NORSOK STANDARD

2D-CAD DRAWING STANDARD

Z-005
Rev. 1, October 1997

CONTENTS

FOREWORD

NORSOK (The competitive standing of the Norwegian offshore sector) is the industry initiative to add value, reduce cost and lead time and remove unnecessary activities in offshore field developments and operations.

The NORSOK standards are developed by the Norwegian petroleum industry as a part of the NORSOK initiative and are jointly issued by OLF (The Norwegian Oil Industry Association) and TBL (The Federation of Norwegian Engineering Industries). NORSOK standards are administered by NTS (Norwegian Technology Standards Institution).

The purpose of this industry standard is to replace the individual oil company specifications for use in existing and future petroleum industry developments, subject to the individual company's review and application.

The NORSOK standards make extensive references to international standards. Where relevant, the contents of this standard will be used to provide input to the international standardisation process. Subject to implementation into international standards, this NORSOK standard will be withdrawn.

Annexes A, B, C and D are normative.

INTRODUCTION

The different CAD environments in the petroleum industry are evolving rapidly and often in different directions. Considerable cost reductions has been identified by standardisation of file formats and methods of work. NORSOK organised a workgroup to recommend a standard for drawing file formats. The goal was to enable file transfers and conversions between different formats without problems.

This standard may not be optimal for all working environments but aims at the main goal of creating one common standard.

The goal was to enable transfers and conversions between different systems without problems. This will result in:

- Unified understanding of file structure and formats
- File transfer without problems
- Simplified data file conversion of drawings between different CAD systems

1 SCOPE

The primary purpose of the standard is to define a common format for drawing files in the hand-over phase between companies.

The entire lifetime of the drawing file has been taken into account; from the very beginning of a project to operation and maintenance phase. The standard is divided into a general part and specific annexes for the two most common 2D-CAD systems in the oil and gas industry.

2 NORMATIVE REFERENCES

The following standards include provisions which, through reference in this text, constitute provisions of this NORSOK standard. Latest issue of the references shall be used unless otherwise agreed. Other recognized standards may be used provided it can be shown that they meet or exceed the requirements of the standards referenced below.

NS 1402	Engineering drawings - Title block and parts list
ISO 3098-1	Technical drawings - Lettering
NS 2400	Technical drawings - Building drawings - Size and layout of drawing sheets
NORSOK Z-004	CAD symbol libraries (to be issued in near future)
ISO 128-20	Technical drawings - Lines

3 DEFINITIONS AND ABBREVIATIONS

Drawing frame	Outer frame that defines the drawing boundary.
Main drawing scale	The drawing scale that is applicable to the major parts in the drawing and is described in the title block.
Hybrid file	Vector file and belonging raster file which together holds the content of the drawing.
.DXF	AutoDesk Data eXchange Format
.DWG	AutoDesk AutoCad
.DGN	Bentley Systems MicroStation (Intergraph IGDS)

4 DEVIATION FROM STANDARD

In the event that the contents of this standard cannot be conformed due to the platform or application/methods used, it is the responsibility of the Party (Contractor) using the CAD-platform/application to submit a deviation request to the Owner/Customer prior to start-up of the CAD-platform/application.

Both the Contractor and the Customer must be aware of applications with automatic drawing production such as 3D-modelling systems which may have difficulties to deliver drawings 100% according to this standard in their native form.

For MicroStation based solutions Working Units in particular may be an area where systems with automatic drawing production do not support this standard in their native format. It must be stressed that Contractor in these instances must inform the Customer to clarify whether a deviation may be accepted or not.

5 SETUP OF 2D-CAD DRAWING FILES

5.1 Co-ordinate system

The co-ordinate system shall be metric with millimetres as main unit.

5.2 Scale

Design drawings shall be made with main elements in scale 1:1. Drawing frame, text and drawing symbols shall be scaled up relative to the main drawing scale.

Example: If the drawing has a main scale of 1:50, the drawing frame, text etc. is scaled up by a factor of 50.

For schematic drawings, symbols and drawing frame are used in original size and scale. The drawing frame shall have its insertion point in the drawing co-ordinate origin.

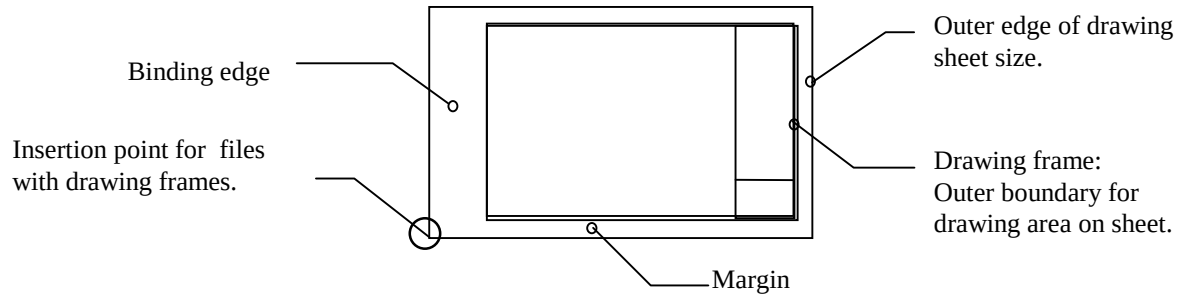
5.3 Reference files

For CAD systems that can handle reference files and use of hybrid files, only the drawing frame and one raster file is allowed as reference file. No other internal or external reference files are allowed.

Files that contain drawing frames shall be stored in a separate directory and referenced by relative directory name (environment parameter) BORDER.

5.4 Drawing frame insertion point

The drawing frame insertion point shall be in the outer, lower, left corner of the outer edge.



5.5 Elements outside outer edge

No elements are allowed outside the given outer edge of the drawing. The CAD file shall only contain one drawing.

5.6 Drawing sheet sizes

The outer edge of all sheet sizes shall be defined with a thin, solid 0,18 mm line. The outer edge dimensions are equal to the sheet size (ref. NS 2400). There shall be a binding edge in and a margin on the remaining three sides, between outer edge and the drawing frame for all sheet sizes.

Format:	Sheet size (mm)	Margin (mm)	Binding edge (mm)
A4	210x297	10	15
A3	297x420	10	15
A2	420x594	14	21
A1	594x841	20	30
A0	841x1189	28	42

5.7 Information and title block

The information and title block shall have size and placement as defined in NS 1402. Then, the maximum width is 180 mm for title blocks along right edge and the maximum height is 70 mm for title blocks along lower edge of the drawing sheet.

The sheet size and main drawing scale shall be defined in the title block.

Optional may an informative text string containing file name, date and time of plotting be placed outside the drawing frame.

5.8 Line width

The following line widths are valid. Line width is also indicated by colour coding as given below:

Line width (mm)	Colour	abbreviated
0,18	red	red
0,25	yellow	yel
0,35	green	grn
0,5	cyan	cya
0,7	blue	blu
1,0	grey	gre
1,4	grey	gre
2,0	grey	gre

5.9 Fonts

All text shall be shown with fonts as defined in the standards ISO 3098-1. The relation between text height and line spacing shall be:

Text height (mm)	Line spacing (mm)
1,8	1,0
2,5	1,4
3,5	2,0
5,0	2,8
7,0	4,0
10,0	5,6

5.10 File names

All CAD drawing files shall have file names of maximum 8 characters and suffix of 3 characters for compatibility with DOS based systems. It is recommended that the suffix (see Definitions and Abbreviations) pertaining to the relevant drawing format (CAD platform) is used to avoid misunderstandings.

5.11 Symbols

Symbol usage shall be in accordance with NORSOK Z-004. Symbols shall not have names with more than 6 characters to simplify conversion between different CAD platforms and systems. Filled areas should not be hatched.

Symbols shall be created by lines and text from their respective layer definitions. When these components are defined into a single symbol, this symbol must be placed according to the layer definitions for symbols.

5.12 Line types

Special line types shall be in accordance with NORSOK Z-004.
All other standard line types shall be in accordance with ISO 128-20.

5.13 Use of grid for Schematic Drawings

Schematic Drawings shall have a snap grid with a spacing of 1 mm between each dot, and a highlight for every 10 mm.

6 LAYER USAGE

The layer usage follows the principle of uniqueness: each layer has one function, one line width and one line type only.

The layer usage is designed to be used in **all recognised CAD programs** so that *conversion* between different platforms and file formats can be done **without problems**. The entire lifetime of the drawing file has been taken into account; from the very beginning of a project to operation and maintenance phase. Also, actions to obtain **compatibility across different disciplines** are introduced as far as possible.

For disciplines with detailed design, for example steel construction and architecture, two selectable alternatives are given:

- Only line type identify the different layers.
- Both line type and purpose identify the different layers, as indicated by the optional layer note in the layer usage tables of appendix C.

For all other disciplines (ISO-, schematic drawings etc.) only one alternative is given.

The intention is not for one discipline to utilise all layers. Only the layers indicated for the given discipline shall be used. Layer usage in general, and for MicroStation and AutoCad in particular are given in Annex C.

7 DETAILED SET-UP

7.1 MicroStation

Addendum for MicroStation set-up is given in Annex A.
MicroStation seed file set-up is given in Annex D.

7.2 AutoCad

Addendum for AutoCad set-up is given in Annex B.

ANNEX A ADDENDUM FOR MICROSTATION SET-UP (NORMATIVE)

A.1 Working Units

Unit Names:	Master Units:	mm
	Sub Units:	mm
Resolution:	1	mm Per mm
	1270	Pos Units Per mm

A.2 Co-ordinate Readout

Co-ordinate Readout shall be set to Master Units.

A.3 Relative path for reference file

Files with drawing frame shall be attached with environment parameter BORDER and logical name BORDER. The name of a file containing drawing frame is defined by the operator or equivalent. The name is usually standardised and not subject to change.

RF=BORDER:[filename]xxxxxxxx.dgn BORDER
(Tip: define BORDER for different companies in different "Project Configuration Files").

A.4 Naming of "Saved View"

Files containing a drawing frame shall be maximised with the entire frame (View Fit All) in VIEW 1. This set-up is saved as BORDER. *SV=BORDER*

A.5 Line width

The following relation between line width and line weight applies:

Line width (mm)	Line weight	Colour no. (ACAD and MSt) Prim	Sec	Tert	Quart
0,18	0	1 (red)	17	33	
0,25	1	2 (yellow)	18	34	
0,35	2	3 (green)	19	35	51
0,5	3	4 (cyan)	20	36	
0,7	4	5 (blue)	21	37	
1,0	5	9			
1,4	6	10			
2,0	7	11			

A special colour table shall be used in MicroStation, ZCAD_COL.TBL. This table is very similar to the colour table in AutoCad. For all cases, the colour numbering must be adhered to.

The colour table may be obtained from the NORSOK Web-site.

A.6 Font types

For all ordinary text the standard MicroStation font 105 "INTL_ISO" shall be used.
For isometric text the same font is used with a “slant” of 30° for left / right oriented text.
As an alternative in tables and other items where proportional text types is impractical, the standard font 106 (INTL_ISO_EQUAL) can be used.

Fonts 105 and 106 are designed according to the standards ISO 3098. The fonts 105 and 106 will be incorrect if the height/width relation is set to 1. Therefore, only TX=h should be given and not TH=h / TW=b.

Font 105 and 106 are included in MicroStation 95 and PowerDraft, and may also be obtained from the NORSOK Web-site for use with V5.

Note: Text with TX=3,5 mm (TH=TB=3,5) will have an actual width of 2,5 mm according to the NS/ISO standard.

A.7 Symbols (Cells)

During insertion of cells (symbols), the option “Shared Cells” must NOT be used. Symbols must be inserted absolute and not relative.

A.8 Level Symbology

The option Level Symbology under View Attributes shall NOT be used.

A.9 Optional text string on plotted drawings

If the optional text string containing filename, date and time of plotting is to be used in combination with plotting software which recognises text substitutions of such entries, the following must be set up in the pen tables:

A.9.1 Intergraph I/PLOT

Syntax for Pen Table:

```
;DATE & TIME

   if ( CHARACTERS .EQ. ‘Field for date and time. Automatically inserted during
plot’ ) Then
            CHARACTERS = SYTIME
   Endif

;FILE SPECIFICATION

   if ( CHARACTERS .EQ. ‘Field for file specification. Automatically inserted
during plot’ ) Then
            CHARACTERS = DGNSPEC
   Endif
```

A.9.2 MicroStation 95, native plotting

Syntax for Pen Table Text Substitutions:

Actual : `'Field for date and time. Automatically inserted during plot'`
Replacement: `_DATE_`

Actual : `'Field for file specification. Automatically inserted during plot'`
Replacement: `_FILE_`

ANNEX B ADDENDUM FOR AUTOCAD SET-UP (NORMATIVE)

B.1 Units

Units shall be metric.

B.2 Reference files

If reference files are used, they must be permanently attached to the drawing with the BIND command before submission.

B.3 Line width

The relation between line width and colour shall be:

Line width (mm)	Colour no. (ACAD and MSt) Prim	Sec	Tert	Quart
0,18	1 (red)	17	33	
0,25	2 (yellow)	18	34	
0,35	3 (green)	19	35	51
0,5	4 (cyan)	20	36	
0,7	5 (blue)	21	37	
1,0	9			
1,4	10			
2,0	11			

B.4 Font Types

Fonts used shall be in accordance with ISO 3098. Font definition file INTLISO.SHX should be used. As an alternative in tables and other items where proportional text types is impractical, the font definition file INTLISOE.SHX can be used.

B.5 Symbols (blocks)

Elements in discipline specific blocks shall be defined in the given layers. Elements in general symbols/blocks shall be defined in layer 0 with colour “BYBLOCK”, but must be inserted into the appropriate layer according to Appendix C.

B.6 Colour/layer usage

Drawings shall be made with colour “BYLAYER”. The layer setup defines element colour.

B.7 Paperspace/modelspace

Paperspace/modelspace can be a source of problems in file conversion and shall not be used, i.e. tilemode=1.

B.8 Line types

For a uniform look of standard line types according to ISO 128-20, the line definition file iso12011.lin should be used.

ANNEX C LAYER USAGE (NORMATIVE)

C.1 General usage (enclosed)

C.2 MicroStation (enclosed)

C.3 AutoCad (enclosed)

Legend for enclosed layer usage (CAD Layers):

Sp.	=	Special/custom
u/d	=	undefined
rev	=	revision
fab	=	fabricator
o	=	optional
f	=	fabricator only
X	=	default

Lines	ISO description	Other description	Representation
cont =	Continuos line		
dash =	Dashed line		
webl =	Dashed-space line	web line	
cent =	Long-dashed-dotted line	centre line	
phan =	Long-dashed-double-dotted line	phantom line	
dott =	Dotted line		
matc =	Long-dashed-short-dashed line	match line	

ANNEX C.1 LAYER USAGE, GENERAL

Disc: COMMON							Detailed Design				ISO	Schematics			
Level	Purpose	Description	Layer name	Width	Colour	Line style	STRUC	ARCH	GA	SAFE	ISO	ELECT	PROC	INSTR	TELECO
1	Lines	Outline, thin, default	01-LIN-025-A	0,25	yel	cont	X	X	X	X	X	Misc	Instr.	X	X
2	Lines	Outline, thin, B	02-LIN-025-B	0,25	yel	cont	o	o	X	X					
3	Lines	Outline, thin, C	03-LIN-025-C	0,25	yel	cont	o	o	X	X					
4	Lines	Outline, med., def.	04-LIN-035-A	0,35	grn	cont	X	X	X	X	X	X	Vent/drain	MPL,blck	X
5	Lines	Outline, med., B	05-LIN-035-B	0,35	grn	cont	o	o	X	Fireprot		Wiring	Equip.	Proc/util	X
6	Lines	Outline, med., C	06-LIN-035-C	0,35	grn	cont	o	o	X	Life Sav				Pne/hyd	X
7	Lines	Outline, med., D	07-LIN-035-D	0,35	grn	cont	o	o	X					Normal	X
8	Lines	Outline, thick, def.	08-LIN-050-A	0,50	cya	cont	X	X	X	X	X	Segre	Second.	Group	X
9	Lines	Outline, thick, B	09-LIN-050-B	0,50	cya	cont	o	o	X	Bound.a.c					
10	Lines	Outline, thick, C	10-LIN-050-C	0,50	cya	cont	o	o	X	X					
11	Lines	Outline, very thick	11-LIN-070-A	0,70	blu	cont	X	X	X	X	Header				
12	Lines	Outline, extra thick	12-LIN-100-A	1,00	grn	cont					X	Main	Primary	Main	X
13	Lines	Centre line	13-LIN-018-CENT	0,18	red	cent	X	X	X	X	X	X	X	X	X
14	Lines	Hidden line (dash)	14-LIN-025-DASH	0,25	yel	dash	X	X	X		X		Electr.	X	X
15	Lines	Phantom line	15-LIN-025-PHAN	0,25	yel	phan	X	X	X				Bound.		
16	Lines	Web line (dashed space)	16-LIN-035-WEBL	0,35	grn	webl	X	X	X			X			
17	Lines	Match line	17-LIN-100-MATC	1,00	grn	matc	X	X	X	X					
18	Lines	Sp. line	18-LIN-025-SP	0,25	yel	sp	o	o	o	o	o	o	Instr.	o	o
19	Lines	Sp. line	19-LIN-035-SP	0,35	grn	sp	o	o	o	o	o	o	o	o	o
20	Lines	Sp. line	20-LIN-050-SP	0,50	cya	sp	o	o	o	o	o	o	o	o	o
21	Lines	Sp. line	21-LIN-070-SP	0,70	blu	sp	Railing	Railing	Railing	o	o	o	o	o	o
22	Dimension:lines & text	Dim (Txt: h=3.5/W=0,35/col=grn)	22-DIM-025-A	0,25	yel	cont	X	X	X	X	X				
23	Dimension:lines & text	Sp. Dim (Txt. h=2.5)	23-DIM-025-B	0,25	yel	cont	o	o	o	o	o				
24	Symbols	Sp. symb	24-SYM-025-SP	0,25	yel	cont	X	X	X	X		Mat.balo	Instr.	Mat.balo	X
25	Symbols	Drawing Symbols	25-SYM-035-DRWG	0,35	grn	cont	X	X	X	Fireprot	X	X	M.Equip	X	X
26	Symbols	Sp. symb	26-SYM-035-SP	0,35	grn	cont	Weld	X	X	Life Sav	X	X	Second.		
27	Symbols	Sp. symb	27-SYM-050-SP	0,50	cya	cont	X	X	X	Ar.class			Primary		
28	Symbols	Sp. symb	28-SYM-070-SP	0,70	blu	cont	X	X	X	X					
29	Pattern	Default line pattern	29-PAT-018-A	0,18	red	cont	X	X	X		X				
30	Pattern	Line pattern	30-PAT-025-A	0,25	yel	cont	X	X	X	X	X				
31	Pattern	Sp. pattern	31-PAT-025-SP	0,25	yel	sp		X		X					
32	Pattern	Line pattern	32-PAT-035-A	0,35	grn	cont		X		Ar.class					
33	Pattern	Sp. pattern	33-PAT-035-SP	0,35	grn	sp		X		X					

34	Text	Text, h=1,8	34-TXT-018	0,18	red	cont	X	X	X	X	X	X	X	X	X
35	Text	Text, h=2,5	35-TXT-025	0,25	yel	cont	X	X	X	X	X	X	X	X	X
36	Text	Text, h=3,5	36-TXT-035	0,35	grn	cont	Default	Default	Default	Default	Default	Default	Default	Default	Default
37	Text	Text, h=5,0	37-TXT-050	0,50	cya	cont	X	X	X	X	X	X	X	X	X
38	Text	Text, h=7,0	38-TXT-070	0,70	blu	cont	X	X	X	X	X	X	X	X	X
39	Text	Text, h=10,0	39-TXT-100	1,00	gre	cont	X	X	X	X	X	X	X	X	X
40	Reserved	Future usage	40-	u/d			-	-	-	-	-	-	-	-	-
41	Reserved	Future usage	41-	u/d			-	-	-	-	-	-	-	-	-
42	Reserved	Future usage	42-	u/d			-	-	-	-	-	-	-	-	-
43	Reserved	Future usage	43-	u/d			-	-	-	-	-	-	-	-	-
44	Reserved	Future usage	44-	u/d			-	-	-	-	-	-	-	-	-
45	Reserved	Future usage	45-	u/d			-	-	-	-	-	-	-	-	-
46	Reserved	Future usage	46-	u/d			-	-	-	-	-	-	-	-	-
47	Reserved	Future usage	47-	u/d			-	-	-	-	-	-	-	-	-
48	Border	Sheet/border outline	48-BOR-018	0,18	red	cont	X	X	X	X	X	X	X	X	X
49	Border	Logo	49-LOG-UD	u/d	n/a	cont	X	X	X	X	X	X	X	X	X
50	Revisions	Rev. Triangle	50-REV-035-TRNG	0,35	grn	cont	X	X	X	X	X	X	X	X	X
51	Revisions	Rev. cloud	51-REV-035-CLD	0,35	grn	cont	X	X	X	X	X	X	X	X	X
52	Fabricator	Sp. fab.	52-FAB-UD	u/d			f	f	f	f	f	f	f	f	f
53	Fabricator	Sp. fab.	53-FAB-UD	u/d			f	f	f	f	f	f	f	f	f
54	Fabricator	Sp. fab.	54-FAB-UD	u/d			f	f	f	f	f	f	f	f	f
55	Fabricator	Sp. fab.	55-FAB-UD	u/d			f	f	f	f	f	f	f	f	f
56	Fabricator	Sp. fab.	56-FAB-UD	u/d			f	f	f	f	f	f	f	f	f
57	Reserved	Future usage	57-	u/d			-	-	-	-	-	-	-	-	-
58	Reserved	Future usage	58-	u/d			-	-	-	-	-	-	-	-	-
59	Reserved	Future usage	59-	u/d			-	-	-	-	-	-	-	-	-
60	Reserved	Future usage	60-	u/d			-	-	-	-	-	-	-	-	-
61	Help lines	Help line	61-HLP-UD-A	u/d	u/d	u/d	X	X	X	X	X	X	X	X	X
62	Help lines	Help line	62-HLP-UD-B	u/d	u/d	u/d	X	X	X	X	X	X	X	X	X

ANNEX C.2 - LAYER (LEVEL) USAGE, MICROSTATION SPESIFIC

Disc:_COMMON

										Detailed Design				ISO	Schematics			
Level	Purpose	Description	Layer name	Width	Colour		Wt	Line style		STRUC	ARCH	GA	SAFE	ISO	ELECT	PROC	INSTR	TELECO
1	Lines	Outline, thin, default	01-LIN-025-A	0,25	2	yel	1	0	cont	X	X	X	X	X	Misc	Instr.	X	X
2	Lines	Outline, thin, B	02-LIN-025-B	0,25	18	yel	1	0	cont	o	o	X	X					
3	Lines	Outline, thin, C	03-LIN-025-C	0,25	34	yel	1	0	cont	o	o	X	X					
4	Lines	Outline, med., def.	04-LIN-035-A	0,35	3	grn	2	0	cont	X	X	X	X	X	X	/ent/drai	MPL,blc	X
5	Lines	Outline, med., B	05-LIN-035-B	0,35	19	grn	2	0	cont	o	o	X	Firepro		Wiring	Equip.	Proc/uti	X
6	Lines	Outline, med., C	06-LIN-035-C	0,35	35	grn	2	0	cont	o	o	X	Life Sav				Pne/hyc	X
7	Lines	Outline, med., D	07-LIN-035-D	0,35	51	grn	2	0	cont	o	o	X					Normal	X
8	Lines	Outline, thick, def.	08-LIN-050-A	0,50	4	cya	3	0	cont	X	X	X	X	X	Segre	Second.	Group	X
9	Lines	Outline, thick, B	09-LIN-050-B	0,50	20	cya	3	0	cont	o	o	X	ound.a.c					
10	Lines	Outline, thick, C	10-LIN-050-C	0,50	36	cya	3	0	cont	o	o	X	X					
11	Lines	Outline, very thick	11-LIN-070-A	0,70	5	blu	4	0	cont	X	X	X	X	Header				
12	Lines	Outline, extra thick	12-LIN-100-A	1,00	9	grn	5	0	cont					X	Main	Primary	Main	X
13	Lines	Centre line	13-LIN-018-CENT	0,18	1	red	0	4	cent	X	X	X	X	X	X	X	X	X
14	Lines	Hidden line (dash)	14-LIN-025-DASH	0,25	2	yel	1	2	dash	X	X	X		X		Electr.	X	X
15	Lines	Phantom line	15-LIN-025-PHAN	0,25	2	yel	1	6	phan	X	X	X				Bound.		
16	Lines	Web line (dashed space)	16-LIN-035-WEBL	0,35	19	grn	2	5	webl	X	X	X			X			
17	Lines	Match line	17-LIN-100-MATC	1,00	9	grn	5	7	matc	X	X	X	X					
18	Lines	Sp. line	18-LIN-025-SP	0,25	2	yel	1	sp	sp	o	o	o	o	o	o	Instr.	o	o
19	Lines	Sp. line	19-LIN-035-SP	0,35	3	grn	2	sp	sp	o	o	o	o	o	o	o	o	o
20	Lines	Sp. line	20-LIN-050-SP	0,50	4	cya	3	sp	sp	o	o	o	o	o	o	o	o	o
21	Lines	Sp. line	21-LIN-070-SP	0,70	5	blu	4	sp	sp	Railing	Railing	Railing	o	o	o	o	o	o
22	Dimension:lines & te	Dim (Txt. h=3.5/Wt=2/co	22-DIM-025-A	0,25	2	yel	1	0	cont	X	X	X	X	X				
23	Dimension:lines & te	Sp. Dim (Txt. h=2,5)	23-DIM-025-B	0,25	34	yel	1	0	cont	o	o	o	o	o				
24	Symbols	Sp. symb	24-SYM-025-SP	0,25	18	yel	1	0	cont	X	X	X	X		Mat.bald	Instr.	Mat.bald	X
25	Symbols	Drawing Symbols	25-SYM-035-DRWG	0,35	19	grn	2	0	cont	X	X	X	Firepro	X	X	M.Equip	X	X
26	Symbols	Sp. symb	26-SYM-035-SP	0,35	35	grn	2	0	cont	Weld	X	X	Life Sav	X	X	Second.		
27	Symbols	Sp. symb	27-SYM-050-SP	0,50	20	cya	3	0	cont	X	X	X	Ar.class			Primary		
28	Symbols	Sp. symb	28-SYM-070-SP	0,70	21	blu	4	0	cont	X	X	X	X					
29	Pattern	Default line pattern	29-PAT-018-A	0,18	1	red	0	0	cont	X	X	X		X				
30	Pattern	Line pattern	30-PAT-025-A	0,25	2	yel	1	0	cont	X	X	X	X	X				
31	Pattern	Sp. pattern	31-PAT-025-SP	0,25	18	yel	1	sp	sp		X		X					
32	Pattern	Line pattern	32-PAT-035-A	0,35	3	grn	2	0	cont		X		Ar.class					
33	Pattern	Sp. pattern	33-PAT-035-SP	0,35	19	grn	2	sp	sp		X		X					

34	Text	Text, h=1,8	34-TXT-018	0,18	12	red	0	0	cont	X	X	X	X	X	X	X	X	X
35	Text	Text, h=2,5	35-TXT-025	0,25	13	yel	1	0	cont	X	X	X	X	X	X	X	X	X
36	Text	Text, h=3,5	36-TXT-035	0,35	14	grn	2	0	cont	Default	Default	Default	Default	Default	Default	Default	Default	Default
37	Text	Text, h=5,0	37-TXT-050	0,50	15	cya	3	0	cont	X	X	X	X	X	X	X	X	X
38	Text	Text, h=7,0	38-TXT-070	0,70	16	blu	4	0	cont	X	X	X	X	X	X	X	X	X
39	Text	Text, h=10,0	39-TXT-100	1,00	17	gre	5	0	cont	X	X	X	X	X	X	X	X	X
40	Reserved	Future usage	40-	u/d						-	-	-	-	-	-	-	-	-
41	Reserved	Future usage	41-	u/d						-	-	-	-	-	-	-	-	-
42	Reserved	Future usage	42-	u/d						-	-	-	-	-	-	-	-	-
43	Reserved	Future usage	43-	u/d						-	-	-	-	-	-	-	-	-
44	Reserved	Future usage	44-	u/d						-	-	-	-	-	-	-	-	-
45	Reserved	Future usage	45-	u/d						-	-	-	-	-	-	-	-	-
46	Reserved	Future usage	46-	u/d						-	-	-	-	-	-	-	-	-
47	Reserved	Future usage	47-	u/d						-	-	-	-	-	-	-	-	-
48	Border	Sheet/border outline	48-BOR-018	0,18	1	red	0	0	cont	X	X	X	X	X	X	X	X	X
49	Border	Logo	49-LOG-UD	u/d	n/a	n/a	2	0	cont	X	X	X	X	X	X	X	X	X
50	Revisions	Rev. Triangle	50-REV-035-TRNG	0,35	3	grn	2	0	cont	X	X	X	X	X	X	X	X	X
51	Revisions	Rev. cloud	51-REV-035-CLD	0,35	3	grn	2	0	cont	X	X	X	X	X	X	X	X	X
52	Fabricator	Sp. fab.	52-FAB-UD	u/d						f	f	f	f	f	f	f	f	f
53	Fabricator	Sp. fab.	53-FAB-UD	u/d						f	f	f	f	f	f	f	f	f
54	Fabricator	Sp. fab.	54-FAB-UD	u/d						f	f	f	f	f	f	f	f	f
55	Fabricator	Sp. fab.	55-FAB-UD	u/d						f	f	f	f	f	f	f	f	f
56	Fabricator	Sp. fab.	56-FAB-UD	u/d						f	f	f	f	f	f	f	f	f
57	Reserved	Future usage	57-	u/d						-	-	-	-	-	-	-	-	-
58	Reserved	Future usage	58-	u/d						-	-	-	-	-	-	-	-	-
59	Reserved	Future usage	59-	u/d						-	-	-	-	-	-	-	-	-
60	Reserved	Future usage	60-	u/d						-	-	-	-	-	-	-	-	-
61	Help lines	Help line	61-HLP-UD-A	u/d	u/d	u/d	u/d	u/d	u/d	X	X	X	X	X	X	X	X	X
62	Help lines	Help line	62-HLP-UD-B	u/d	u/d	u/d	u/d	u/d	u/d	X	X	X	X	X	X	X	X	X
63	Reserved	Reserved		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

ANNEX C.3 - LAYER USAGE, AUTOCAD SPESIFIC

Disc: COMMON

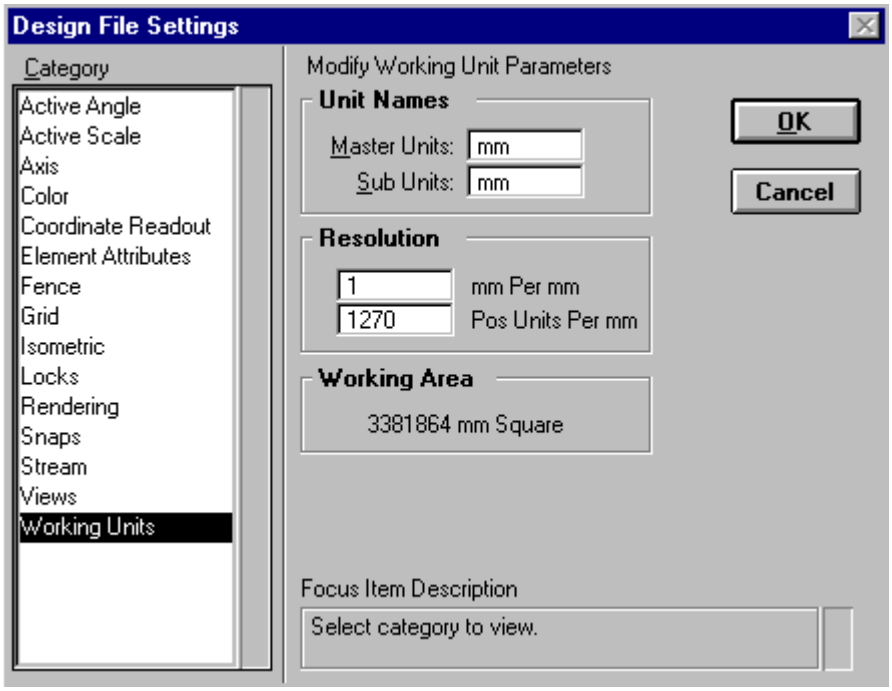
								Detailed Design				ISO	Schematics			
Layer	Purpose	Description	Layer name	Width	Colour		Line style	STRUC	ARCH	GA	SAFE	ISO	ELECT	PROC	INSTR	TELECO
1	Lines	Outline, thin, default	01-LIN-025-A	0,25	2	yel	cont	X	X	X	X	X	Misc	Instr.	X	X
2	Lines	Outline, thin, B	02-LIN-025-B	0,25	18	yel	cont	o	o	X	X					
3	Lines	Outline, thin, C	03-LIN-025-C	0,25	34	yel	cont	o	o	X	X					
4	Lines	Outline, med., def.	04-LIN-035-A	0,35	3	grn	cont	X	X	X	X	X	X	Vent/drain	MPL,blck	X
5	Lines	Outline, med., B	05-LIN-035-B	0,35	19	grn	cont	o	o	X	Fireprot		Wiring	Equip.	Proc/util	X
6	Lines	Outline, med., C	06-LIN-035-C	0,35	35	grn	cont	o	o	X	Life Sav				Pne/hyd	X
7	Lines	Outline, med., D	07-LIN-035-D	0,35	51	grn	cont	o	o	X					Normal	X
8	Lines	Outline, thick, def.	08-LIN-050-A	0,50	4	cya	cont	X	X	X	X	X	Segre	Second.	Group	X
9	Lines	Outline, thick, B	09-LIN-050-B	0,50	20	cya	cont	o	o	X	Bound.a.c					
10	Lines	Outline, thick, C	10-LIN-050-C	0,50	36	cya	cont	o	o	X	X					
11	Lines	Outline, very thick	11-LIN-070-A	0,70	5	blu	cont	X	X	X	X	Header				
12	Lines	Outline, extra thick	12-LIN-100-A	1,00	9	grn	cont					X	Main	Primary	Main	X
13	Lines	Centre line	13-LIN-018-CENT	0,18	1	red	cent	X	X	X	X	X	X	X	X	X
14	Lines	Hidden line (dash)	14-LIN-025-DASH	0,25	2	yel	dash	X	X	X		X		Electr.	X	X
15	Lines	Phantom line	15-LIN-025-PHAN	0,25	2	yel	phan	X	X	X				Bound.		
16	Lines	Web line (dashed space)	16-LIN-035-WEBL	0,35	19	grn	webl	X	X	X			X			
17	Lines	Match line	17-LIN-100-MATC	1,00	9	grn	matc	X	X	X	X					
18	Lines	Sp. line	18-LIN-025-SP	0,25	2	yel	sp	o	o	o	o	o	o	Instr.	o	o
19	Lines	Sp. line	19-LIN-035-SP	0,35	3	grn	sp	o	o	o	o	o	o	o	o	o
20	Lines	Sp. line	20-LIN-050-SP	0,50	4	cya	sp	o	o	o	o	o	o	o	o	o
21	Lines	Sp. line	21-LIN-070-SP	0,70	5	blu	sp	Railing	Railing	Railing	o	o	o	o	o	o
22	Dimension:lines & text	Dim (Txt. h=3,5/W=0,35/col=3)	22-DIM-025-A	0,25	2	yel	cont	X	X	X	X	X				
23	Dimension:lines & text	Sp. Dim (Txt. h=2,5)	23-DIM-025-B	0,25	34	yel	cont	o	o	o	o	o				
24	Symbols	Sp. symb	24-SYM-025-SP	0,25	18	yel	cont	X	X	X	X		Mat.balo	Instr.	Mat.balo	X
25	Symbols	Drawing Symbols	25-SYM-035-DRWG	0,35	19	grn	cont	X	X	X	Fireprot	X	X	M.Equip	X	X
26	Symbols	Sp. symb	26-SYM-035-SP	0,35	35	grn	cont	Weld	X	X	Life Sav	X	X	Second.		
27	Symbols	Sp. symb	27-SYM-050-SP	0,50	20	cya	cont	X	X	X	Ar.class			Primary		
28	Symbols	Sp. symb	28-SYM-070-SP	0,70	21	blu	cont	X	X	X	X					
29	Pattern	Default line pattern	29-PAT-018-A	0,18	1	red	cont	X	X	X		X				
30	Pattern	Line pattern	30-PAT-025-A	0,25	2	yel	cont	X	X	X	X	X				
31	Pattern	Sp. pattern	31-PAT-025-SP	0,25	18	yel	sp		X		X					
32	Pattern	Line pattern	32-PAT-035-A	0,35	3	grn	cont		X		Ar.class					
33	Pattern	Sp. pattern	33-PAT-035-SP	0,35	19	grn	sp		X		X					

34	Text	Text, h=1,8	34-TXT-018	0,18	12	red	cont	X	X	X	X	X	X	X	X	X
35	Text	Text, h=2,5	35-TXT-025	0,25	13	yel	cont	X	X	X	X	X	X	X	X	X
36	Text	Text, h=3,5	36-TXT-035	0,35	14	grn	cont	Default	Default	Default	Default	Default	Default	Default	Default	Default
37	Text	Text, h=5,0	37-TXT-050	0,50	15	cya	cont	X	X	X	X	X	X	X	X	X
38	Text	Text, h=7,0	38-TXT-070	0,70	16	blu	cont	X	X	X	X	X	X	X	X	X
39	Text	Text, h=10,0	39-TXT-100	1,00	17	gre	cont	X	X	X	X	X	X	X	X	X
40	Reserved	Future usage	40-	u/d				-	-	-	-	-	-	-	-	-
41	Reserved	Future usage	41-	u/d				-	-	-	-	-	-	-	-	-
42	Reserved	Future usage	42-	u/d				-	-	-	-	-	-	-	-	-
43	Reserved	Future usage	43-	u/d				-	-	-	-	-	-	-	-	-
44	Reserved	Future usage	44-	u/d				-	-	-	-	-	-	-	-	-
45	Reserved	Future usage	45-	u/d				-	-	-	-	-	-	-	-	-
46	Reserved	Future usage	46-	u/d				-	-	-	-	-	-	-	-	-
47	Reserved	Future usage	47-	u/d				-	-	-	-	-	-	-	-	-
48	Border	Sheet/border outline	48-BOR-018	0,18	1	red	cont	X	X	X	X	X	X	X	X	X
49	Border	Logo	49-LOG-UD	u/d	n/a	n/a	cont	X	X	X	X	X	X	X	X	X
50	Revisions	Rev. Triangle	50-REV-035-TRNG	0,35	3	grn	cont	X	X	X	X	X	X	X	X	X
51	Revisions	Rev. cloud	51-REV-035-CLD	0,35	3	grn	cont	X	X	X	X	X	X	X	X	X
52	Fabricator	Sp. fab.	52-FAB-UD	u/d				f	f	f	f	f	f	f	f	f
53	Fabricator	Sp. fab.	53-FAB-UD	u/d				f	f	f	f	f	f	f	f	f
54	Fabricator	Sp. fab.	54-FAB-UD	u/d				f	f	f	f	f	f	f	f	f
55	Fabricator	Sp. fab.	55-FAB-UD	u/d				f	f	f	f	f	f	f	f	f
56	Fabricator	Sp. fab.	56-FAB-UD	u/d				f	f	f	f	f	f	f	f	f
57	Reserved	Future usage	57-	u/d				-	-	-	-	-	-	-	-	-
58	Reserved	Future usage	58-	u/d				-	-	-	-	-	-	-	-	-
59	Reserved	Future usage	59-	u/d				-	-	-	-	-	-	-	-	-
60	Reserved	Future usage	60-	u/d				-	-	-	-	-	-	-	-	-
61	Help lines	Help line	61-HLP-UD-A	u/d	u/d	u/d	u/d	X	X	X	X	X	X	X	X	X
62	Help lines	Help line	62-HLP-UD-B	u/d	u/d	u/d	u/d	X	X	X	X	X	X	X	X	X

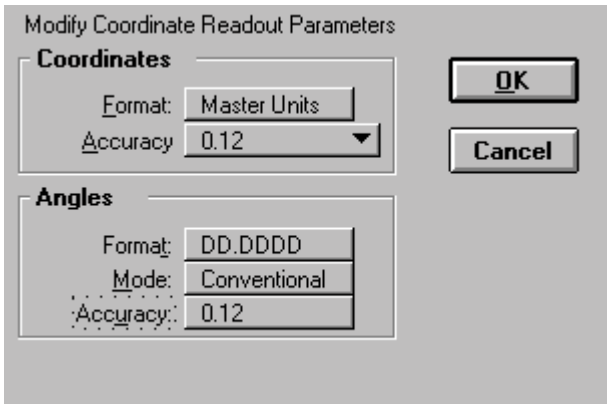
ANNEX D - MICROSTATION SEED FILE SET-UP (NORMATIVE)

The set-up of a MicroStation seed file is shown by a series of dialogue boxes.

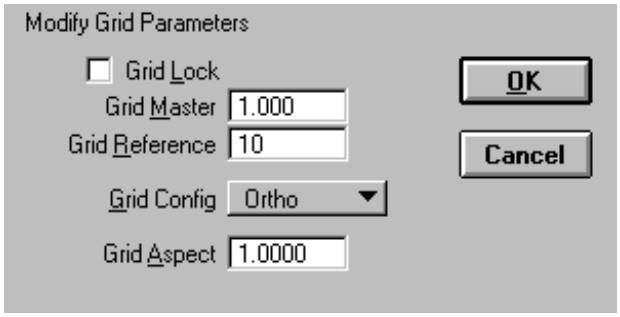
Design file settings:



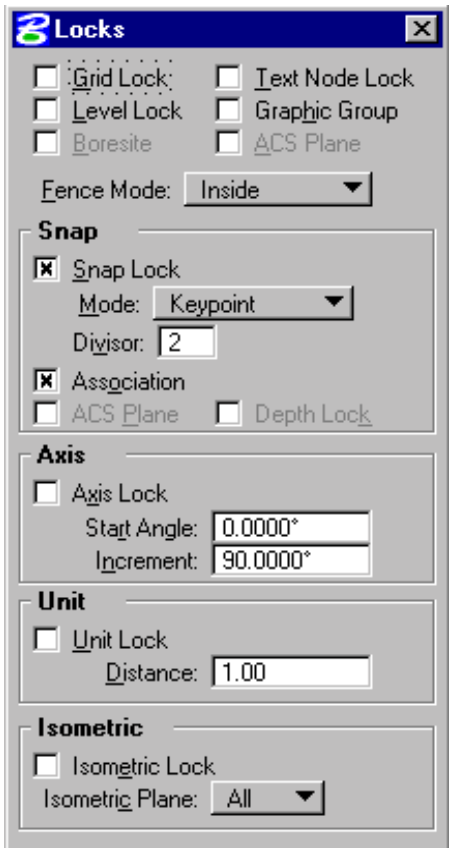
Mandatory



Optional

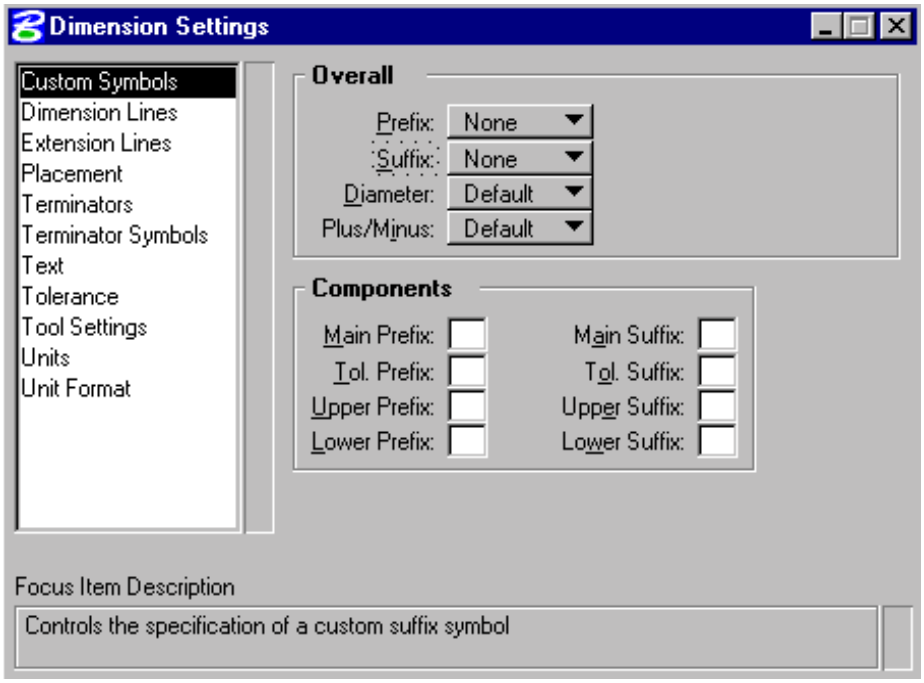


Mandatory

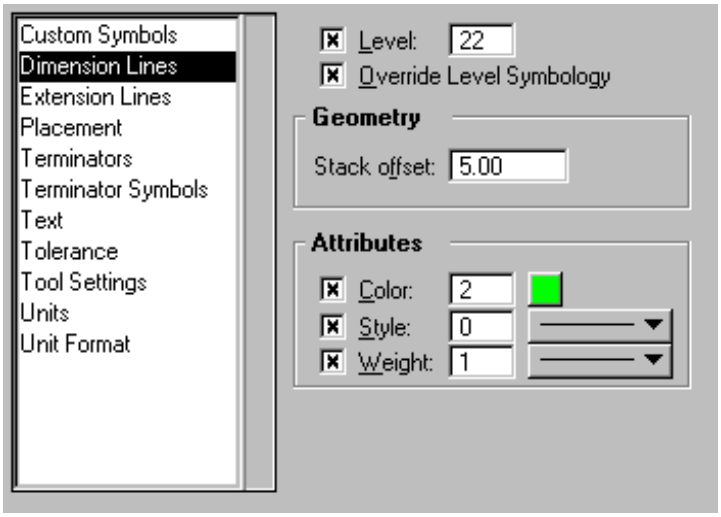


Recommended

Dimension settings:



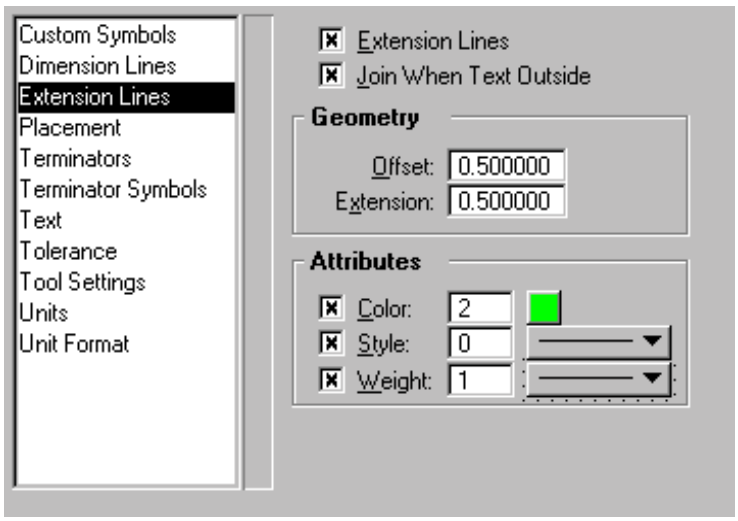
Recommended



Mandatory

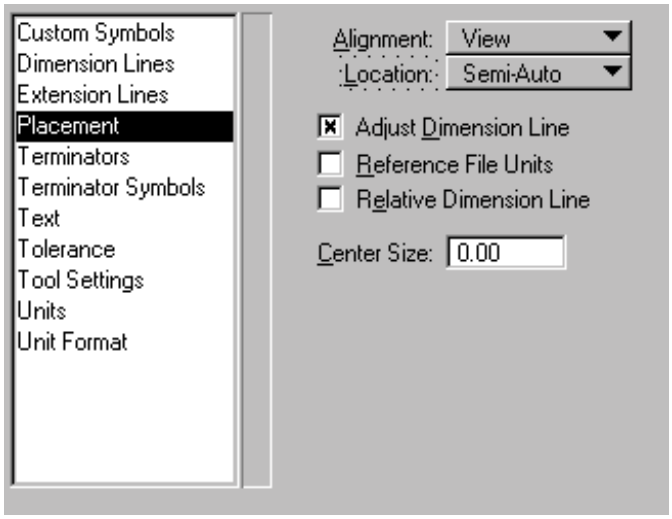
Optional

Mandatory

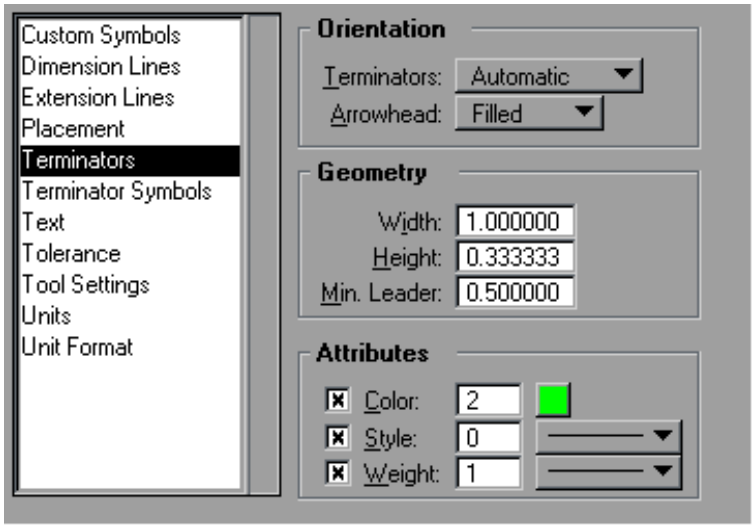


Optional

Mandatory



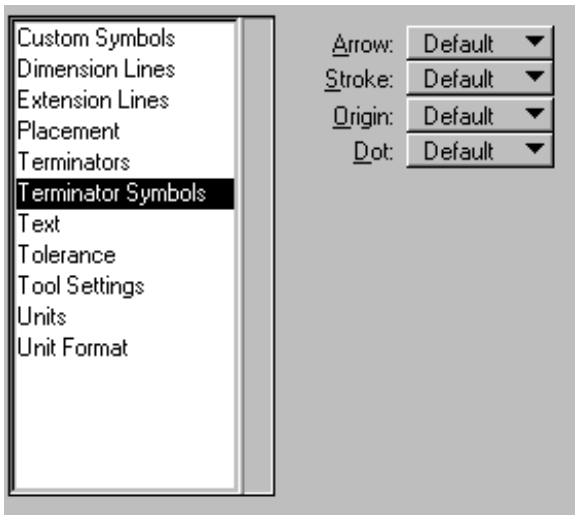
Recommended



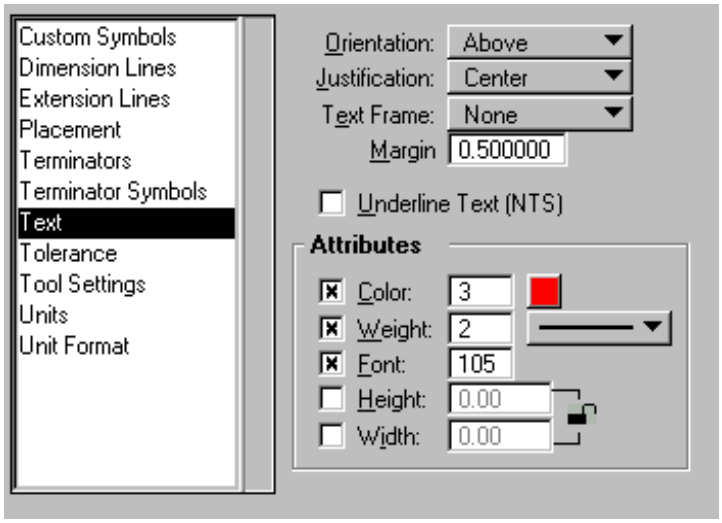
Optional

Optional

Mandatory

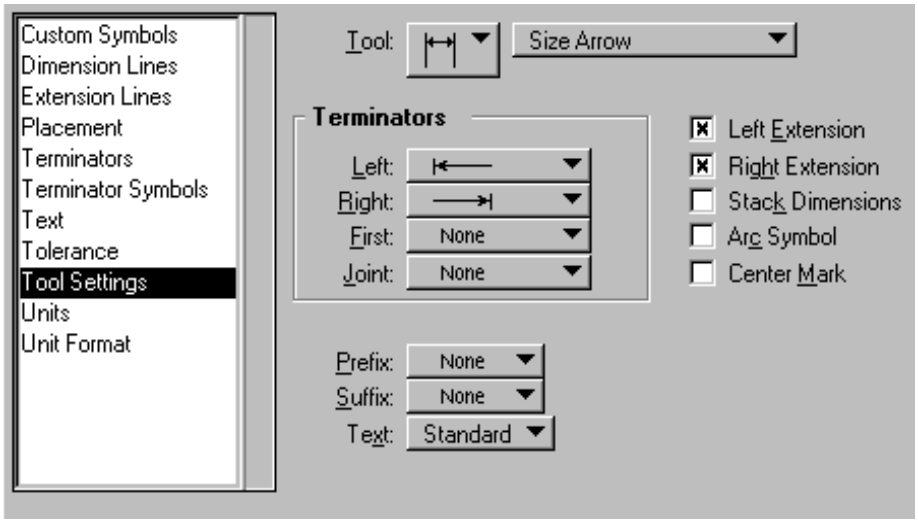


Mandatory

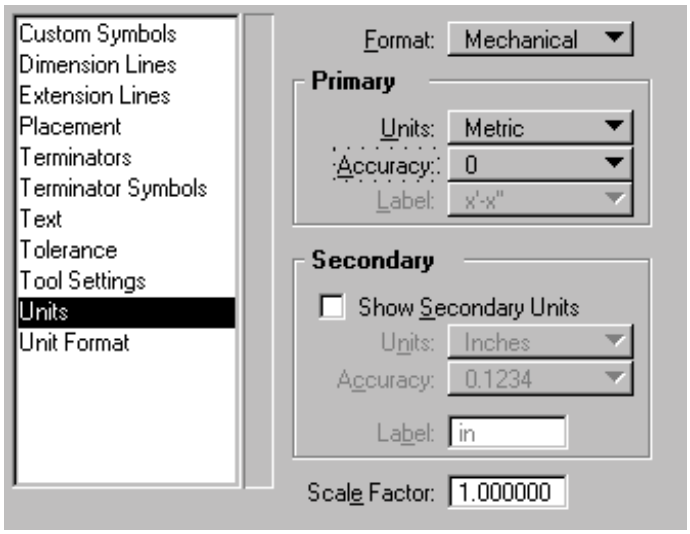


Recommended

Mandatory



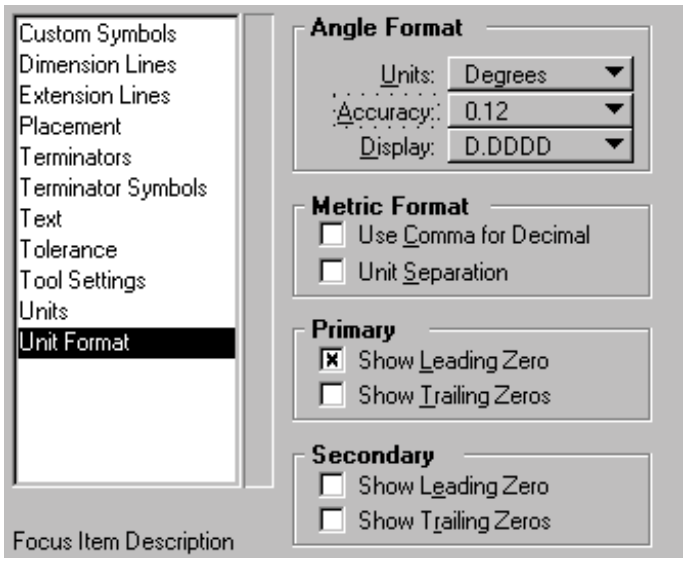
Recommended



Mandatory

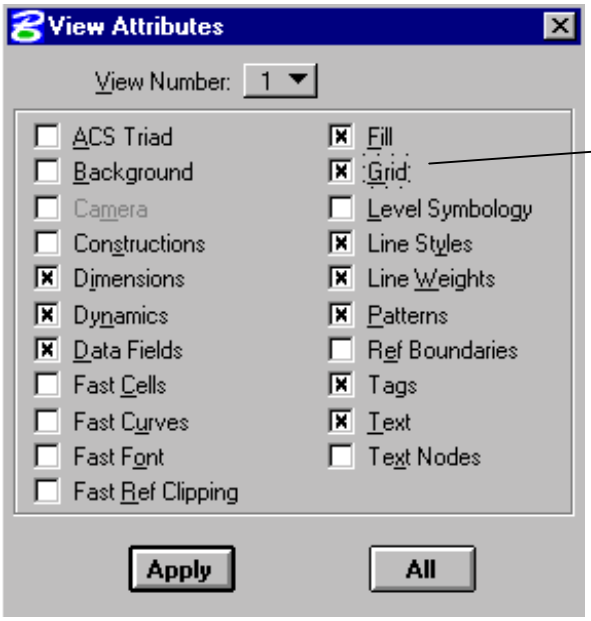
Optional

Depends on drawing scale



Optional

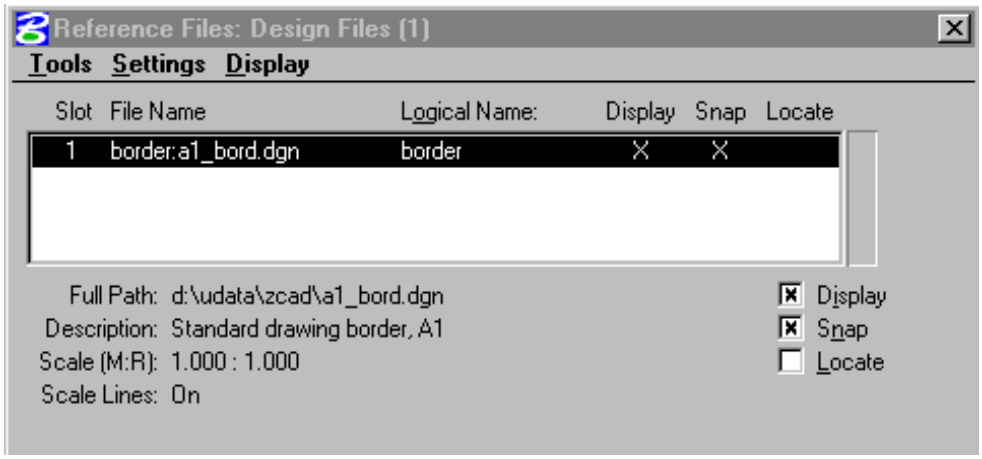
View attributes:



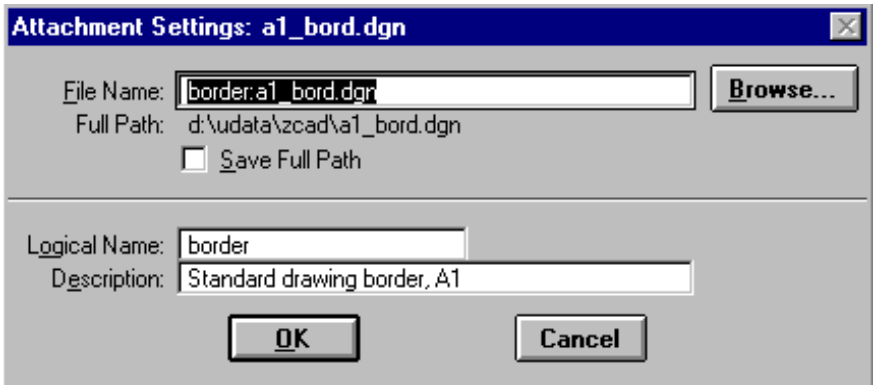
GRID: for schematics only

Recommended

Reference files:



Optional



Optional