

## Comments on the A/E/C CADD Standard Release 2.0 Main Text

**Submitter:** Bill Boyle, USAE District, Alaska

**Comment:** File naming -

<http://tsc.wes.army.mil/products/standards/aec/chapters/CHAPTER2.PDF> can create problems. First, we like to identify the project code first so drawings can be sorted or grouped alphabetically, having a sheet type in name can be time consuming if (and this happens all the time) sheets are moved around and renamed. Also, we like to show the sheet reference number in the filename. Here is the standard we use in Alaska District:

FR120A1\_100 FR identifies the base or post, 120 is the project number, A1\_100 is reference A1.100

The way the file naming system in the standards reads, all A-FP sheets will be grouped together, and so on.

**Response:** The CHAPTER2.PDF file reviewed was actually for Release 1.8 of the standard. For Release 2.0, Project Codes will be an optional part of both Model and Sheet Files. Users will be allowed to use a 0-20 character Project Code before file names.

**Comment:** Pens, colors, plotting - we use a simplified system using only 8 basic pens and they are sized in order. Don't understand why the chart goes .25, .35, .25, .5, .18, .35, .7 instead of a more straightforward system. <http://tsc.wes.army.mil/products/standards/aec/appdd/appdd.pdf>

**Response:** The file mentioned is actually a part of Release 1.8 of the Standard. In Release 2.0, pen weights will not be listed along with the color #'s since AutoCAD 2000 has removed the assignment of specific weight to color.

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**Submitter:** Rodger Tellefson, USAE District, Sacramento

**Comment:** Page 23 - We in the Sacramento District have found that using the FILLED Swiss True Type font does not work for CALS file generation.

(Note: in a clarification phone call, Mr. Tellefson recommended the ROMANC font for filled fonts)

**Response:** According to the EBS POCs at the Center, AutoCAD 2000 has fixed this problem.

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**Submitter:** Lori Taylor, USAE District, St. Paul

**Comment:** Page 3, paragraph 1, line 4: Remove the hyphen from "communi-cations".

**Response:** Agreed. This was a typo.

**Comment:** Page 7, Table 2 specifies the use of 1:1:10 working units for Metric (A/E/C) drawings. In the past, I have had precision problems when constructing small arcs and curves when preparing structural drawings and cells using those units. For most of our A/E/C drawings we use 1:1000:1. We primarily deal with smaller structures in my district, and usually opt for more precision. Would it be possible to change the description in last row to read "Metric (Mechanical Machine Design or Small A/E/C projects)?"

**Response:** Agreed. This question was sent out to several DoD experts on working units. Almost all of them agreed that the current working units are not precise for metric A/E/C designs. However, they felt that working units of 1:1:100 would have enough precision for A/E/C design.

**Comment:** Page 9, paragraph 1, line 11: Change "*Model*" to "*Drawing*" to match the Table 5 description (page 14).

**Response:** Actually, the correct National CAD Standard designation for this information is Model File Type. So, on page 9 - line 11, the text will be changed to *Model File Type* and Table 5 will be changed to Model File Types.

**Comment:** Pages 30-31, paragraph "Large units of measure": I believe toggling off the unit separator for four digit metric dimensions would be tedious and unnecessary. Line G.2. of ASTM

E 621 - 94 (Reapproved 1999) states, "For individual numbers with four digits before (or after) the decimal marker this space is not necessary." However, the standard does not restrict its use. In fact, Table 4 of the ASTM standard lists the number "1 000" with the unit separator. Allowing the unit separator for four digit numbers is especially important when preparing tables where you want the units to line up. I suggest Figure 16 be modified showing both methods for 4 digits or more. I also recommend deleting the last sentence in paragraph 1 or page 31: "The unit separation toggle switch needs to be turned off for dimensions less than 10000 mm; otherwise four-digit numbers will display using the space as a unit separator (Figure 16)."

**Response:** Agreed on the fact that the space is allowed in four digit numbers where it is shown in tabular form with other numbers with more than five digits (as shown in Table 3 of ASTM E 621-94). Also agree that if you have mixed measurements of both 4 digit and 5+ digit measurements that it would be tedious to keep turning on and off the unit separator option. Since the ASTM document states, "For individual numbers with four digits before (or after) the decimal marker this space is not necessary", this statement makes this sound like an option not a mandate. Therefore, the paragraph on page 31 of the Standard will be rewritten:

"The Unit Separation toggle under the *Unit Format* setting for Dimension Settings can be used to add a space after the thousands place in a value (Figure 17). Since toggling this value on and off for drawing files containing varying dimension values would be tedious, recommend toggling Unit Separation "on" for files containing any dimension values over 5 digits and "off" for files containing dimension values with only 4 or less digits."

**Comment:** Increase the resolution on Figures 6, 7, 17, 18, 19, 20, 22, 24, 26, 27, 28, 29, 31, and 32 and Table 14.

**Response:** Agreed. The resolution will be increased.

**Comment:** Page 31, paragraph "Dual units:" Could you add guidance for creating metric drawings where some existing components are in feet/inches? One example is adding on to an existing R.C.P. In our district, we currently label the existing R.C.P. in inches and place the metric equivalent in millimeters. Any thoughts?

**Response:** The purpose of this section was just to enforce the push toward moving toward metric and the difficulties behind dual dimensioning. Rather than try and present a methodology on how dual dimensioning is achieved, we would rather leave it up to the sites to establish their own convention.

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**Submitter:** Richard Newlin, USAE District, Fort Worth

**Comment:** Reference Table 4 "Discipline Designators with Level 2 Designators"

- a. Reference previous comment concerning additional level 2 discipline designator code for airfield lighting due to significant quantity of files. Although model file naming would distinguish airfield lighting by drawing type code "AL", apparently the only way to distinguish type plans such as legends, schedules, diagrams, and details for airfield lighting is to utilize additional type codes for user defined characters (e.g. \*ESALSHXX.DGN). For sheet files, there would not be any way to organize files to include airfield lighting files as a group as the sheet type designator would intermix other files such as site lighting or power details, legend, schedules, and diagrams with airfield lighting files. It would be preferable to include an additional designator for airfield lighting. The following is recommended:

Discipline Designator: EA, Description: Airfield Lighting and Nav aids, Content: Visual Air Navigation Systems

**Response:** Agreed. Will add this designator with an "\*" showing that it is not in NCS 2.0.

- b. The "Content" for "Electrical Site" does not fully cover types of systems utilized for exterior work. Description needs to be revised to indicate "Exterior Electrical Systems (Power, Lighting, Telecommunications, Auxiliary)".

**Response:** Agreed. The description in NCS is vague. Will change the description to that mentioned above. This way, users will not be confused as to which to use for interior vs. exterior work.

- c. The designators such as EP, EL, ET, & EY would present some ambiguity in naming. For example, EL or ES could be utilized for exterior lighting since they would both be lighting. Recommend that "Interior" be added to description to distinguish between interior and exterior files.

**Response:** Agreed. Interior needs to be added to the description to make the content less vague.

**Comment:** Reference Table 5 "Drawing Type Codes"

- d. Reference previous comment concerning legend and schedule files. "SH" was added as a drawing type for schedules. Legends are very significant files and need to be included in drawing type codes to readily distinguish them from other files. Recommend "LG" be added to table 5 for Legend.

**Response:** Agreed. A Legend could potentially be a model file referenced to create a Legend sheet. Will add LG to Table 5.

- e. Some symbology table disciplines and model file descriptions do not agree. To obtain standardization, it must be clear which symbology tables apply to which model files. The following table indicates proposed symbology tables that would be used for Electrical/Fire Alarm model files:

| Model File |      |                           | Symbology Table             |  |
|------------|------|---------------------------|-----------------------------|--|
| Discipline | Type | Description               | Discipline                  | Model File Type                          |
| ES         | AL   | Airfield Lighting Plan    | Electrical                  | Airfield Lighting Plan                   |
| ES         | CC   | Cathodic Protection Plan  | Electrical                  | Electrical Utilities Plan                |
| ES         | CP   | Communication Plan        | Electrical                  | Exterior Communications Systems Plan     |
| ET         | CP   | " "                       | Telecommunications          | Telephone/Data Plan                      |
| All        | DG   | Diagram                   | Electrical                  | Riser/One-Line Diagrams                  |
| All        | DT   | Detail                    | Electrical                  | Details                                  |
| E-         | GP   | Grounding Plan            | Electrical                  | Grounding System                         |
| ES         | LP   | Lighting Plan             | Electrical                  | Electrical Utilities Plan                |
| EL         | LP   | " "                       | Electrical                  | Lighting Plan                            |
| E-         | LR   | Lightning Protection Plan | Electrical                  | Grounding System                         |
| ES         | PP   | Power Plan                | Electrical                  | Electrical Utilities Plan                |
| EP         | PP   | " "                       | Electrical                  | Power Plan                               |
| E-         | QP   | Equipment Plan            | Architectural               | Equipment Plan                           |
| All        | SH   | Schedule                  | Electrical                  | Details                                  |
| ES         | SL   | Site/Street Lighting Plan | Electrical                  | Electrical Utilities Plan                |
| EY         | SP   | Security Plan             | Electrical                  | Special Systems Plan                     |
| ES         | SS   | Special Systems Plan      | Electrical                  | Electrical Utilities Plan                |
| EY         | SS   | " " "                     | Electrical                  | Special Systems Plan                     |
| ES         | TS   | Traffic Signals Plan      | Electrical                  | Electrical Utilities Plan                |
| EY         | TV   | TV Systems Plan           | Electrical                  | Special Systems Plan                     |
| All        | XD   | Existing/Demolition Plan  | -                           | Use tables for other files in this table |
| All        | *LG  | Legend                    | Electrical                  | Details                                  |
| FA         | FA   | Fire Alarm Plan           | Fire Protection/Suppression | Fire Protection Plan                     |
| FA         | DG   | Fire Alarm Diagram        | Fire Protection/Suppression | Riser Diagrams                           |
| FA         | DT   | Fire Alarm Detail         | Electrical                  | Details                                  |

\* Not in current standard model file types.

**Response:** Agreed. There is confusion over which code you would use when comparing to the model files available in Appendix A. For instance, Lightning Protection is shown in the Grounding Systems Plan model file. If you use this model file, which model file type do you use in the file name - GP or LR? We will make sure that the Model File Types correspond to model files included in Appendix A.

- f. Airfield Lighting needs to be included in Survey/Mapping model file codes as well as the symbology table.

**Response:** Agreed. "Existing Airfield Lighting Plan" will be added to Table 5 under Survey/Mapping.

- g. Symbology table for Survey and Mapping, Existing Poles Plan was provided, but no drawing type code was provided. There should be no need for a separate poles file since poles are included in Existing Electrical Utilities Plan.

**Response:** Agreed. Since Poles are covered in depth on other model files, a separate model file for strictly Poles seems redundant. Will remove Existing Poles Plan model file.

**Comment:** Symbology for egress lighting is included in Fire Protection Plan symbology table. Egress lighting should be included in life safety plan in lieu of fire protection plan. A separate model file for life safety needs to be included under Fire Protection/Suppression Discipline. Symbology needs to be coordinated with Electrical Lighting Plan Model File.

**Response:** Agreed. Per a meeting with the Electrical and Mechanical FAC groups, the Life Safety Plan model file was moved into the Fire Protection discipline. Egress lighting was moved

into the Life Safety model file and the layers/levels coordinated with the Electrical Lighting Plan model file.

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**Submitter:** George Malamos/Rick Waller, NAVFAC - Atlantic Division

**Comment:** Cover: NCS Compliance Symbol is false and misleading because of the pen color tables that do not match NCS. Recommend deleting the pen color tables.

**Response:** We are going to delete line widths from our pen color tables. The color # mapping that is left will match what is in the NCS. We have a note to the left of the compliance logo that says that the "A/E/C CADD Standard contains supplemental materials and DoD specific requirements not addressed in the U.S. National CAD Standard", which covers the additional items in our standard.

**Comment:** Page 6: References to the AutoCAD "Report Format" in column 2, paragraph 2 are confusing. Not aware of this term. This term needs to be clarified.

**Response:** Agreed. The sentence will be rewritten to "For metric designs, the recommended procedure is to choose the "Decimal" option in the drawing units dialogue box."

**Comment:** Page 9: Note in left column requires dashes as placeholders for user-defined characters that are not used. NCS doesn't appear to require this. We do not want to conflict with NCS or place undue requirement to use placeholders if there is no important reason. Recommend deleting the requirement to use place-holding dashes.

**Response:** We do not mandate that dashes be used for the place holding characters. The only time a hyphen is mandated as a placeholder is the second character in model file names (see NCS - UDS-01.22). The 5<sup>th</sup> through 8<sup>th</sup> characters can be alphanumeric user-defined characters as per NCS.

**Comment:** Page 9: "XD" code not in NCS (2<sup>nd</sup> column, 2<sup>nd</sup> paragraph). An asterisk "\*" has been used to denote other items not in the NCS. Need an "\*" to denote that this is not in the NCS.

**Response:** Agreed. Will add an "\*" to the code.

**Comment:** Page 10: Comment under "Content" does not apply for Geotech/Civil Works seems to be copied in error. Looks like this was left when someone cut/paste from other cells. Recommend that cells that have no sub designators be cleared.

**Response:** Agreed. The Content for these disciplines will be removed.

**Comment:** Pages 10-13: The "D" designator code for demolition sheets is in NCS, but is not shown here for applicable disciplines. Recommend adding the "D" designators to the appropriate disciplines corresponding to the NCS.

**Response:** Agreed. These Level 2 Designators will be added to the Table.

**Comment:** Page 13: \* states that the item is not in the NCS. Does this mean that if one uses these/other \* items that their CADD file would not comply with NCS? Clarify what effect on NCS compliance would be if one uses this/other \* items.

**Response:** In the Foreword to the NCS it states "Undoubtedly, (the NCS) will not meet the needs of all users in all cases. To the extent possible, we urge you to classify your basic data according to the Standard, augmenting it only in those cases where your data cannot be sufficiently classified, organized, or represented according to it." In several cases, the NCS did not cover facets of DoD construction drawing design and we had to develop new codes, layers, symbols in the spirit of the NCS. Therefore, according to the Foreword information, use of the \* information is understood to be a definite possibility, and therefore allowable.

**Comment:** Page 14: "Drawing Type Code" title on Table 5 is confusing. This table applies to Model Files but sounds too similar to "Sheet Type Designators" in Table 6. Recommend renaming Table 5 to "Model File Codes".

**Response:** Agreed. Table will be retitled "Model File Types" per NCS-UDS-01.22.

**Comment:** Page 16: Not clear if 3 user-defined characters at the end of the file name are mandatory. Should dashes for user-defined characters be required? These may potentially conflict with suffixes such as "RD", "XX", "AM" that are used to denote revised drawings so you wouldn't want a user to define them. Please clarify the intent and requirement. We do not believe the NCS requires the placeholders.

**Response:** NCS recommends that the three user-defined characters can be used for identifying inserted sheets. Note that NCS only gives recommendations. We also leave it up to the user as to the content and definition of these characters. We also recommend that one user-defined character could be used if your number of sheets goes above 99 (which is a definite possibility). The important thing about the sheet file name is tying the filename to the # in the Sheet Identification Block.

**Comment:** Page 18: Font size seems off for line item beginning with "fine".

**Response:** Agreed. The font size needs to be reduced to match the other rows.

**Comment:** Page 20: 2<sup>nd</sup> "Note:" in left column says future... of UDS will address color in plots. This is already covered in NCS. Tables in NCS already reflect color numbers for use in color plotting. Recommend deleting this discussion and referring to the NCS.

**Response:** Agreed. This paragraph and the Note above it are going to be removed.

**Comment:** Page 20: Color Table 9 line weights are not in conformance with NCS. This is clearly conflicting with NCS tables based on the original Coast Guard colors. We were told CGTC was going to comply with NCS at last year's conference.

**Response:** We are going to remove the Line Width column from this table. With the latest versions of AutoCAD, users have the option of associating varying widths per color. So we are not going to lock in a specific weight per color. We have recommended to the NCS that they also follow this wisdom and not severely limit the NCS by assigning specific weights to colors.

**Comment:** Page 22: Table 10 not in conformance with NCS except for 250-255. This is clearly conflicting with NCS tables based on the original Coast Guard colors. We were told that CGTC was going to comply with NCS at last year's conference.

**Response:** The NCS may tell what colors to make halftone colors, but users wanted to know what percentages to assign to these halftone colors. We are going to submit our table to the NCS for replacement/enhancement of the current table.

**Comment:** Page 24: Title block guidance is already in the NCS. Recommend deleting Title Block guidance and reference the NCS.

**Response:** NCS gives specifics as to what type of information goes in each block in the title block area, but it does not mandate a specific look to the appearance or orientation of the information. Several DoD agencies have decided to go with a title block that has the title block information in a vertical layout with the text oriented to the short side of the sheet. In developing this section of the standard, we remain compliant with the NCS guidelines on the blocks, while showing the information arranged in the DoD vertical title block.

**Comment:** Page 24: ISO A1 "required" sheet size causes problems for those desiring using ANSI D paper. Margins/borders recommended by NCS cannot be achieved if using A1 and printing on ANSI D. The A1 size when overlaid on ANSI D cuts off some information. Recommend standardizing on "hybrid" A1/D sheet that has 33x22 inch extents. This area can be printed on either A1/D paper with proper margins per NCS and without losing any drawing information.

**Response:** In the note on page 24, there is information on how to adapt the A1 sheet to fit on an ANSI D-size sheet.

**Comment:** Page 32: Level/layer guidance in NCS. Not sure why level guidance is needed since it is in NCS. Recommend referencing the NCS.

**Response:** Granted the NCS does go into how layer/level names are developed, however they do not go into how to use the layer/level names to develop model files. For some reason, they removed the excellent section on how model files are created using the levels/layers from Release 2.0 of the NCS.