

## 3 Delivery Media and Format

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### Submittals

The A-E should be required to make submittals at key milestones in the development of the CADD-generated maps and design drawings. The milestones at which the submittals are made should be in accordance with the installation's or service's guidelines. Electronic digital media submittals would not have to be made with each project submittal if hard copies (e.g., blueprints or sepia) are provided. Some installations may prefer to receive electronic submittals and not hard copies. Normally hard copies are provided with each submittal to facilitate review by the installation. It is recommended that electronic digital media submittals, as a minimum, be provided at the first and final submittal milestones. Providing electronic digital media at the first submittal milestone will allow for testing of the quality of any translations the A-E had to perform to achieve the format requested by the Government.

### Electronic Digital Media

Electronic digital media may consist of any of the following:

- a. 3-1/2 in. high-density back-up disks (e.g., ZIP or JAZ).
- b. 3-1/2-in. high-density floppy disks (1.44 Mb formatted).
- c. 8-mm magnetic tape (data) cartridge (usually 2.3 or 5 gigabyte (gb)

formatted).

- d. 4-mm magnetic tape (data) cartridge (usually 1.2 gb formatted).
- e. 5-1/4-in. read/write (R/W) optical disk.
- f. Compact disc read-only memory (CD-ROM) with International Standards Organization (ISO)-9660 format.
- g. Removable hard drive (e.g., Bernoulli Disk, 90 Mb formatted).
- h. 10 gb tape (DAT).
- i. Writable CD.

Magnetic tape cartridges (e.g., 8 and 4 mm) are normally formatted by the tape backup program (e.g., SCPIO or Tar) at the time information is copied to them. The information is placed on the tape in a particular format (structure) by the program. Therefore, the tapes are not formatted prior to use.

The type of electronic digital media and number of copies to be provided by A-E's with the CADD deliverables should be specified. The preferred media type will depend upon the capabilities and types of platforms used by the installation and the size of the design files. It is recommended that files or sets of files larger

than four diskettes be furnished via tape, optical disk, or CD-ROM. If the electronic digital disks are to be archived in their delivered form, then CD-ROM's are the preferred type due to their longer shelf life. It is recommended that all electronic digital media stored on tapes be transferred to new tapes or CD-ROM's within 1 year. CD-ROM's are considered to have a storage life expectancy of 10 to 20 years.

The external label for electronic digital media should contain, as a minimum, the following information. Reference could be made to Military Standard 1840B, which contains specifications on multiple file content and labeling requirements.

- a. Format and version of the operating system (e.g., MS-DOS, version 6.0).
- b. Utility software and version used for preparing and copying files.
- c. Media (e.g., diskette) sequence number.
- d. Short description of the media contents.

In addition, a transmittal sheet containing, as a minimum, the following information should accompany the media:

- a. Information included on the external label of each tape, diskette, etc., along with the total number being delivered, and a list of the names and descriptions of the files on each one.
- b. Instructions for transferring the files from the media.
- c. Certification that all delivery media are free of known computer viruses. A statement including the name(s) and release date(s) of the virus-scanning software used to analyze the delivery media, the date the virus scan was performed, and the operator's name should also be included with the certification. The release or revision date of the virus-scanning software should be the current version which has detected the latest

known viruses at the time of the delivery of the media.

- d. A statement indicating that the A-E will retain a copy of all delivered electronic digital media (with all files included) for at least 1 year and, during this period of time, will provide additional copies of each to the Government, if requested, at no additional cost.

## Format

A-E's should deliver all CADD files in a format that is directly readable and compatible with the installation's CADD software and platforms. The term "compatible" means that data can be accessed directly by the target CADD software and platform without translation or preprocessing of data files. Before a CADD file is placed on the delivery electronic digital media, the following procedures should be performed:

- a. Remove all extraneous graphics outside the border area and set the active parameters to a standard setting or those in the seed file.
- b. Make sure all reference files are attached without device or directory specifications.
- c. Compress and reduce all graphics files using the appropriate utility software. It is recommended that the Government specify the type (including version) of compression/decompression utility software to be used by the A-E. If the A-E does not use the same compression/decompression utility software the Government uses, then the A-E must purchase a copy of the software for the Government and provide it with the CADD deliverable media. For example, a compression utility for MS-DOS versions of MicroStation (and other

Intergraph programs) and AutoCAD files is PKZIP. PKUNZIP is required to allow decompression of PKZIP files. A self-extracting archive is an acceptable alternative.

- d. Include all files, both graphic and non-graphic, required for the project (i.e., color tables, pen tables, font libraries, cell/block libraries, user command files, plot files, etc.). Each finished drawing (sheet) should have its own separate plot control file. All cells/blocks not provided as GFM must be provided to the Government as a part of the electronic digital deliverables.
- e. Make sure that all support files such as those listed above are in the same directory and that references to those files do not include device or directory specifications.
- f. Include any standard sheets (i.e., abbreviation sheets, standard symbol sheets, etc.) necessary for a complete project.
- g. Document any fonts, tables, symbols, cells/blocks, line styles/types, details, reference drawings, etc., developed by the A-E or not provided with the GFM. A-E's must obtain Government approval before using anything other than the Government's standard fonts and linetypes.

UNIX versions of MicroStation (and other Intergraph programs) and AutoCAD files should be copied in cpio format (SCPIO for Intergraph files, depending upon the target platform).

## Drawing Development Documentation

Complete documentation concerning the development of each finished drawing should be included in the first eight levels/layers as described in the "Standards Manual." The documentation must, as a minimum, contain the

information specified in the "Standards Manual." The following additional information should be included in the nonplot level, X-\*\*\*\*-NPLT:

- a. How the data were input (e.g., keyed in or downloaded from a survey total station, instrument (include name and model)).
- b. Brief drawing development history (e.g., when developed, modified, etc.).
- c. Reference, cells/blocks, symbols, details, tables, and schedule file names.
- d. Level/layer assignments and lock settings.
- e. Fonts, line styles/types used, and pen settings.

## Plot File Development and Project Documentation

Documentation of the plot file configuration for each drawing is needed to be able to duplicate the plot at a later date and should be provided with the deliverables. All delivered files should be documented with the appropriate documentation program provided with the general cell library. When the documentation program is not available, an ASCII file should be provided.

In addition to the requirements previously prescribed for inclusion in the transmittal sheet and drawing levels/layers, the following additional minimum documentation requirements for delivered electronic digital media should be included:

- a. Plotting instructions on tape/diskette and paper. The plotter configuration (e.g., name and model of plotter), pen settings, and any specific plotting instructions.
- b. A list of all deviations from the standard layer/level scheme and file-naming convention.
- c. A list of all new symbols created for the

project, which were not provided to the A-E in the GFM.

- d.* A list of any non-IGES crosshatch/patterns used.
- e.* A list of all new figure/symbol tables, schedules, and other cells/blocks created for the project, which were not provided to the A-E in the GFM, and any associated properties.
- f.* A list of all database files associated with each drawing, as well as a description of the database format and schema design.

*g.* Any recommended modifications necessary to make the data available for GIS use.

## Hard Copy

A-E's should provide one full-size (or half-size at the preference of the installation) hard copy (usually mylar, paper, or vellum) of each finished drawing with the final submittal. A hard copy of the documentation for each file should also be provided with each submittal on the size and type of media as preferred by the installation and negotiated in the A-E contract.