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GENERAL

1. These standards are not simple and easy to follow. They are complex and time consuming standards that will lead to increased project cost, will not likely be followed and/or will produce products that will not always in compliance since there is greater chance of a mistake. The Government should be developing ways to reduce cost and minimize work to provide the taxpayers with the most affordable quality product. While standards are required so presentations are consistent and “rules’ are not different from one agency to the next, they should pass a simple test or be revised until they do. For example, if a plan drawing were plotted, the standards should be able to be annotated with just a few markups. These current standards would encompass a tremendous portion of that plot and would fail the test. By producing a standard that would allow simple marked up examples to be displayed, there would be a greater tendency to follow the standards even if time were of the essence on a particular project. By being simple, the standards would become habit. By becoming habit, the standards would not increase project time and cost.

Response: It is hoped that the implementation of the workspaces developed will assist field offices in implementing these standards. Hopefully, the resolution of comments submitted on the Release 1.7 draft from field offices will clear up some concerns regarding the standards. The Center always welcomes feedback from field offices on ways of simplifying these standards.

2. One of the primary advantages of CADD has been that a detail is developed once and reused several times over. As such, a tremendous database of details, cells, etc. has been developed over the years of using CADD. Since it appears that none of NOD’s current standards have been incorporated into this standard, our entire database will be useless. The cost to revise our database will be tremendous and there is no funding source to perform this conversion. If a TriService standard is the way to go, then appropriate funding to fund conversion should be setup.

Response: Implementation of the tri-service standards will require varying levels of conversion for all sites. Recommend that any details used in current projects that were developed based on previous standards be converted on an "as needed" basis. The CADD Details Library available from the Tri-Service Center has a library of over 1500 details, all conforming to the Tri-Service Standards.

3. The standards do not address font size for lettering in (a) title blocks, (b) detail titles, e.g., “Enlarged Plan”, (c) text annotating features within a detail, etc. One of the primary purposes of the standard should be to specify required sizes so that whether the Tri-Service workspace and just keying in the text parameters is used, the resulting plotted document looks the same.

Response: Concur, text heights within Title Blocks will be added to the final of Release 1.7. Information about text heights for details can be found in the CADD Detail Library reports.

4. The standards do not address whether drawings should be 2D or 3D should be used. If these standards are unchanged and NOD is forced to comply, we will basically have to start from the beginning. As such, 3D drawings should be mandated so that all files are compatible, i.e., a 2D file cannot be referenced to a 3D file.

Response: Concur, a note will be added to this effect.

5. It is likely that significant changes will occur as a result of this review. Since these standards have such far-reaching implications, another review should be conducted after the changes are incorporated but before the standards are issued for use.

Response: These standards are considered to be an "evolving" document. Future comments on Release 1.7 will be incorporated into the next release of the standards. The Center definitely would welcome additional comments from New Orleans District for future incorporation.

CHAPTER 1

6. Page 1. The first paragraph in the section entitled background provides several benefits of standards. The only compelling benefit is that (A/E) CADD users servicing several agencies and/or offices would not have to use a different set of standards simply because the work was being performed for one of the other agencies or offices. While one of the benefits listed is the sharing of products, it is not compelling enough to justify the use of these standards. However, it does imply that all products will comply with these standards so any organization that receives CADD files will expect that the file complies with these standards and are ready to use. To preclude any diminished expectations by a receiver, these standards should specify (a) the date when the standards are applicable (and must be followed), (b) how to handle the many CADD files generated prior to this standards mandated effective date and (c) how to handle the files currently in production but have not been completed. Often CADD files from previous projects are reused on new projects. This standard should also explain if/when the previous files should be brought up to these standards and, if updating is mandatory, include a justification for the increased project cost that would result.

Response: Concur, the previous Release of these standards was mandated for the Corps of Engineers (EC 25-1-243). A similar mandate will be pursued when these standards are released, addressing the concerns listed in the above comment.

7. Page 4.

a. According to the first paragraph, the standards are based on level names. Using level numbers is far simpler and easier since it involves much less effort. Names will tend to be longer thereby requiring more keystrokes (equating to more time and money for small changes to files) and will tend to be more complicated.

Response: These standards were developed for use with both AutoCAD and MicroStation. Since AutoCAD uses layer names to keep track of level/layer information, the standards assign both a level number and a level name to level information. These level/layer names are based on the AIA's "CAD Layer Guidelines," which will be a crucial part of the National CADD Standards.

b. According to the second paragraph, every final plotted drawing sheet is required to have its own separate electronic drawing file. The purpose of this

requirement is not apparent for all applications. While this requirement appears prudent for plan drawings in reports or contract solicitations, it will inherently increase disk storage space when small sketches and/or schematics are prepared for reports or enclosures to memorandums or letters.

Response: Saving every sheet file in a separate electronic drawing file is part of the methodology in creating sheet files and model files. Sheet files should not be very large because they are comprised of referenced model files with sheet-specific information added on.

CHAPTER 2

8. Page 5, Table 2. The table should be annotated to note that the Microstation line weights shown are for full size plots. The thickness of a particular line weight of a half scale plan drawing is identical to the thickness of that same line weight for a full scale plot of the same drawing.

Response: Concur, a note will be added.

9. Page 7. The first note in the left column is confusing especially when used in conjunction with Table 4, the recommended color table. The note states that “specific colors are assigned (standardized) to individual layers/levels, and every line color is associated with a particular line width.” While associating every color with a particular line width is easy to understand and is consistent with Table 4, it is not apparent how specific colors are/can also be assigned to individual layers/levels (i.e., if red is the color for a 0.25 mm line width, then that association would be used on each layer/level and red would not be restricted to only certain layers/levels).

Response: In Appendix B, each level/layer has a color assigned to it. These colors should have weights as shown in Table 4. In AutoCAD, a color can be assigned to a layer and if a particular setting is chosen, every element drawn on that layer will be drawn using that assigned color. The AutoCAD user then sets up a pen table that assigns colors to line weights. MicroStation users can achieve the same results by setting Level Symbolism tables. The MicroStation workspaces should keep color/line weight problems to a minimum.

10. Page 8.

a. The paragraphs on text styles/fonts list Microstation fonts 3, 1, 23, 43 and 42. Almost all text in COE CADD files is supposed to be font 8. It is suggested that font 8 be included as a standard font so that all text will not have to be changed should COE CADD files be reused and updating in conformance with these standards is mandatory.

Response: The Center is not sure who developed this font for the COE. EM 1110-1-1807 presents font 8 as a Corps font, however recommends four modified fonts for preparing drawing (2, 24, 10, 51). The Center selected fonts that are included in the MicroStation font library and would be readily available to any user who own the package. If a drawing is required that has used font independent from the supplied fonts, it is recommended that this font be mapped to one of the tri-service recommended fonts.

b. Specifying the use of five (5) fonts for drawing text is excessive and should be reduced to no more than three (3) fonts. The reduction should eliminate duplication and not be subject to interpretation. For example, both font 3 and font 1 are appropriate for title blocks. These standards should only specify one acceptable font for title blocks since these standards are to standardize all drawings and eliminate judgement.

Response: From a survey of user needs, these fonts were the five most requested types of fonts. Font 42 is recommended for outline (i.e., unfilled) title blocks in cover sheets, while Font 43 is recommended for filled title blocks in cover sheets.

11. Page 9, Table 5. An outline font may save plotting time for cover sheets as stated on page 8 but the font (as well as the other 4 choices) will be of little use when used in conjunction with photo images, e.g., aerial photos scanned and converted to .COT files and used as a background on plan drawings.

Response: The Tri-Service Center would welcome a field solution or recommendation to solve this problem.

12. Pages 9 and 10. The paragraphs require each agency to develop pen tables for each plotter to conform to these standards. Rather than each agency duplicating pen table development for identical plotters, it suggested that a survey be taken so those agencies with similar plotters can pool resources. Also, plotter manufacturers should be contacted to see if they are willing to prepare the required tables for current and future users. Either of these options would reduce cost to the agencies.

Response: Concur, recommend that this task be submitted by New Orleans District as a project for the Tri-Service Center.

13. Page 10.

a. The first paragraph of the section entitled Sheet Sizes states that typical contract documents will be prepared on A1 sheets in accordance with ISO and the ANSI sheet sizes in Table 6.

(1) It is not apparent how sheet sizes can comply with both standards since A1 is 23.39x33.11 and all ANSI sizes are to an even inch, e.g., 22x34.

Response: The sentence will be rewritten to read "Typical A/E/C project (contract documents) will be prepared on A1 sheets in accordance with the International Standards Organization (ISO) sheet size as shown in Table 6".

(2) If this is to be a true standard, then the size should be established, should be clearly stated and not left to judgement or interpretation, i.e., the paragraph implies that other than A1 is acceptable since A1 is for typical and not all contract documents.

Response: Concur, this contradiction will be fixed in the final of Release 1.7.

b. Table 6 does not include the ANSI F size sheet. This is the size that NOD uses for all drawings in contract solicitations. By eliminating this sheet, none of our previous drawings will comply with this standard. Details have been developed over several years of CADD use based on these drawing sizes. "Standard" drawings that are reused will have to be modified to conform.

Response: The ANSI F size sheet will be added to this table.

c. The proposed vertical title block will make our flat files obsolete since title blocks will not be read easily. It will also require modification of “standard” drawings and aerial photos that are periodically reused so as to conform.

Response: The metric A1 sheet (or metric A0 sheet for Civil Works projects) with the vertical title block was mandated by ER 1110-345-700 dated 30 May 1997. The vertical title block provides the most usable drawing space on a sheet. The bottom right of the sheet still contains the most prevalent and pertinent information that is required when searching through sheets.

14. Page 11.

a. The block sizes, fonts, text sizes, etc. should be shown since they must be fixed in order to fit on the standard sheet size specified on page 10.

Response: Concur, this will be added to the final of Release 1.7.

b. In Figure 4, an example management block should be shown when A/E firms prepare the plans.

Response: Concur, a discussion on each of the blocks will be added.

c. In Figure 4, there is a space for a revision number. The purpose of this space is not apparent since an issue block is also included in the vertical title block.

Response: See answer to 14b.

d. The space below the division name example in Figure 4 is blank. The purpose of this space should be explained or the block should be redesigned to better utilize the limited space, e.g., abbreviations could be eliminated.

Response: See answer to 14b.

e. NOD uses two title blocks for its plans. The first sheet contains a signature block for the branch chief responsible for plan preparation, the Engineer-of-Record (i.e., the Chief, Engr Div) and the District Engineer. All following drawings contain a signature block only for the Design Engineer. This procedure documents those in command at the time of issuance and establishes those in responsible charge but relieves senior leaders of the tedious task of signing numerous plan drawings. Using the proposed title block, only one signature will be allowed. Since the Engineer-of-Record's signature is required on the plan drawings by regulation, the Chief of Engr Div will be burdened with the task of signing every plan drawing in the drawing set. This will be a tremendous waste of time and effort.

Response: The metric A1 sheet (or metric A0 sheet for Civil Works projects) with the vertical title block was mandated by ER 1110-345-700 dated 30 May 1997. This sheet was developed by Huntsville (CEHNC) and the Center suggests that any recommendations for change be submitted to that office.

f. The purpose of the Drawing code in figure 4 should be explained.

Response: See answer to 14b.

15. Page 12.

a. According to Table 7, the largest scale allowed for site plans is 1"=40'. For several projects, we use scales of 1"=400' and 1"=500'. If these scales are not allowed, the number of plan drawings could increase by a factor of 10, a much more costly production with no apparent added value.

Response: Concur, these scales will be added, as well as metric equivalents.

b. Table 7 is setup for architectural features of a building. Either the table should be generalized so it is applicable to all disciplines or separate tables should be included for each discipline.

Response: This table comes from Table C-1 in ER 1110-345-700. Scales will be added for Boring Logs as well as additional scales for site plans as indicated in the response to 15a.

c. According to the last paragraph on the page, the unit of measure will be millimeters. NOD is still using English units so this paragraph is inappropriate and should be expanded to include these units of measure.

Response: The metric design policy for Military Construction that was issued by HQUSACE on 21 November 1994, requires that all FY97 and future military projects shall be designed using the metric system of measure. This policy applied to all construction contracts and solicitations issued on or after 10 January 1997. Since other tri-service sites, as well as professional organizations such as the NIBS Construction Metrication Council and CSI, are pushing toward the use of the metric system, the Tri-Service A/E/C Standards will promote the use of the metric system.

16. Pages 12 and 13. Since we have not had the opportunity to prepare plans using SI units nor have any plans in the near future, we reserve the right to comment on this area after we gain some experience.

Response: The Center would welcome any comments on this from New Orleans District.

17. Pages 14 through 21. The captured images are too small to read. As such, the images should be enlarged to ease readability.

Response: Concur. However, many users felt that dimensioning setups were intuitive and this section was unnecessary. Therefore, this section will be removed and made available via the web for those users who are unfamiliar with setting up dimension parameters.

CHAPTER 3

18. Page 22. The second paragraph describes the relationship of master units, subunits and positional units. The text is somewhat confusing since the nomenclature does not match that used in Microstation 95, i.e., the format of working unit input is subunits per master unit and positional units per subunit. It would be clearer to say that 8000 subunits per master unit and 12 positional units per subunit produces a design cube of 44,739 master units square.

Response: Disagree, working units of 1:12:8000 present a design cube with 44,739 feet (master units) per side. Feel the paragraph explains the MicroStation design cube adequately.

19. Page 23.

a. While requiring all files to have a certain global origin is good, the origins proposed in Table 8 are too precise. It would appear that origins at 22000,22000,22000 (1:12:8000) and 215000,215000,215000 (1:1000:10) are accurate enough since the origin does not have to be in the exact center of the cube. If rounding off is not acceptable, then

the origins of 22369:4970:8,22369:4970:8,22369:4970:8 should be used since they are currently the defaults using 2D and 3D seed files with working units of 8000 subunits per master unit and 12 positional units per subunit.

Response: The global origins table is being reevaluated and revised accordingly.

b. The X origin and Y origin for Civil/Site should be 0 so that state Lambert coordinates can be used in the file. See related comment on drawing units/working units.

Response: Concur, the global origin for Civil/Site will be revised.

c. While establishing a (global) origin may have merit, it is not readily apparent. The rationale for requiring a particular origin should be included and the relationship of the elements in the file to the origin should be specified, i.e., is the lower left corner of the sheet border to be put at the origin.

Response: Concur, this section (both on working units and global origin) needs to be reordered and rewritten.

d. Table 8 indicates that the MU:SU:PU for Civil/Site and Survey & Mapping is to be 8000 subunits per master unit and 12 positional units per subunit (1:12:8000). The units for these disciplines should be 1000 subunits per master unit and 1 positional units per subunit to allow the elements within the file to be located at the state Lambert coordinates. This is used at NOD so that composite drawings can be developed for presentations and overall project observations. This approach also allows easy transfer of GPS field data and easy entry of features whose locations are often provided with coordinates, e.g., pipelines.

Response: Concur, the working units table will be reevaluated and revised.

20. Pages 24 and 25. The concept of model files and sheet files presented implies that all CADD work is required to have model files and sheet files.

a. If this is correct, then the number of files required to produce a single plotted file will become overwhelming to manage and will decrease the number of file names available, e.g., the simple example shown will increase the number of files by a factor of 3. The impacts to a fairly complex drawing will be tremendous. By using multiple reference files, all files must be placed in the exact same path, e.g.,

c:\win32apps\ustation\dgn\ when transferred or the sheet file references will have to be re-established based on an actual plot so that location and scale of each model file can be re-established in the sheet file. This gets extremely complicated when files are archived or transferred. For the former, the path of each file and each file name would have to be "linked" to each archived file by some data system. For the latter, the "link" data along with each file would have to accompany all file transfers (one of the primary benefits of these standards).

Response: Concur, however it will be up to sites and the user to maintain archived and transferred files. It is assumed that most sites are aware of the problems involved when transferring files that have attached reference files, and have steps for ensuring that those files are included in the transfer.

b. It is not apparent whether this procedure will be conducive to files electronically transferred to electronic bid set medium and the current technology being pursued, Internet display of DGN files using Microstation Publisher.

Response: Unknown, this would merit some investigation.

21. Page 25. The bottom left paragraph on page 25 states that two naming conventions are allowed. This seems to defeat the purpose of standards which is to have a single set of rules followed by all. If two are allowed, why not allow three, four or more. Obviously, the number must be limited so a single naming conventions should be specified.

Response: The Industry Standards method will be the National CADD Standards method for file naming. The Tri-Service optional method was developed based on the file naming method included in the South Atlantic Division standard. This file naming method was developed by SAD because field personnel felt that the National CADD Standards method was not descriptive enough. Since the National CADD Standard method is still not set in stone, the Center felt that the two methods needed to be presented for field personnel feedback.

22. Page 26.

a. The example shown on the bottom left clearly demonstrates a potentially dangerous flaw with the industry standard model file naming convention. If two simple demolition models are created at a particular agency over the entire CADD life of that agency, it is likely that both model files will have the name in the example. If this occurs, one of the files could be easily overwritten since the naming system does not force distinction from one file to the other. This difficulty is recognized on page 27 but does not explain why this convention was selected in spite of this significant concern. The convention should reduce the number of possible problems to a minimum and should not just reduce the likelihood of a problem simply by requiring a specific file organization structure.

Response: Since this file naming convention was developed by CSI and is part of the National CADD Standards, recommend that this comment be submitted to the NIBS CADD Council for consideration.

b. The designator in Table 10 for Kitchen should be deleted. The designator should be limited to major disciplines and not parts of a various discipline, i.e., a plan of a kitchen would be part of architectural, the lighting in a kitchen would be part of electrical, etc.

Response: Concur, Kitchens will become a modifier for the Equipment discipline category (Q). So for the Industry Standard file naming convention, the Discipline and Designator will be QK.

c. The application of the designators when two "disciplines" appear is confusing. If surveys appear on a drawing with civil/site data for a civil works project, the user has the choice of 3 designators. As such, the list of disciplines should be limited to primary disciplines found in the majority of CADD files, i.e., the contract plan drawing files. These primary disciplines are architecture, civil engineering, environmental engineering, geotechnical engineering, structural engineering, mechanical engineering and electrical engineering. All of the other "disciplines" listed fall into one of these primary disciplines, e.g., surveying and mapping falls into civil engineering, landscaping falls into architecture, etc.

Response: The Discipline Codes were taken from those developed by CSI in their Uniform Drawing System, and promoted by the AIA in their "CAD Layer Guidelines" document. The Tri-Service Center is behind the NIBS CADD Council in their

development of a set of National CADD Standards (comprised of the CSI, AIA, and Tri-Service documents), so the Center will continue to promote the discipline breakout presented by CSI. Also, the Center has found that certain disciplines resent being categorized under another discipline (e.g., Landscape Architects).

d. The dash in the sheet file name shown in Figure 39 should be deleted since adding an additional character to the user defined portion of the name would be much more beneficial.

Response: The Industry Standard sheet file naming convention was developed by CSI and will be a part of the National CADD Standards. The figure should have had a character instead of a hyphen. The revised figure will include a character for the second character in the file name.

e. The sheet type code shown in Figure 39 and Table 11 should be eliminated since sheet files will often be a combination of the types listed, i.e., it would not be uncommon for a sheet file to contain both a plan and an elevation. A policy on the proper designator would have to be specified, e.g., the type in the upper left corner of the sheet would establish the type. Since sheet files will likely have more than one type, the value of this designator is diminished. It appears that deleting the sheet file type and adding an additional character to the user defined portion of the name would be much more beneficial.

Response: Since this file naming convention was developed by CSI and is part of the National CADD Standards, recommend that this comment be submitted to the NIBS CADD Council for consideration.

23. Pages 27 and 28. These standards include requirements for the structure of project folders on a PC's hard drive and/or a public file server. These requirements should be deleted since they are outside the scope of these standards and each organization should be allowed to determine the best structure for their needs.

Response: Concur, the standards present a typical method for sorting projects into folders. It is up to the site to develop a method of storing project model and sheet files.

24. Page 28. The Tri-Service (model and sheet) naming convention distinguishes files through the use of a project code consisting of one letter and one number. This would limit each office to only 260 projects over the office's entire CADD life. In NOD, we have given each project a file number. In addition to one letter, the file number includes 5 numbers. Currently, the five digit number is over 40,000 so, obviously, NOD would not be able to use this severely limited option.

Response: The two character project code was added to conform to the South Atlantic Division standard that was released. The Center is reevaluating the file naming conventions to see what information is absolutely required in a file name.

25. Page 29. The standards allow options for sheet numbers and mention the possibility of different size blocks.

a. The size of the block should be large enough to handle drawing sets with three numbers, e.g., sheet 102 of 121. There is no purpose in having standards if there is latitude for each agency to do something different. More importantly, the vertical length along the right side of the form part is limited so the standards should specify block sizes that will fit within the fixed space.

Response: Concur, this section is being reevaluated.

b. Again, options should not be allowed. All drawings should follow Option 1 so no interpretation or judgement is required.

Response: This section is being reevaluated to see if one method is sufficient.

CHAPTER 4, APPENDIX B AND APPENDIX D

26. The CADD standards presented are extremely complex with respect to leveling as discussed above. The leveling scheme appears to be based on the fact that the system has the capability to utilize a large number of levels and not on the end product required. As such, the effort to prepare CADD drawings using this standard will increase the cost significantly yet there is no explanation justifying this substantial cost increase. Absent a strong and compelling justification, a more simplified approach should be taken with respect to the leveling issue. One approach would be to provide each discipline with between 5 to 10 set levels, e.g., all structural engineering work could be on levels 21 through 28. The first level would be for the all line work, e.g., level 21 using the above level range. The second level would be for all dimensions and dimension lines, e.g., level 22. The third level would be for all remaining annotations, leader lines, notes, etc., e.g., level 23. The remaining levels for that discipline would be reserved for specific project use, e.g., contours could be put on level 24 if the specific project had a need for separation in the structural CADD file. This would allow the project to dictate the level of effort warranted based on need and on system capability. This methodology would still be compatible with the ultimate end product, i.e., either a 2 dimensional plot for reports, contract solicitations, etc. or a 2 dimensional image for inclusion in electronic bid sets.

Response: All level/layer tables were developed with the assistance of tri-service field personnel. In between the drafts of Release 1.4 and Release 1.7, it was found that users requested more levels/layers and disciplines be added to the appendices. It is hoped that the release of workspaces will assist users in implementing the complex level scheme.

CHAPTER 5

27. Page 37. The second paragraph is misleading. It implies that architectural changes are highlighted and jump out at the structural engineer. Sometimes the changes are subtle and are not obvious. The first sentence of the second paragraph should be rewritten to eliminate this misconception and should state that there is no substitute for good communication between designers.

Response: Concur, this paragraph will be rewritten.

CHAPTER 7

28. It is our understanding that review of the Tri-Service workspace is not a part of this review but will be handled separately. We would like to review the Tri-Service workspace at the appropriate time.

Response: The Center would welcome any feedback on the workspace from New Orleans District when it becomes available.

CHAPTER 8

29. Page 44.

a. This chapter lists virtually all types of deliverable media. It is suggested that the types currently available be conducted so that media types can tend to migrate toward standardization.

Response: The Center has developed a document on CADD A-E Deliverables. Recommend that this comment be passed on to the Tri-Service POC for this report (Mr. Bobby Carpenter, (601)634-4572, carpenb@ex1.wes.army.mil) for the consideration of revising this document.

b. The last paragraph implies that the sending organization is “guaranteeing that the media is free of known computer viruses.” Since the media will change hands several times from the sender to the receiver, the receiver should verify that the media does not contain a virus.

Response: This is a standard precaution. However, it is in the sender's best interests to certify that the media was free from viruses when it left his/her office.

30. Page 45.

a. The sections on Format and Documentation require the sender to perform several tasks prior to sending electronic files to a receiver. Several of these tasks will be time consuming and will require an expenditure of labor hours that will be significant for large projects. If the receiver requires all of this, then the receiver will have to fund the sender appropriately for the effort. Otherwise, the sender will likely just send the data “as is”. The purpose of including a section on Data Encyclopedia and the relationship to CADD standards is not apparent and should be included if the section is to be retained.

Response: The Center has developed a document on CADD A-E Deliverables. Recommend that this comment be passed on to the Tri-Service POC for this report (Mr. Bobby Carpenter, (601)634-4572, carpenb@ex1.wes.army.mil) for the consideration of revising this document.

MISCELLANEOUS

31. Consider numbering each paragraph to facilitate referencing and discussions, e.g., the fourth paragraph in the second section in Chapter 1 would be 1-2.4.

Response: This is a good idea, similar to what CSI did with its UDS document. This may be implemented in future draft releases.

32. Consider numbering each page with its section number so each chapter can be independent, e.g., the third page in the second chapter would be 2-3. This would facilitate reissuing chapters without reprinting other unchanged sections.

Response: This is another good idea that is worth looking into for future releases.

33. Much effort has been spent in providing guidance for both Microstation and AutoCAD yet these two different systems do not readily convert. Accordingly, they are not transferable and, as such, most of the benefits of using these exhaustive standards will be lost. Several tests should be conducted to ensure that all of the standards presented are convertible between the two CADD systems.

Response: As part of FY96 standards funding, a validation study was made on the standards (and concluded in FY97). This study involved determining if the standards were generic enough that it could be used in both AutoCAD and MicroStation and could create files that could be transferred. With some rewrites incorporated into this draft, the standards were found to be usable and transferable between both systems.