Mobile District
Advanced Modeling (AM) Bulletin
Graphics Concepts
SAM AMB 2024-09

Based on the standards produced by the

CAD·BIM
TECHNOLOGY CENTER

US Army Corps of Engineers
Mobile District
Engineering Division
September 2024

Version changes:

October 2018

1. New bulletin 2018-03

May 2019

1. Add wall type tag with ¼" square per NCS to the Graphics Concept example sheet.

August 2019

1. Updated the Graphics example attachment to correct Callout boundary lines per NCS & corrected Graphics scales' text size and bar height

March 2023

1. Added "Drawing Area Titles" section to address differences in the A/E/C Graphic Standards and the SAM Graphic Standards dealing with the placement of drawing area titles.

September 2020

1. Change the bulletin version to 2024-09

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Preface

The advanced modeling (AM) graphics concepts herein are based on the latest version of the National CAD Standard (NCS), and the A/E/C CAD Standard and the A/E/C Graphics Standard as developed and maintained by the CADD/BIM Technology Center. In this document, the A/E/C CAD Standard will be referred to as the AEC CAD Standard, the A/E/C Graphics Standard will be referred to as the AEC Graphics Standard. For internal users, local copies of both documents are located in Projectwise under AEC Standards, or online at https://cadbimcenter.erdc.dren.mil.

In the context of determining the applicable graphics requirements, the NCS forms the foundation of the requirements, with the AEC CAD Standard and the AEC Graphics Standard specifying or clarifying options and deviations as deemed appropriate for the US Army Corps of Engineers. This AMB further refines and in some cases deviates from the NCS and AEC Standards as necessary to support local requirements.

Drawing Composition

The Mobile District standard sheet size is ANSI D (22" x 34") for projects based on imperial units and ISO A1 (594mm x 841mm) for projects based on metric units. Deviations from these standard sheet sizes require approval from the Mobile District Engineering Division Design Branch chief. However, approval is typically only granted for use of the alternative larger size ANSI F (28" x 40") for designs that do not fit well on the standard sheet sizes.

Standard Mobile District border file and matching sheet file templates are available for download from the Mobile District website http://www.sam.usace.army.mil/Missions/Military-Missions/Engineering/Design-Guides/Mobile-District-Design-Guides/CADD/Templates/. Use of these templates is not mandatory as long as the delivered files comply with contract requirements, the AEC CAD Standard, the AEC Graphics Standard and the requirements expressed herein.

A project cover sheet and border are provided by the Technical Services branch (EN-T) for each project for in-house projects.

For Acrobat PDF deliverables, sheet sizes shall be full-size prints, e.g. ANSI D shall be printed to full size scale at 22" x 34".

Line Styles and Text

Line Styles and Linetypes

Standard line styles/linetypes shall be in accordance with the AEC CAD Standard. The custom line styles/linetypes required by the AEC CAD Standard are stored in line style resource file tsaec.rsc for Microstation and line definition file AEC_Linetypes.lin and shape file AEC_LT_Shapes.shx for AutoCAD as published on the CAD/BIM Center website (https://cadbimcenter.erdc.dren.mil) as part of the A/E/C Work Structure download.

EXCEPTION: Revit does not support linetypes that utilize shape fonts and therefore the AEC CAD Standard linetypes for gas lines, fence lines, etc. do not apply to Revit models, and Revit exported CAD files, PDFs, and prints.

Text Styles and Dimension Styles

Text style and dimension style graphics settings shall comply with AEC CAD Standard and AEC Graphics standards, except where explicitly prescribed herein.

Text Font, Height, and Width

All text styles are to be based on the Arial TrueType font with a width factor of 1.0. Use of other text width factors may cause problems with the proper display and printing of the Arial truetype font and is prohibited. Except otherwise noted, the standard text size (height) shall be 3/32".

Text style settings are to be set to opaque background as a default with a leader/border offset gap of 1/2 the text height and a tab setting of 1/2".

Title Block Text

All text in the border shall conform to the AEC Graphics and AEC CAD Standards as published by the CAD/BIM Center.

Tables and Schedules

Headers shall be 3/16" with optional 1/8" sub-headers and 3/32" body text.

Drawing Area Titles

When placing and numbering drawing area titles, SAM Graphic Standards may differ from the National CAD Standard section 2.3.1.1 and A/E/C Graphic Standard *section 4.2.3.1* the following way.

Placement of drawing area titles can be from left to right and top to bottom like reading a book.

Numbering of the drawing area titles should be in numerical order with the lowest number in the upper left-hand corner of the drawing area and continuing left to right and top to bottom to the highest number of views contained on the sheet.

Numbering of PLAN or ELEVATION VIEW DRAWING AREA TITLES should be in numerical order left to right and top to bottom, starting with the number (1) and continuing numerically on the sheet and then starting over with number one (1) for each sheet containing plan or elevation views.

Numbering of SECTION or DETAIL DRAWING AREA TITLES should be in numerical order left to right and top to bottom, starting with the number one (1) with your first section or detail of the plan set and continuing numerically through the entire plan set. This will prevent sections and details from having the same numerical identifier and hopefully preventing the wrong section or detail from being used incorrectly.

Symbols and Markers

All drawing scales, section markers, elevation markers, column line grid indicators, detail callouts, and other symbols shall conform to NCS and AEC standards, except as noted below.

Dimensions and Leaders

Dimensions and leaders shall be in accordance with AEC Standards using 3/32" text.

View Titles

View title symbology shall be in accordance with NCS with view title and view number using 1/4" text. Optional view sub-titles shall be 3/16" underlined, and view scale shall be 3/32" text.

Object Tags

All object tags shall be 3/32" text. Door tags shall be placed parallel to the door panel inside the door swing. Room and space names shall be 1/8" text. Room and space numbers shall be 3/32" text. Imperial duct size tags shall omit the inch mark and shall be aligned with the duct. For small ducts, use of a 1/32" dot leader is permissible.

Quick Reference – SAM Graphics Concepts Examples

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