M	General
A0	A0-9003-M	General with vertical drawing header
A1	A1-8002-M	General
A1	A1-8003-M	General with vertical drawing header
A2	A2-2002-M	General
A2	A2-2003-M	General with vertical drawing header
A3	A3-8010-M	Front sheet
A3	A3-7139-M	Front sheet continued
A3	A3-5020-M	Single sheet drawings
A3	A3-5021-M	General consecutive sheet
A3	A3-5023-M	Single sheet drawings with vertical drawing header
A3	A3-4944-M	Connection diagram
A3	A3-4950-M	Connection diagram with voltage numbers
A3	A3-5007-M	Electrical circuit diagram with vertical drawing header
A3	A3-5008-M	Electrical circuit diagram with horizontal drawing header
A3	A3-5009-M	GE drawings
A3	A3-7242-M	d/h divider
A3	A3-8040-M	Phoenix HK4-FS5 divider

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10.2.2 Templates for paperspace drawings

Format	File name	Application
A0	A0-9000-P	General
A0	A0-9003-P	General with vertical drawing header
A1	A1-8002-P	General
A1	A1-8003-P	General with vertical drawing header
A2	A2-2002-P	General
A2	A2-2003-P	General with vertical drawing header
A3	A3-5020-P	Single sheet drawings
A3	A3-5021-P	General consecutive sheet
A3	A3-5023-P	Single sheet drawings with vertical drawing header

10.2.3 Suppliers title block

The suppliers title block may be placed above the Tata Steel design header if desired.

11 File nomenclature

11.1 General

The basic assumption for the following file nomenclature is that Tata Steel has provided the supplier with drawing numbers.
All letters in filenames, sheet numbers and sub-sheet numbers must be capitalised.

11.2 Single sheet A0 or A1 format drawings.

Single sheet A0 or A1 drawing file names must be compiled as follows:

<TATA-DRAWINGNO>-<REVISIONNO>.<EXTENSION>

In which: <TATA-DRAWINGNO>   : 6 positions
              <REVISIONNO>   : 3 positions (numerical)

Example: A76543-002.DWG

11.3 A2, A3 or A4 format drawings.

A2, A3 and A4 drawing file names must be compiled as follows:

<TATA-DWGNO>-<REVNO>-BL<SHEETNO>-<SUB-SHEETNO>.<EXTENSION>

In which: <TATA-DWGNO>   : 6 positions
              <REVNO>   : 3 positions (numerical)
              <SHEETNO>   : 4 positions
              <SUB-SHEETNO>   : 2 positions

Example: A54321-002-BL0000-00.DWG
             A54321-002-BL0001-00.DWG
             A54321-002-BL0010-00.DWG
             etc.

11.3.1   Revision numbering

All pages of a multi-sheet package must have the same revision number at the time of submission to Tata Steel.

11.3.2   Sheet numbering

Only drawings of A2, A3 and A4 format may consist of more than one sheet.
The following rules apply:
- The highest sheet number permitted is 0999.
- The front sheet of a multi-sheet package must always be sheet number 0000.
- The sub-sheet number is 00, or 2 letters. Combinations of numbers and letters are not permitted.
- The sub-sheet number of the front sheet must be 00.

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- If an A2, A3 or A4 size drawing consists of only one sheet, its sheet number must be 0000 and the sub-sheet number 00.

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12 References

The following references are made in this Technical Directive:

R1058001   Tata Steel Drawing rules.

13 Statement

Version 6.2 is a revised edition and replaces all previous versions.