



## Southwest Division NAVFACENGCOM CAD Standards

### **1. Preface**

These CAD Standards have been developed for use by both inhouse NAVFACENGCOM personnel and the A/E community. This document is to be used in conjunction with the A/E/C CADD Standard (current Release 2.0), produced by the CADD/GIS Technology Center for Facilities, Infrastructure and Environment (formerly the Tri-Service CADD/GIS Technology Center), and the United States National CAD Standards (current Version 2.0), published jointly by the National Institute of Building Sciences (NIBS), American Institute of Architects (AIA), Construction Specifications Institute (CSI), Tri-Service CAD/GIS Technology Center and U.S. Coast Guard. This document only addresses deviations from the previously mentioned standards and is not intended to be a fully detailed stand-alone document. Copies of the A/E/C CADD Standard may be obtained at no cost from the CADD/GIS Technology Center. Copies of the United States National CAD Standard may be purchased from NIBS, from the individual publishing agencies (NIBS, AIA, CSI) or at <http://www.nationalcadstandard.org/>.

### **2. Introduction**

This document provides guidance and procedures for preparing CAD products for the Southwest Division of NAVFACENGCOM. The aim of the document is to ensure consistent CAD products that are in compliance with the United States National CAD Standard. As these Standards evolve, this document will be updated to reflect the latest revisions. These CAD Standards are produced and maintained by the InHouse Design Area Focus Team CAD Manager. Any questions from the A-E Community regarding this policy should be addressed via Southwest Division Project Leaders.

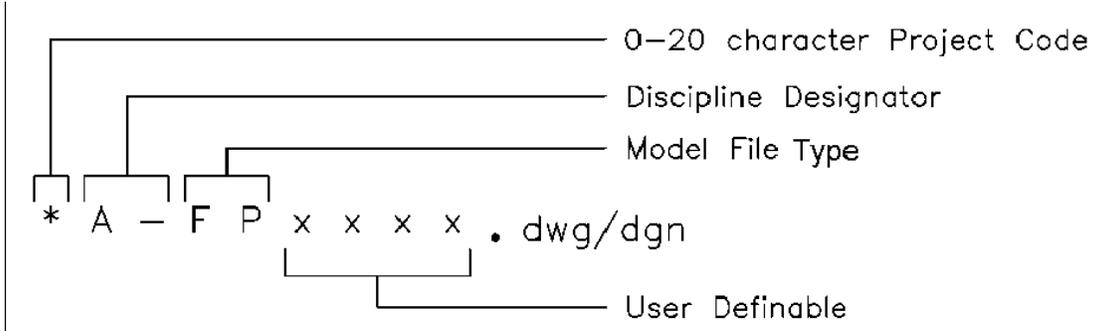
### **3. Target System**

This policy is written around AutoCAD 2002, which is the CAD system currently in use in the InHouse Design Area Focus Team of Southwest Division. This does not prohibit the use of other CAD systems or third party packages designed to work with AutoCAD. All products developed under this policy shall be saved in a format which is readable by the target system (.dwg). Any objects or entities created by other systems or software must be readable by the target system.

#### 4. File Naming and Sheet Identification

File naming shall be per the National CAD Standard (NCS) as specifically interpreted by the Tri-Service CAD/GIS Technology Center and as follows:

- Use the MCON Project Number for the “Project Code”, for example, P095.



- “Discipline Designators” shall be per table 1.

<b>Table 1 Discipline Designators</b>	
<b>Discipline</b>	<b>Designator</b>
General	G
Hazardous Materials	H
Survey / Mapping	V
Geotechnical	B
Civil Works	W
Civil	C
Landscape	L
Structural	S
Architectural	A
Interiors	I
Equipment	Q
Fire Protection	F
Plumbing	P
Process	D
Mechanical	M
Electrical	E
Telecommunications	T
Resource	R
Other Disciplines	X
Contractor / Shop Drawings	Z
Operations	O

- “Model File Type” shall be per Table 2.

<b>Table 2 Model File Types</b>		
<b>Discipline</b>	<b>Code</b>	<b>Definition</b>
<i>General</i>		
	BS	Border Sheet
	KP	Keyplan
<i>Hazardous Materials</i>		
	DT	Detail
	EL	Elevation
	LG	Legend
	PP	Pollution Prevention Plan
	SC	Section
	XD	Existing / Demolition Plan
<i>Survey / Mapping</i>		
	AL	Existing Airfield Lighting Plan
	CP	Existing Communication Plan
	EU	Existing Electrical Utilities Plan
	FU	Existing Liquid Fuel Utilities Plan
	HP	Hydrographic Survey Plan
	HT	Existing HTCW Utilities Plan
	IW	Existing Industrial Waste Water Plan
	LG	Legend
	NG	Existing Natural Gas Utilities Plan
	PB	Project Boundary
	PR	Existing Profile
	SC	Existing Section
	SP	Survey / Mapping Plan
	SS	Existing Sanitary Sewer Plan
	ST	Existing Storm Sewer Plan
	WA	Existing Domestic Water Plan
<i>Geotechnical</i>		
	BL	Boring Location Plan
	LB	Boring Log
	LG	Legend
	SH	Schedule
<i>Civil</i>		
	AF	Airfield Plan
	AM	Airfield Pavement Marking Plan
	CP	Channel Plan
	DT	Detail
	EC	Erosion Control Plan
	EL	Elevation
	FU	Liquid Fuel Utilities Plan

<b>Table 2 (Continued)</b>		
<b>Discipline</b>	<b>Code</b>	<b>Definition</b>
<i>Civil (Continued)</i>		
	GP	Grading Plan
	IP	Installation Plan / Base Map
	IW	Industrial Waste Water Plan
	JP	Joint Layout Plan
	KP	Staking Plan
	LG	Legend
	NG	Natural Gas Utilities Plan
	PL	Project Location Map
	PR	Profile
	SC	Section
	SH	Schedule
	SP	Site Plan
	SS	Sanitary Sewer Plan
	ST	Storm Sewer Plan
	TS	Transportation Site Plan
	WA	Domestic Water Plan
	XD	Existing / Demolition Plan
<i>Landscape</i>		
	DT	Detail
	EL	Elevation
	IP	Irrigation plan
	LG	Legend
	LP	Landscape Plan
	SC	Section
	SH	Schedule
	XD	Existing / Demolition Plan
<i>Structural</i>		
	3D	Isometric / 3D
	CP	Column Plan
	DT	Detail
	EL	Elevation
	EP	Enlarged Plan
	FP	Framing Plan
	LG	Legend
	NB	Non-Building Structures Plan
	NP	Foundation Plan
	SC	Section
	SH	Schedule
	XD	Existing / Demolition Plan

<b>Table 2 (Continued)</b>		
<b>Discipline</b>	<b>Code</b>	<b>Definition</b>
<i>Architectural</i>		
	3D	Isometric / 3D
	AC	Area Calculation / Occupancy Plan
	CP	Reflected Ceiling Plan
	DT	Detail
	EL	Elevation
	EP	Enlarged Plan
	FP	Floor Plan
	LG	Legend
	QP	Equipment Plan
	RP	Roof Plan
	SC	Section
	SH	Schedule
	XD	Existing / Demolition Plan
<i>Interiors</i>		
	3D	Isometric / 3D
	DT	Detail
	EL	Elevation
	EP	Enlarged Plan
	LG	Legend
	QP	Equipment Plan
	RP	Furniture Plan
	SC	Section
	SH	Schedule
	SP	Signage Placement Plan
	WP	System / Prewired Workstation Plan
	XD	Existing / Demolition Plan
<i>Fire Protection</i>		
	DG	Diagram
	DT	Detail
	FA	Fire Alarm / Detection Plan
	FP	Fire Suppression Plan
	LG	Legend
	LP	Life Safety Plan
	SH	Schedule
	XD	Existing / Demolition Plan

<b>Table 2 (Continued)</b>		
<b>Discipline</b>	<b>Code</b>	<b>Definition</b>
<i>Plumbing</i>		
	DG	Diagram
	DT	Detail
	EL	Elevation
	EP	Enlarged Plan
	LG	Legend
	PP	Piping Plan
	SH	Schedule
	XD	Existing / Demolition Plan
<i>Mechanical</i>		
	3D	Isometric / 3D
	DG	Diagram
	DT	Detail
	EL	Elevation
	EP	Enlarged Plan
	HP	HVAC Plan
	HT	HTCW Utilities Plan
	LG	Legend
	MD	Machine Design
	MH	Material Handling Plan
	PP	Piping Plan
	QP	Equipment Plan
	SC	Section
	SH	Schedule
	SP	Specialty Piping Plan
	XD	Existing / Demolition Plan

<b>Table 2 (Continued)</b>		
<b>Discipline</b>	<b>Code</b>	<b>Definition</b>
<i>Electrical</i>		
	AL	Airfield Lighting Plan
	AP	Auxiliary Power Plan
	CP	Exterior Communication Systems Plan
	DG	Diagram
	DT	Detail
	EU	Electrical Utilities Plan
	GP	Grounding Systems Plan
	LG	Legend
	LP	Lighting Plan
	PP	Power Plan
	SH	Schedule
	SS	Special Systems Plan
	XD	Existing / Demolition Plan
<i>Telecommunications</i>		
	DG	Diagram
	DT	Detail
	LG	Legend
	SH	Schedule
	TP	Telephone / Data Plan
	XD	Existing / Demolition Plan

- User Definable Fields shall correspond to the drawing’s final Sheet Name, for example, the final Sheet Name of the project’s Architectural Floor Plan is A101; the full filename would be “P095-A-FP-A101.dwg”.
- The first “User Definable” field shall correspond to the “Discipline Designators” per Table 1.
- The second “User Definable” field shall correspond to the “Sheet Type Designators” per Table 3.

<b>Table 6: Sheet Type Designators</b>	
<b>Sheet Type</b>	<b>Designator</b>
General (symbols legend, notes, etc.)	0
Plans (horizontal views)	1
Elevations (vertical views)	2
Sections (sectional views)	3
Large Scale Views (plans, elevations or sections that are not details)	4
Details	5
Schedules & Diagrams	6
User defined	7
User defined	8
3D Representations (isometrics, perspectives, photographs)	9

- The last two “User Definable” fields shall correspond to the sheet sequence order, i.e., 01,12, 03, etc..

## 5. Text Fonts and Sizes

The standard font for all drawings is the Arial True Type font. Standard text heights shall be 3mm (1/8”) for typical note and dimension text, 6mm (1/4”) for titles and 1” maximum for project titles.

## 6. Sheet and Border Size

The standard ANSI D size sheet (22” x 34”) and border have been created to implement a PDF electronic signature process. Southwest Division will provide the Autocad file of this border as well as files for time & date stamp and sheet information, which are to be inserted as blocks in each paperspace layout. The standard border file also contains NAVFAC’s standard annotation symbology and dimension style.

## 7. Layer Names

Layer names shall be generated in accordance with the National CAD Standard using the Tri-Service Workspace for AutoCAD (TSWS\_Acad), available for download at <http://tsc.wes.army.mil> . Do not utilize the lineweight function of this application and the color assigned to layers by this application may be changed to achieve the desired lineweight.

## **8. Line Weights and Colors**

Line weights shall be created by assignment to Autocad standard screen colors in accordance with the United States National Cad Standard.

Southwest Division will provide a Plot Style Table file, "NavFacStd.ctb".

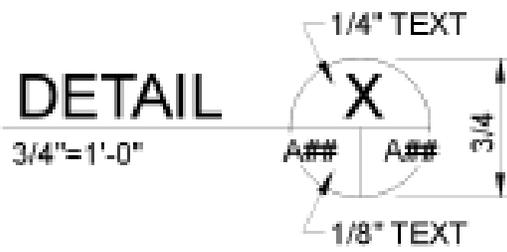
Plotted files (hardcopy or PDF) shall be Monochrome, unless color plots are specifically requested, and shall use color numbers assigned to "Black" or "Halftone".

## **9. Support Files**

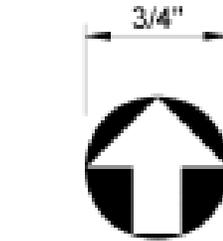
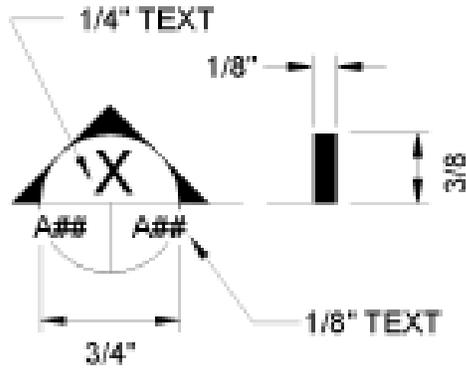
Support files necessary for initializing, editing and plotting drawing files shall be standard files provided as part of the AutoCAD software. Copyrighted, third party files shall not be used. Support files include text fonts, hatch patterns, line types, menus, etc..

## **10. Standard Symbols**

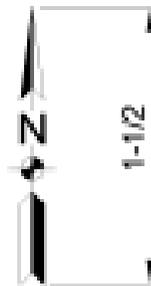
Standard symbols in English (in) and Metric (mm) units follow, respectively.



**TITLE LINES**



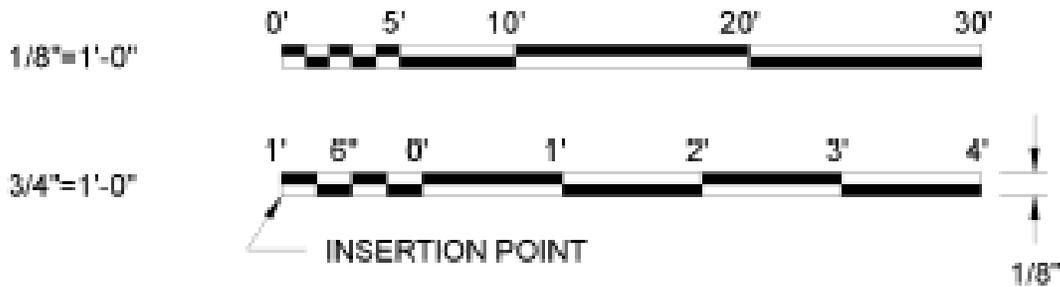
**BUILDING PLANS**



**SITE PLANS**

**SECTION CUTS**

**NORTH ARROWS**



**GRAPHIC SCALES**



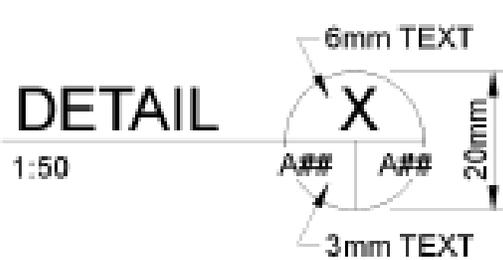
**ELEVATION MARKER**



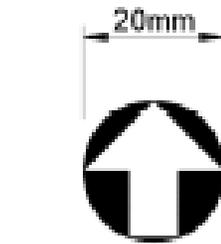
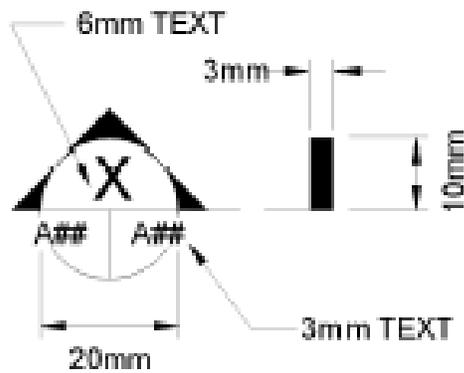
**POINT OF CONNECTION**



**REVISION MARKER**



**TITLE LINES**



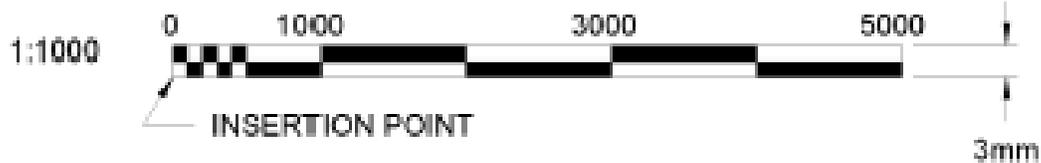
**BUILDING PLANS**



**SITE PLANS**

**SECTION CUTS**

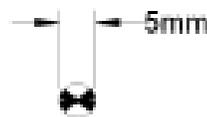
**NORTH ARROWS**



**GRAPHIC SCALES**



**ELEVATION  
MARKER**



**POINT OF  
CONNECTION**



**REVISION  
MARKER**