

NANP-1110-02-02


NEW YORK DISTRICT US ARMY CORPS OF ENGINEERS  
 ENGINEERING DIVISION, DESIGN BRANCH



## NEW YORK DISTRICT CAD STANDARD

### Version 2.0

May 2010

 US Army Corps of Engineers New York District		
DESCRIPTION	DATE	APPR.

The New York District CAD Standard supplements the Department of Defense A/E/C CAD Standard, Release 4.0, ERDC/ITL TR-09-2.

The New York District CAD Standard contains supplemental materials and requirements specific to all New York District US Army Corps of Engineers computer-aided design and drafting work.

# **NEW YORK DISTRICT CAD STANDARD**

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### REVISION RECORD

Revision Letter	Change Number	Description	Date
		Basic Issue	1 May 2009
A	1	Update to reflect release of A/E/C CAD Standard version 4.0	26 May 2010

### LIST OF EFFECTIVE PAGES

THE TOTAL NUMBER OF PAGES IN THE DOCUMENT IS 13, CONSISTING OF:

Note: A vertical line in the outer margin of page indicates the changed portion of the document.

Page No.	Issue	Page No.	Issue
<i>i thru. v</i>	2.0	9	2.0
1	2.0		
2-3	2.0		
4-5	2.0		
6	2.0		
7-8	2.0		

## SCOPE, PURPOSE AND BACKGROUND

1. This manual provides guidance, procedures and specific requirements for computer-aided drafting (CAD) products within the New York District United States Army Corps of Engineers (CENAN). The contents of this manual supplement the Department of Defense A/E/C CAD Standard, Release 4.0, ERDC/ITL TR-09-2, which is compliant with and supplementary to the U.S. National CAD Standard.
2. The purpose of this manual is to establish the standard for all CAD work for which the New York District team<sup>1</sup> is responsible. All CAD products delivered by the New York District United States Army Corps of Engineers shall conform to the provisions of this document.
3. In 2004, the New York District began full implementation of the A/E/C CAD Standard, per direction of Corps Headquarters (HQUSACE). Implementation was completed in 2006 by which time all CAD work was required to be performed and delivered in compliance with the A/E/C CAD Standard. Some stated goals of the A/E/C CAD Standard are “[delivery of] consistent CAD products for customers; uniform requirements for A-E deliverables; sharing of products and expertise; and collection, manipulation, and exchange of database information.”

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<sup>1</sup>The “New York District Team” includes all CENAN employees, other Corps districts and Federal agencies, and contracted A/E/C firms.  
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# NEW YORK DISTRICT STANDARDS FOR COMPUTER-AIDED DESIGN AND DRAFTING (CAD) PRODUCTS

## 1. Standard

- 1.1. All drawing files submitted to the New York District United States Army Corps of Engineers (CENAN) shall conform to the New York District CAD Standard, to the Department of Defense A/E/C CAD Standard, Release 4.0, which is a subset of the National CAD Standard, version 4.0. **In all matters concerning Computer-Aided Drafting (CAD) and Computer-Aided Design and Drafting (CADD), the New York District CAD Standard shall govern pertaining to those matters specifically described herein.**
- 1.2. Plans, sections, details and other drawings, elements of drawings, and other similar items generated from Building Information Modeling (BIM) efforts shall conform to the New York District CAD Standard.
- 1.3. The “latest versions” of the New York District CAD Standard and all border sheets, for contractual purposes, are those versions available on the New York District Engineering Division website (see below) on the day of contract award.

2. **Location of New York District CAD Standard** The latest version of the New York District CAD Standard, and other related documents are available only by download

Contracted projects (for A/E firms): <http://www.nan.usace.army.mil/business/buslinks/contract/ae/index.htm>

In-house projects: <https://intranet.nan.usace.army.mil/cad/index.htm> (via CENAN intranet).

## 3. Paper Size

- 3.1. All full-size drawings, both inch-pound and metric, shall be plotted on ANSI D (22 in X 34 in) size paper.
- 3.2. Customer-specific paper size requirements, if any, described in the pertinent Scope of Work or other contract document(s), shall be substituted for ANSI D size paper; otherwise, all full-size drawings shall be plotted on ANSI D size paper.

## 4. Cover and Border Sheets

- 4.1. Cover Sheet (Figure 1). All plans packages shall be based upon the most recent cover sheet file as downloaded from the New York District Engineering Division website.
- 4.2. Border Sheet (Figure 2). All plans packages shall be based upon the most recent border sheet file as downloaded from the New York District Engineering Division website.
- 4.3. All drawing sheets shall have a production data area indicating who submitted the file for plotting, date and time of plot and the file’s full path and file name (see Figure 3).
- 4.4. All drawing sheets shall include border sheet version information indicating the effective date of the border sheet (see Figure 3).
- 4.5. All drawing sheets shall include disclaimer information, submittal level information, scale verification and room for registered design professional stamps and seals (see Figure 3).

## 5. Title Blocks

- 5.1. Use the supplied title block only. Do not alter its configuration, images, fonts or point size in any way. Add company logo only in the lower portion of the Management Block (in accordance with A/E/C CAD Standard 4.0, chapter 3).
- 5.2. The Management Block shall be completed with all pertinent information. Several fields in the management block contain code that is processed by the IPLOT software. If IPLOT is not being used, replace these codes accordingly.
- 5.3. CAD products submitted with blank fields and/or unprocessed IPLOT codes are considered incomplete and will be rejected by the New York District.

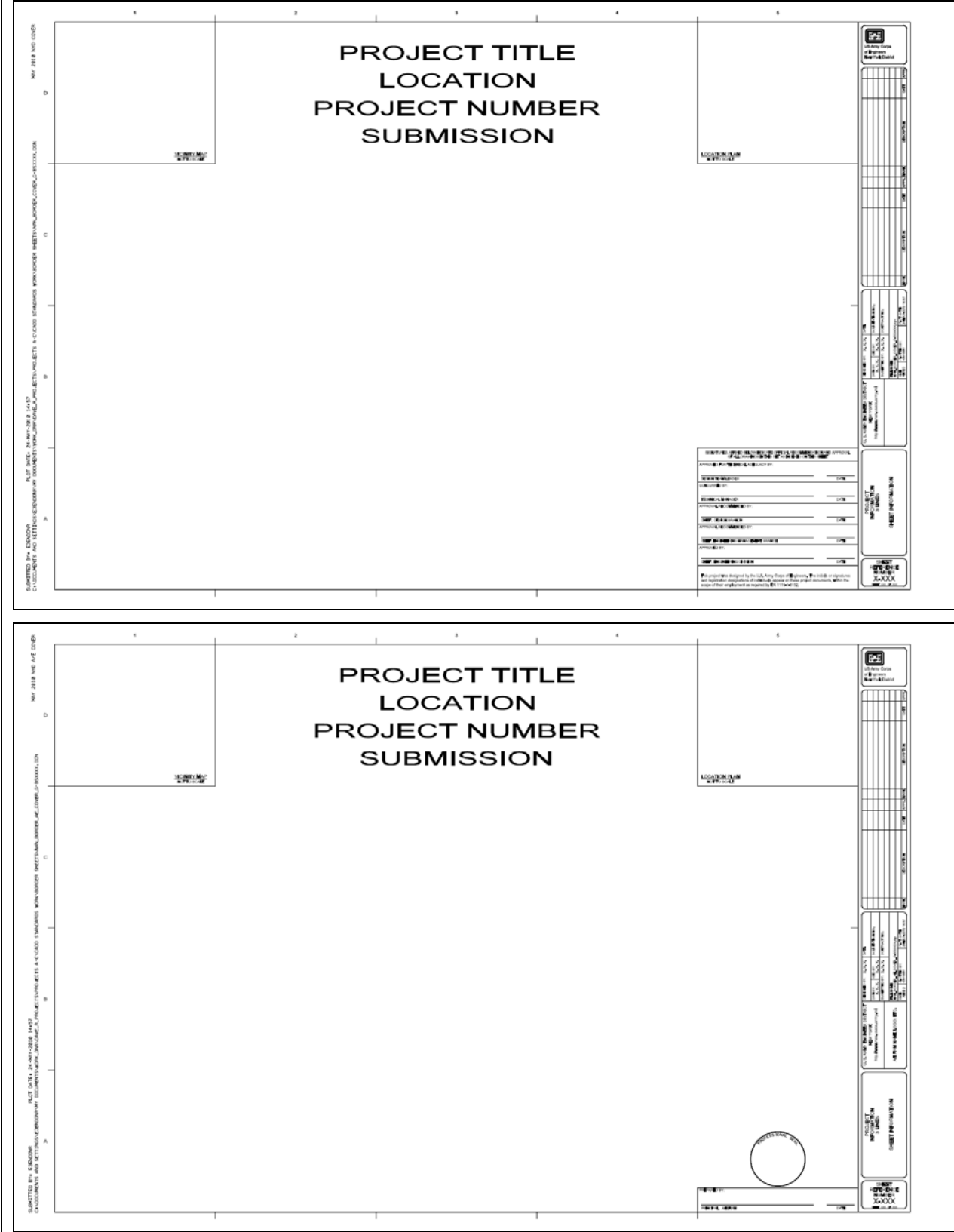
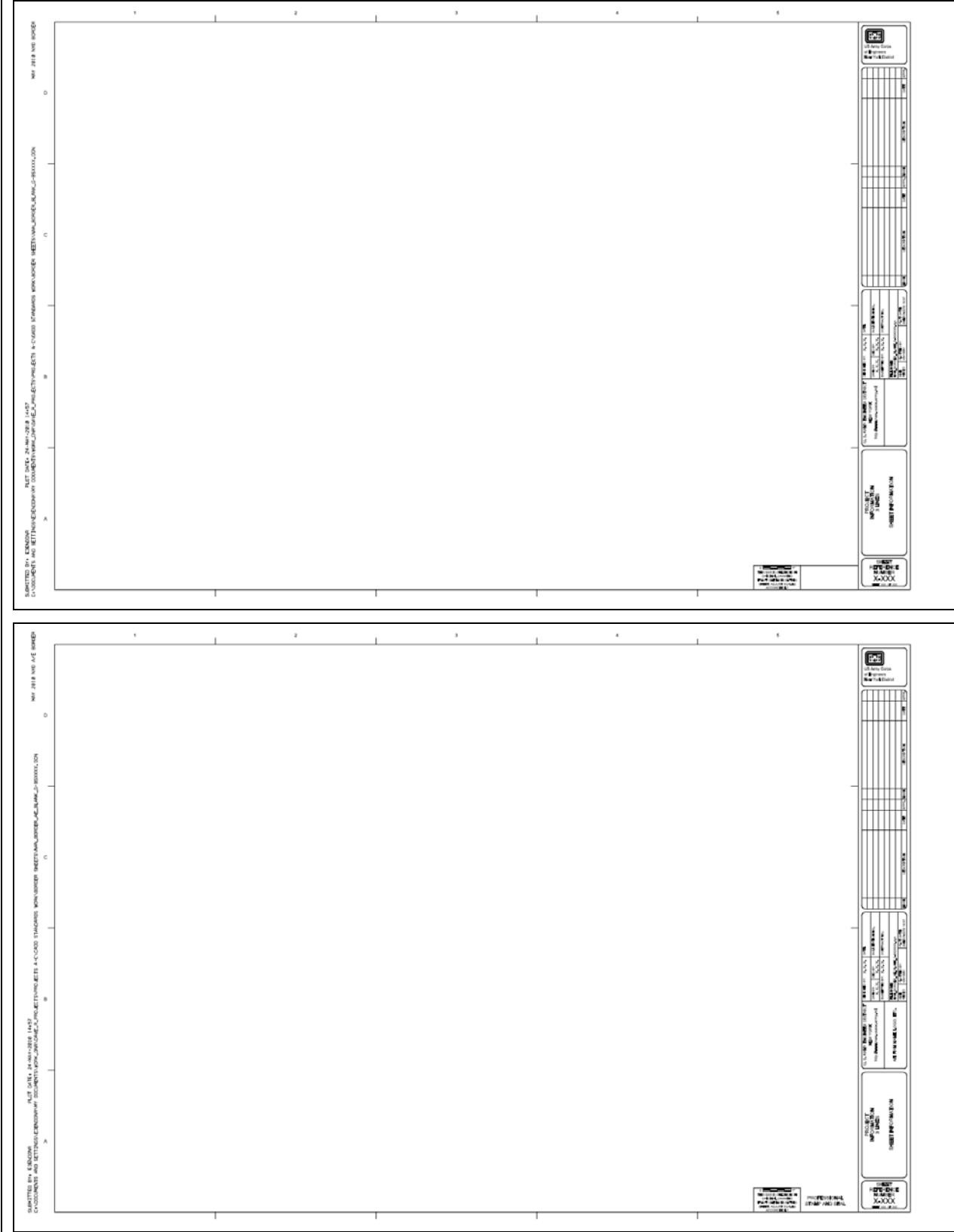


Figure 1. New York District CAD Standard cover sheets.

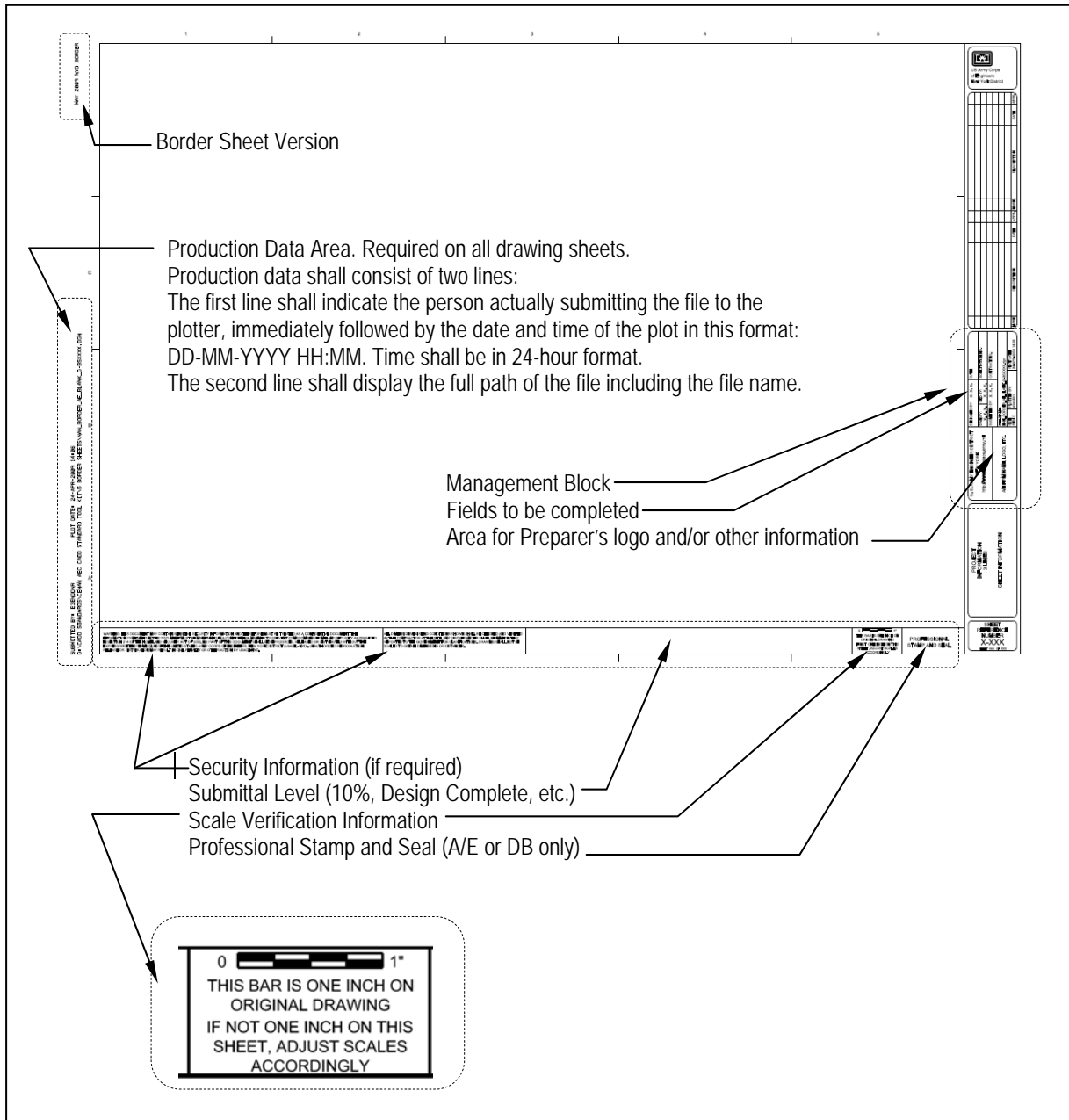
The cover sheet at the top of the page is for plans prepared in-house. The cover sheet at the bottom half of the page is for plans prepared by A/E or DB contractors. NB: these cover sheets are representative only. The governing cover sheet must be downloaded from the New York District Engineering Division website.



**Figure 2. New York District CAD Standard Border sheets.**

The border sheet at the top of the page is for plans prepared in-house. The border sheet at the bottom half of the page is for plans prepared by contractors. NB: these border sheets are representative only. The governing border sheet must be downloaded from the New York District Engineering Division website.





**Figure 3. New York District Border Sheet Requirements**

Border sheet version will indicate date of issue. Security information consists of a Homeland Security Act of 2002 statement and statement regarding field verification of any existing conditions data shown. This information is included in the downloadable cover and border sheet files. Note: This information may not be required and it is the responsibility of project leadership to determine the necessity of these and any other statements on project drawings. Submittal level information should indicate the level of design progress, whether or not the drawing is from a construction set or record set, etc. The scale verification information is shown enlarged and is self-explanatory. NB: this border sheet is representative only. The governing border sheet must be downloaded from the New York District Engineering Division website.

## 6. File Naming

- 6.1. All CAD file names shall include the project-specific project code designator in accordance with the A/E/C CAD Standard Ver. 4.0, Chapter 2. The project code designator is typically provided in the Scope of Work or other pertinent document.
- 6.2. For those projects, like multi-story buildings or multi-component military facilities, which lend themselves to be subdivided by floors, parcels, sectors, etc., it is acceptable to group the drawing sheets by such subdivisions. This shall be accomplished by manipulation of the 0-20 character project code and the User Definable portion of the file name, as illustrated in Figures 4-6.

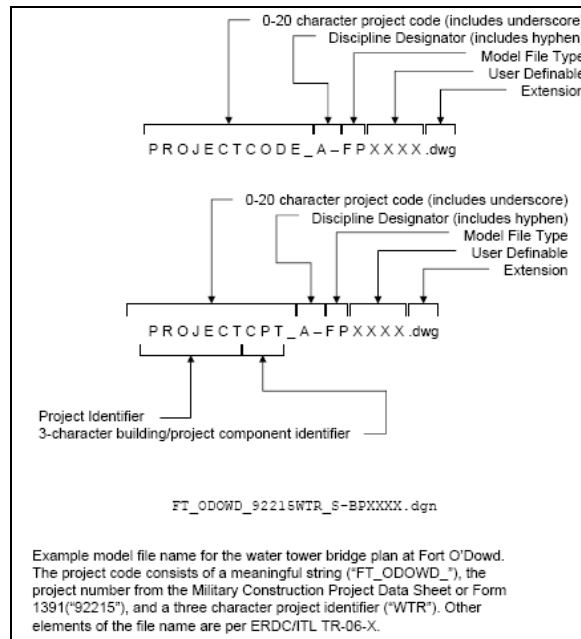


Figure 4. Model file naming for multi-element projects.

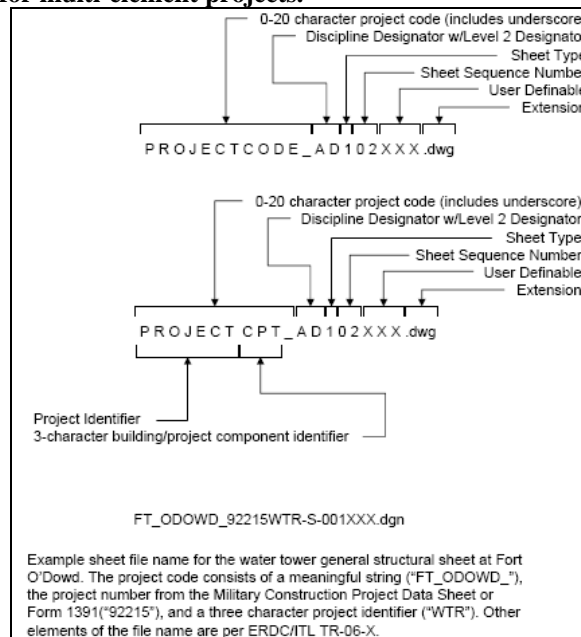
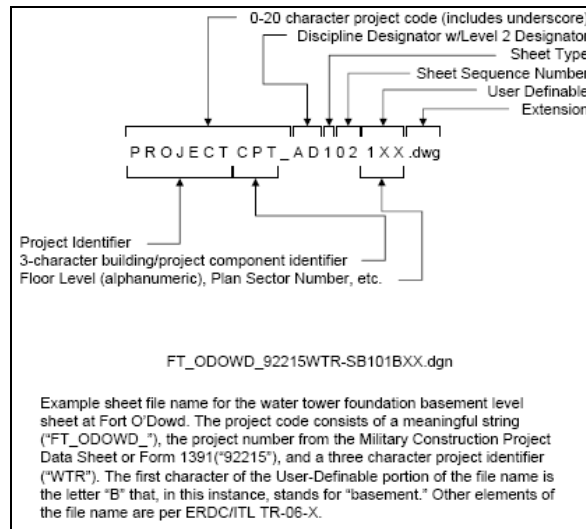


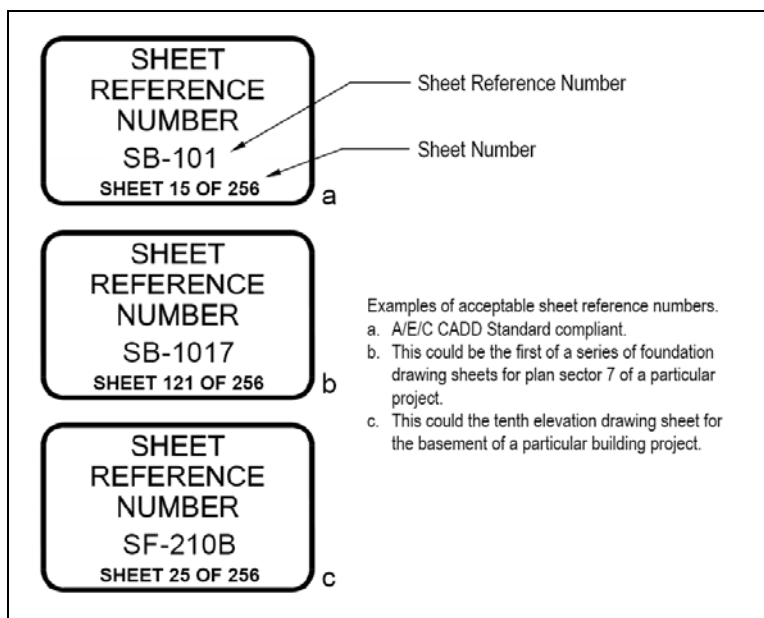
Figure 5. Sheet file naming for multi-element projects.



**Figure 6. Sheet file naming for multi-element projects using user-defined characters.**

**7. Sheet Numbering and Sheet Sequence Numbering**

- 7.1. Sheet numbering is simply the numerical order of the respective sheets. Sheet numbers are dependent only upon this numerical ordering; when new sheets are added to a plan set, the sheet number shall change accordingly.
- 7.2. The sequence of plan sheets shall be organized in a logical manner. However, sheet sequencing is not dependent upon file naming or discipline, though usually it will be.<sup>2</sup>
- 7.3. Each sheet shall have a unique sheet sequence number also known as the *sheet reference number*. For projects involving multiple buildings or repeated, separable project elements, the plans may be organized into volumes or sub-sets drawing from the user-defined characters, similar to the sheet file name illustrated in Figure 6, as shown in Figure 7, below.



**Figure 7. Sheet numbering and sequencing examples.**

<sup>2</sup> That is, sheets would be sorted per discipline in accordance with the Uniform Drawing System, Module 01 (UDS 01), *Drawing Set Organization*, as illustrated in the National CAD Standard, Volume 4.0, Figure 01.1.  
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True Type	MicroStation	AutoCAD
ARIAL	43 LOW_RES_FILLED	SWISS 721 BT
<b>ARIAL BOLD</b>	43 LOW_RES_FILLED	<b>SWISS 721 BT BOLD</b>
<i>ARIAL ITALICS</i>	<i>43 LOW_RES_FILLED ITALICS</i>	<i>SWISS 721 BT ITALICS</i>

**Figure 8. New York District CAD Standard fonts.**

## **8. Fonts and text size**

8.1. Font type and usage shall be consistent for *all* drawings and sheets. Figure 8 provides a sample of the fonts specified below.

8.2. The Arial True Type font is the *preferred* font for all CAD work. Use of the MicroStation and AutoCAD equivalent fonts is permitted, particularly regarding legacy CAD work; however, new CAD work should use the preferred font (Arial True Type).

8.2.1. Font requirements per the New York District CAD Standard

8.2.1.1. Cover Sheet Title Text

8.2.1.1.1. Use True Type Arial or Swiss 721 BT (AutoCAD), 43 LOW-RES\_FILLED (MicroStation)

8.2.1.1.2. Text height and width for the title text on the cover sheet shall be at least 0.5 inches. As the title text on the cover sheet must stand out, it is permissible for the title text on the cover sheet to be disproportional.

8.2.1.2. Main drawing titles (not within title block).

8.2.1.2.1. Use True Type Arial or Swiss 721 BT (AutoCAD), 43 LOW-RES\_FILLED (MicroStation)

8.2.1.2.2. Text height and width shall be .25 (1/4) inches.

8.2.1.3. Main drawing sub-titles.

8.2.1.3.1. Use True Type Arial or Swiss 721 BT (AutoCAD), 43 LOW-RES\_FILLED (MicroStation)

8.2.1.3.2. Text height and width shall be .1875 (3/16) inches.

8.2.1.4. Notes, Call-outs, Dimensions, Schedules, Tables, Index Tables, and General Text

8.2.1.4.1. Use True Type Arial; romans (AutoCAD), 3 ENGINEERING (MicroStation)<sup>3</sup>.

8.2.1.4.2. Text height and width shall be .125 (1/8) inches.

8.2.1.5. Italics. The use of italicized text is acceptable for notes and call-outs. However, consistency shall be maintained across the entire set of drawings. For instance, if the Architectural discipline uses italicized text in call-outs, then so shall all disciplines.

## **9. Arrow terminators, Symbols, Patterns, Colors**

9.1. Arrow terminators shall be consistent for all disciplines throughout the full plan set.

9.2. Discipline-Specific CAD Products. Output from analysis programs that is included on CAD sheets (for example, structural connection details, flow diagrams, etc.) shall conform to the New York District CAD Standard.

<sup>3</sup> romans and ENGINEERING are not shown.

9.2.1. Boring Log Patterns. The Unified Soil Classification System (USCS) is a long-in-use, well-established standard. The USCS contains graphic standards for representing soil and rocks. It shall be the standard New York District practice to use these standard colors and patterns.

10. **Abbreviations.** With the exception of the following, the provisions of the A/E/C CAD Standard shall govern. All CAD deliverables shall use the following abbreviations:

To be abbreviated...	Abbreviation
<i>United States Army Corps of Engineers</i>	USACE
<i>Corps of Engineers</i>	USACE
<i>New York District Corps of Engineers</i>	NYD
<i>North Atlantic Division Corps of Engineers</i>	NAD
<i>Contracting Officer (military projects only)</i>	KO
<i>Contracting Officer's Representative (military projects only)</i>	COR

**Table 1. New York District CAD Standard Abbreviations.**

11. **Waivers to this Standard.** Requests for waivers of the provisions of the New York District CAD Standard shall be directed to Chief, Design Branch, New York District. Waiver requests shall be written and shall include a detailed description of the circumstances requiring a waiver. Waivers are generally discouraged, though it is recognized that they may be necessary. There is one bona fide reason for waiving compliance with the NYD and A/E/C CAD Standards: Existing drawings (as-builts, record drawings, etc.) are available electronically as scanned images only. In order to include such drawings in a CAD package, the scanned images would be attached to a sheet file as a raster image. In order to fit within the NYD Standard border sheet, however, it may be necessary to manipulate the image electronically. This introduces errors into the image that may have serious impact on the project (for example, undesired change in drawing scale that is difficult to detect).
12. **Retainages.** Failure to provide New York District CAD Standard-compliant drawings will result in retainages reflecting the cost to the Government to bring the drawings into compliance. Retainages are described in the pertinent contract documents (e.g., § 01 12 00.00 18 *Design and Record Drawings Requirements*, etc.).
13. **Revisions to this Standard.** Revisions to the New York District CAD Standard will be periodic in keeping with revisions to the A/E/C CAD Standard and the National CAD Standard. Also, revisions will be made time-to-time when deemed necessary to address issues discovered as required. The governing version<sup>4</sup> of the New York District CAD Standard is the one currently available for download on the New York District Engineering Division website.

## REFERENCES

U.S. Army Corps of Engineers, Engineer Research and Development Center/Information Technology Laboratory. July 2009. *A/E/C CAD Standard* Release 4.0. ERDC/ITL TR-09-2. Vicksburg, MS. The AEC CAD Standard is available for download at <https://cadbim.usace.army.mil/CAD>.

National Institute of Building Sciences. 2007. *U.S. National CAD Standard For Architecture, Engineering, and Construction (A/E/C)* Version 4. Washington, D.C.

U.S. Army Corps of Engineers, New York District. March 2008. *Engineering and Design Standards Manual*. New York City, NY.

U.S. Army Corps of Engineers, Waterways Experiment Station, April 1960. *The Unified Soil Classification System*. Vicksburg, MS.

<sup>4</sup> Contracted CAD deliverables shall comply with the New York District CAD Standard available for download on the date of contract award.  
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# CHANGE BALLOT

Change suggestions to the New York District CAD Standard are welcomed.

Only printed change ballots are accepted! Print out this page, in its entirety, fill it out accordingly, and submit the New York District CAD Standard change ballot to Chief, Design Branch (CENAN-EN-D), Room 2009.

Requestor's Name:		
Request Date:		
Reference Section and Page Number:		
Requested Change (with detailed explanation – include additional sheets if required):		
Requestor's Signature:		
DESIGN BRANCH USE ONLY		
Accepted	<input type="checkbox"/>	Review Date and Explanation:
Rejected	<input type="checkbox"/>	