



# CADD/GIS Bulletin

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## Tri-Service A/E/C CADD Standards

by Toby Wilson, Tri-Service CADD/GIS Technology Center

The architectural/engineering/construction (A/E/C) Computer-Aided Design and Drafting (CADD) Standards are undergoing several important changes for FY97. Scheduled for a mid-August release (just in time for the Tri-Service CADD/GIS/FM Symposium in St. Louis, MO), Version 1.7 will contain the prototype MicroStation® Workspace and the first set of non-graphic database definitions for the mechanical HVAC and architectural design disciplines.

### National CADD Standard

One noticeable change in Version 1.7 of the A/E/C CADD Standards is the move toward full compliance with the proposed National CADD Standard. Developed under the auspices of the National Institute of Building Sciences' CADD Council, and based on contributions of multiple organizations including the International Stand-

ards Organization, the National CADD Standard will provide the United States with a set of CADD-related standards documents that are acceptable for both government and commercial design work. The 400-plus CADD Council members include representatives from the government, commercial vendors, national standards organizations, and private design firms committed to the ideal of a single National CADD Standard. Figure 1 lists the current Board of Direction members serving as the oversight committee for the CADD

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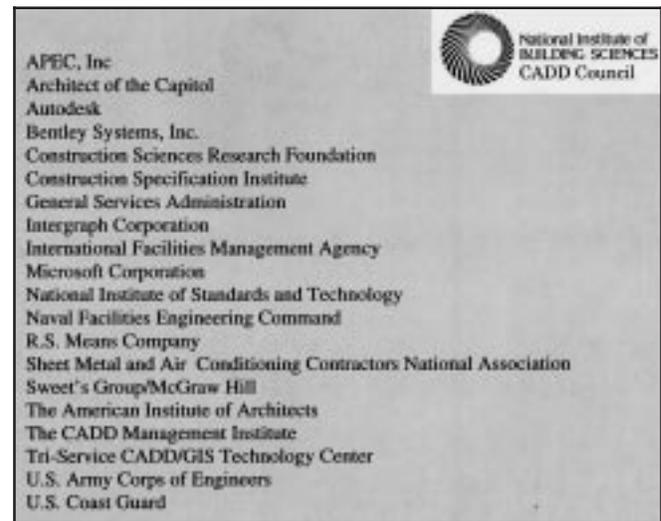


Figure 1. Board of Direction members for the CADD Council



Visit: <http://tsc.wes.army.mil>

Council. As with other releases of the Tri-Service Standards, the Center is relying on the vendors to play a major role in implementing the standards at the installations and Civil Works projects.

### MicroStation Workspace

It is often said that the most successful standard is an invisible standard. We agree; therefore, Version 1.7 of the A/E/C CADD Standards will be distributed with a MicroStation "Workspace" prototype (Figure 2). MicroStation users will be able to load the Workspace to access basic drafting utilities that are preconfigured to meet the A/E/C CADD Standards (Figure 3). During FY98,

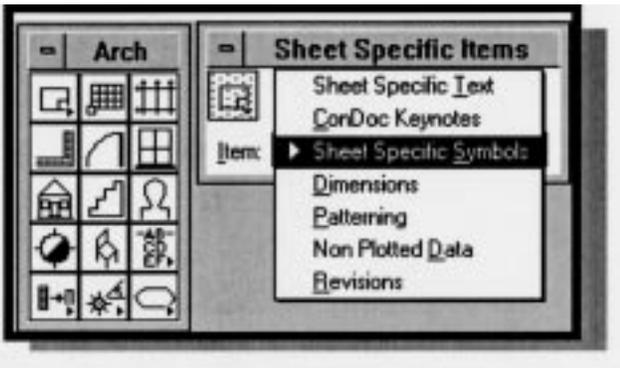


Figure 2. Example of a Workspace interface pull-down menu

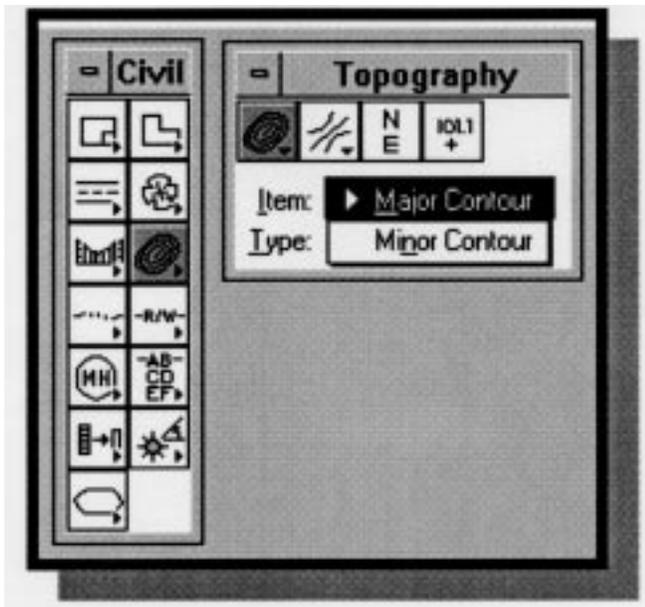


Figure 3. Preconfigured options ensure compliance to the Standards

user-defined line styles, metric cells, and a hyper-linked instructional manual will be added. An AutoCAD version is also under development and should be available for review and comment in FY98.

A workshop on the A/E/C CADD Standards will be conducted at the Tri-Service CADD/GIS/FM Symposium in August. If you would like to attend the Symposium and the Workshop, please register via the Internet at: <http://fwgcom.wes.army.mil/center/general/feature.htm>.

### Non-Graphic Attribute Data

Non-graphic attribute data are the key to successful automation in cost engineering, specification development, and every aspect of facility management. With the addition of non-graphic attributes in a standardized format, information developed during the design and construction phases can be easily imported into a facility management system without redundant effort or loss of data. To assist this transition, the Center completed the initial development of non-graphic database information for the architectural and mechanical HVAC design disciplines (Figure 4). In FY98, database information for the remaining design disciplines will be developed.

Architectural Entity Selection	
Entity	
Entity Name:	arare_door_single_hr_p
Entity Type Name:	architecture_door
Entity Code:	araredrsghrp
Table Name:	araredor
Object Type:	P
Discriminator:	door_single_hr
Color/Width/Layer:	M:10/35
Symbol Name:	ASHNGR
Symbol Library:	accarch (.cel or .blk)



Figure 4. Non-graphic attribute data

*The Tri-Service Center is dedicated to fostering the application of computer-aided design and drafting (CADD) and geographic information system (GIS) technologies for facility life-cycle efforts throughout the Army, Navy, and Air Force. The CADD/GIS Bulletin is published by the Tri-Service CADD/GIS Technology Center of the Information Technology Laboratory, U.S. Army Engineer Waterways Experiment Station, 3909 Halls Ferry Road, Vicksburg, Mississippi 39180-6199.*

# Tri-Service Spatial Data Standards

by Bobby G. Carpenter, P.E., Tri-Service CADD/GIS Technology Center

One of the Tri-Service Center's major initiatives has been development of the Tri-Service Spatial Data Standards (TSSDS) for use at Air Force, Army, and Navy installations and Corps Civil Works activities. In August 1994, distribution of the TSSDS with an interactive Microsoft Access software application began with Release 1.4, which contained a Master Planning/Base Comprehensive Planning level of detail.

Distribution of the next major enhancements to the TSSDS, Release 1.6, began in November 1996 via the World Wide Web (<http://tsc.wes.army.mil>) and on CD-ROM. Since that time, over 2,000 copies of the CD-ROM have been distributed. Additional entities (i.e., the features depicted on a map or drawing) and attribute tables (i.e., data-

base tables containing information about the features) depicting man-made structures and improvements, delineating hydrography, and supporting environmental restoration activities were included in Version 1.6.

The TSSDS have been widely accepted and applied and are a key focus of a multitude of GIS implementations throughout the Department of Defense (DoD); other federal, state, and local government organizations; public utilities; and private organizations. Additionally, these standards have been implemented by the Tri-Service Center on a pilot Automated Facility Master Plan project developed for the U.S. Army Engineer Waterways Experiment Station (WES) on the Intergraph MGE/MGA GIS platform.

## Tri-Service Spatial Data Standards Data Model

The screenshot displays a GIS interface with a map on the left and an attribute table on the right. A red line on the map represents a water line. A callout points to this line with the text "Entity Type water\_line". The attribute table is titled "water\_line" and contains the following data:

datalink:	100004
pipe_id:	utwatpip0000005
map_id:	234
meta_id:	utwatpip000000
media_id:	utwatpip000000
coord_id:	97894
date_acqrd:	19730818
dispostn_d:	PERMANENT
use_d:	MAIN
type_d:	CIRCULAR
mat_d:	PVC
size_d:	PVC
pipe_mat_d:	REINFORCONCR
dim_u_d:	REINFLASMOR
inv_elv_1:	SINGLE_CLAY
grnd_elv_1:	SINGLE_TILE
inv_elv_2:	254
grnd_elv_2:	257
elv_u_d:	FT

A callout points to the "mat\_d" field in the table with the text "Attribute mat\_d". A dropdown menu is open for the "size\_d" field, showing a list of domain values: "PVC", "polyvinyl chloride", "reinforced concrete", "reinforced plastic mortar", "single clay", and "single tile". A callout points to the "PVC" value in this list with the text "Domain Value PVC".

The Tri-Service Center periodically updates and expands the TSSDS data scheme. Release 1.7 (an interim version) is scheduled for distribution at the Tri-Service CADD/GIS/FM Symposium in August 1997, with the next major release (Release 1.8) scheduled for January 1998. In addition, the Tri-Service Center has begun development of the Tri-Service Facility Management Standards (TSFMS), which will be closely integrated with the TSSDS. The first TSFMS distribution will be included with Release 1.8 of the TSSDS. During 1997, initial focus on TSFMS development will be environmental compliance and pollution prevention data. It is anticipated that next year's focus will be on space, building, utilities, and parcel/real estate management/maintenance.

The TSSDS are designed such that they effectively execute within commercially available CADD software packages, e.g., AutoCAD (Autodesk) and MicroStation (Bentley); GIS software packages, e.g., MGE/MGA (Intergraph), ARC/INFO (ESRI), ARCVIEW (ESRI), AutoCAD Map (Autodesk), MicroStation GeoGraphics (Bentley), and GeoMedia (Intergraph); and any type of relational database management system. Oracle (Oracle Corporation) and Informix (Informix Corporation) are the most widely used relational database management systems within Tri-Service organizations. The popularity of Windows (Microsoft) has resulted in the growth in the use of relational database management systems complying with Microsoft's Open Database Connectivity (ODBC) standard, such as Access (Microsoft).

An interactive Microsoft Access application is provided that installs the TSSDS on microcomputers and workstations using a Windows 3.1, 95, or NT operating system. The application permits the user to (1) browse and review the data standards components, (2) preview and print standards documents, and (3) generate SQL code schema for AM/FM and GIS applications.

Additional enhancements are listed below:

- ↳ Tools are provided on the Release 1.6 CD-ROM to assist with conversion from Release 1.4.
- ↳ Help screens have been added to the various menus in the CD-ROM.
- ↳ The SQL generation capability has been upgraded. Microsoft Access has been added as one of the options.
- ↳ The TSSDS can be installed on a network accessible to many users. (Release 1.4 could be

installed only on the C drive of each user's workstation.)

- ↳ An e-mail address has been established for TSSDS users to submit comments, requests for future additions/enhancements, and TSSDS user registrations (tssds@fwgcom.wes.army.mil).

## National Geospatial Standards

The recent increased use of GIS in local, state, and federal government and in business, academic, and international communities has resulted in a rapidly increasing demand for geospatial data. The term "geospatial data" refers to any information that identifies the geographic location and characteristics of natural or constructed features and boundaries on the earth.

The goal of the Federal Geographic Data Committee (FGDC) is to create and adopt standards that will promote the coordinated development, use, sharing, and dissemination of geospatial data on a national basis. The FGDC is an interagency committee established by the 1990 revision of Office of Management and Budget (OMB) Circular A-16, entitled Coordination of Surveying, Mapping, and Related Spatial Data Activities. The Department of Interior was designated as the lead agency for the FGDC. OMB Circular A-16 also established a process to promote the development of a national spatial framework for an information-based society with the participation of federal, state, and local governments as well as the private sector and to reduce the duplication of effort.

Executive Order 12906, Coordinating Data Acquisition and Access: The National Spatial Data Infrastructure (NSDI), which was signed by the President on 11 April 1994, requires that all federal agencies use the FGDC Metadata Standard to document new geospatial data and make them electronically accessible through the use of a National Geospatial Data Clearinghouse. Executive Order 12906 also assigned authority for the development of national geospatial data standards to the FGDC. The NSDI Clearinghouse is intended to be a distributed, electronically connected network of geospatial data producers, managers, and users. When fully functional, the NSDI Clearinghouse will allow its users to electronically (via the Internet) determine what geospatial data exist, find the data they need, evaluate the usefulness of the data for their applications, and obtain or order the data as economically as possible.

The NSDI will provide a base or structure of relationships among data producers and users that will facilitate data sharing. The FGDC comprises 14-plus subcommittees and working groups whose focus is on developing geospatial standards. The FGDC program ensures that standards are created under an open consensus, with participation by non-federal and federal communities, and that all standards from the FGDC subcommittees and working groups are integrated. Presently, these standards are not integrated; however, the Tri-Service Center is assisting the FGDC with integration of the various standards. More information about the FGDC and individual standards development can be found through the FGDC Internet Homepage at URL: <http://www.fgdc.gov>.

The Tri-Service Center is involved in the FGDC National Geospatial Data Standards development effort by:

- ↳ **Participation in the various FGDC subcommittees and working groups involved in standards development.** The FGDC Facilities Working Group (FWG) is actively involved in development of national geospatial facility management data standards. Current projects for the FWG include development of a (1) Facility ID Code Standard, (2) Utilities Geospatial Standard (based upon the TSSDS), (3) Environmental Hazards Geospatial Standard (based upon the TSSDS), and (4) Geospatial Data Accuracy Standard. More information about the FWG can be found through the FWG Internet Homepage at URL: [http://corps\\_geol.usace.army.mil/FGDC/welcome.html](http://corps_geol.usace.army.mil/FGDC/welcome.html).
- ↳ **Integration of the approved FGDC geospatial data standards into the TSSDS.** The TSSDS have been designed to comply with the Spatial Data Transfer Standard (SDTS) data model

and are currently being updated to ensure compliance with the recently revised FGDC Metadata Standard. Provisions of the FGDC Bathymetric Geospatial Standard (International Hydrographic Standard (IHO S-57)) were incorporated into the TSSDS Release 1.6. The FGDC geospatial data standards provide a Logical Data Model consisting of descriptive feature names (entity), attribute names, and domain names. This data model must be fully developed into a Physical Data Model before it can be implemented in a GIS. That is, all symbology (e.g., symbols, colors, fonts, line types); level/layer schemas; coverages; file table, attribute, and domain names that are compatible with commercially available GIS and relational database management systems must be developed. The TSSDS provides the Physical Data Model for implementation of the FGDC geospatial data standards in a GIS.

- ↳ **Development of FGDC Standards Feature Registry.** The Tri-Service Center has been funded by the FGDC to develop an interactive registry that will consolidate the geospatial standards being developed by each FGDC subcommittee and working group. A study of all FGDC standards conducted by an outside contractor indicated there were numerous overlaps, redundancies, and non-integration problems associated with some of the draft FGDC standards under development. As a result, the FGDC contracted with the Tri-Service Center to assist them in the development of a FGDC Standards Feature Registry (similar to the TSSDS application) to integrate their standards into one database. This registry will follow the feature, attribute, domain Logical Data Model.

# Blueprint of the Tri-Service Spatial Data Standards

by Chip Fleming, Tri-Service CADD/GIS Technology Center

- ↪ “What good is a data model?”
- ↪ “Where are the TSSDS data models?”
- ↪ “How do I download them?”
- ↪ “What format are they in?”

## Data Modeling Background

Data models, the blueprints of a database, serve as a set of guidelines with which the user is able to build and maintain databases. Imagine how hard it would be to either build or maintain a large building without a set of blueprints. It is equally difficult to maintain a database without a data model. It can be done, but it is very expensive and very time-consuming.

Unlike blueprints, data models have semantics, syntax, and procedures. The data structure defines the attributes, the tables, and the interrelationships among the tables. A data model must also have a syntactic structure. The syntactic structure encompasses: a graphical syntax, which defines the rules for drawing the model; a language syntax, which is hopefully English; and a machine syntax, which maps the database with the data model.

Developed with DoD funding, the TSSDS must comply with guidelines and policies issued by the Defense Information Systems Agency (DISA), the agency in charge of data administration within DoD. DISA requires that all data models be developed using the IDEF1x methodology. Although IDEF1x models may be submitted to DISA in many different formats, the recommended IDEF1x development tool is ErWin, modeling software from Logic Works, Inc. All TSSDS v1.6 models were developed with ErWin, Version 2.5.

Without going into too much detail, IDEF1x was developed as a database modeling tool for the Integrated Computer Aided Manufacturing (ICAM) Program in 1986 by the D. Appleton Co. (aka DACOM). The “x” in the acronym IDEF1x means “extended.” IDEF1x extended and superseded IDEF1. Like its counterpart IDEF0, IDEF1x is also a DoD standardized technique and is the DoD standard data-modeling technique.

IDEF1x models are built around entities. An entity is a noun about which information is kept. Attributes are the information stored by an entity. Keys are attributes that uniquely identify every

instance of an entity. Every attribute is owned by only one entity, and every instance of the entity must have a value for every attribute associated with the entity. An entity within an IDEF1x model may be related to another entity within that model through a relationship (sometimes referred to as a “join”). Relationships between entities reflect the business rules that govern the model.

In addition to being an aid to users and database administrators (DBAs) and fulfilling DoD requirements, the TSSDS data models serve an additional purpose. The data models help us, the TSSDS developers, to uphold quality-control standards. Viewing the data models helps us quickly ascertain any problems that have been introduced as a result of incorporating user comments into the next version of the TSSDS.

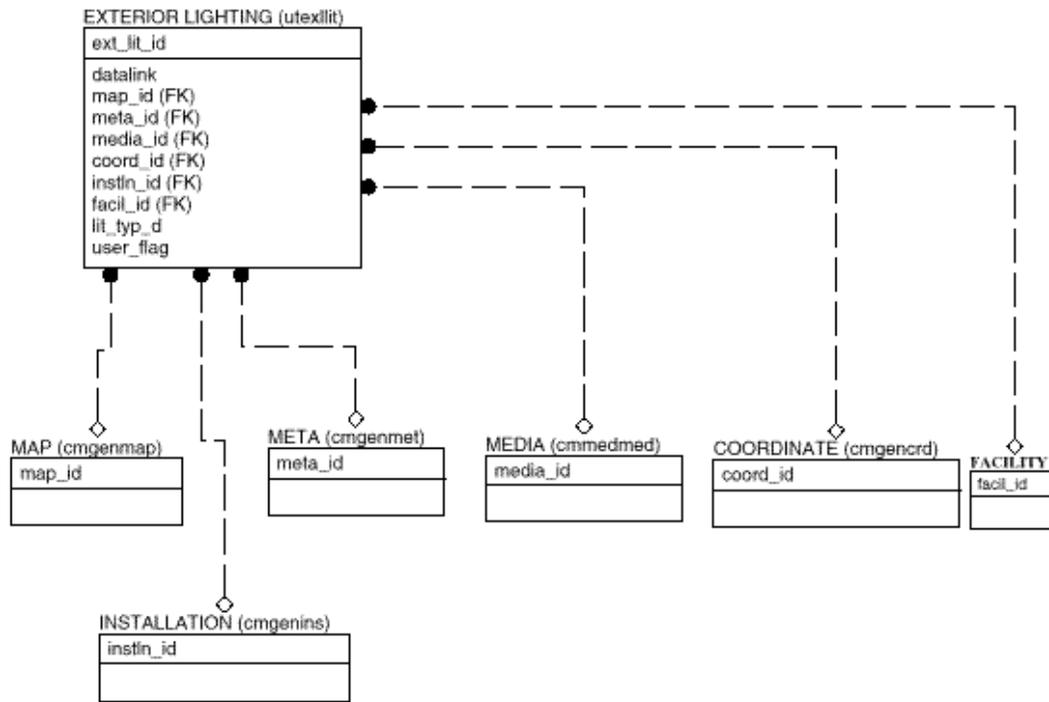
## Organization of Data in TSSDS

The data in the TSSDS are organized into Entity Sets and Entity Classes. “Entity Sets” is the name of a generalized thematic group of real world features, for example Utilities. Each of the 24 Entity Sets is reflected by encoding a two-character representation in file names and table names to more easily interpret the Entity Set. For example, the Utilities Entity Set is assigned the prefix “ut.” Entity Sets are subdivided into Entity Classes. External Lighting is an example of an Entity Class within the Utilities Entity Set. Each of the Entity Classes has an additional three-character encoding representation. The encoding scheme for External Lighting is “exl.” (Thus the complete code for Utilities External Lighting is “utexl.”) Entity Classes contain tables, and tables contain attributes.

## TSSDS Data Models

All of the TSSDS data models, 109 of them at present, are at the level of the Entity Class. The models were developed at the Entity Class level through a general consensus of the TSSDS users. Model size and overall ease of use played a large part in the users’ choice to develop the models at this level. The current models are large in size; some cover as many as eighty-eight, 8.5” by 11” pages. If the data models had been developed at the level of Entity Sets, they would be much larger and would thus be much more difficult, perhaps impossible, to use effectively.

ERwin Model Reverse-Engineered from  
D:\WORK\CAD\MODEL\SQL\UTEXL16.SQL  
Mon Oct 21 12:39:57 1996



Utilities External Lighting [utex116] Data Model (one of the smallest data models)

Each model is named on the basis of the Entity Set Name and the Entity Class Name. Each model name also includes the number "16" to indicate TSSDS Version 1.6. Using the example of Utilities External Lighting again, the entity class data model name is "utexl16."

The TSSDS data models may be found on the TSSDS World Wide Web homepage at:

<http://fwgcom.wes.army.mil/projects/standard/tssds/idef/idefindx.htm>

The models may be downloaded from the Web page in PDF format or by request in the native ErWin "ERX" format. The PDF documents may be viewed with the Adobe Acrobat Reader. The URL to obtain a free copy of the Adobe Acrobat Reader is:

<http://www.adobe.com/prodindex/acrobat/download.html>

The advantage of viewing the data models in the native ErWin "ERX" package is that they are editable. Models may be rearranged to meet user needs. Logicworks' ErWin software, however, is

required to view the models in their native ERX format. (For those readers familiar with ErWin, the TSSDS models do not include definitions or attribute field sizes. This information is included in the TSSDS and thus was not duplicated within the data models.)

## Lessons Learned

Adding the capability to download models from the TSSDS homepage has not been entirely problem free. The most significant problems to date have involved the Netscape Browser. (All of the other browsers we have tried seem to perform satisfactorily.) Recently, those using Netscape to download models from the Web page reported that the models were corrupted and were not viewable. This problem stems from a complex interaction between Commerce Builder 2.0, our Web server software, Netscape, and Adobe Acrobat Reader. To further complicate things, the problem with Netscape was visible only to those outside our network subnet. (Thanks to our systems administration technician, Spence Cobb, who with some first-class detective work, tracked down the problem and corrected it on his own

time.) The temporary solution to the problem has been to move the physical location of the models to another server that did not use Commerce Builder. The TSSDS Web server will be rebuilt in the near future with either a new version of Commerce Builder or with new Web server software.

### **Future Plans**

Version 1.6 was the first time that all of the data models were included on the TSSDS World Wide Web homepage. We have received favorable

feedback from both field users and from DBA's. Additionally, we feel that the data models have helped improve the quality of the TSSDS. In the future we hope to include models with each release of the TSSDS. Hopefully a "radio button" selection device will permit users to view the models directly from the TSSDS. If you have feedback about the data models, please feel free to contact me directly (8:30 a.m. - 6:00 p.m. central time) at (601) 634-2789 or by e-mail at [fleminw@ex1.wes.army.mil](mailto:fleminw@ex1.wes.army.mil).

## **Facilities CAD2 Program to Co-Host Symposium**

*by Tony Joyce and Ray Summerell, Facilities CAD2 Program Office*

There will be no registration fees at the upcoming Tri-Service CADD/GIS/FM Symposium, thanks to the CAD2 program. CAD2 funds (the 3% fee charged by the program when contract purchases are made) will be used to offset registration fees as well as to cover other operating expenses.

Scheduled for August 18-22 in St. Louis, the Tri-Service CADD/GIS/FM Symposium is a bi-annual event highlighting spatial data and related technology solutions and implementations across the military facilities community. By co-hosting the event, the Facilities CAD2 (FCAD2) Program will help many participants attend who might otherwise not have available funds for registration. Additional information on the Symposium can be found on the Center Homepage: <http://tsc.wes.army.mil>.

### **Facilities CAD2 Program Improvements**

In April, the FCAD2 Program undertook major steps to improve the performance of the contracts and related activities. Ongoing actions are aimed at better serving the growing needs of the military facilities customer. From education programs to better communications and faster purchase processing, FCAD2 is entering its

mid-life renewed and invigorated. Recent accomplishments include:

- ↳ Surcharge fees have been reduced to 3%, effective June 1.
- ↳ Credit card purchases are now possible on the contracts.
- ↳ Procedures for adding new technologies and products to the contracts have been streamlined.
- ↳ New tools for mass communication are being created.
- ↳ The FCAD2 Web site is being updated and improved.

Many more improvements are being fast-tracked to be in place by the Tri-Service CADD/GIS/FM Symposium in August and for the FY97 year-end purchasing cycle. FCAD2 remains the best contract vehicle for facilities support technology, with vast capabilities, multiple vendors, and prices that are routinely lower than GSA schedules.

For further information, please contact Tony Joyce at (703) 325-7696 or Ray Summerell at (703) 815-0227. Visit the FCAD2 Web site at <http://cad2.wes.army.mil>.

# Tri-Service Architect-Engineer (A-E) Deliverables Standards

by Bobby Carpenter, Tri-Service CADD/GIS Technology Center

There has been an increasing emphasis for Tri-Service (Air Force, Army, and Navy) installations and USACE Civil Works activities to (1) contract various planning, design, surveying and mapping, and facility management services and (2) expand the use of CADD and GIS technology in life-cycle project development. Part 1 of the Tri-Service Standards (i.e., the Tri-Service A-E Deliverables Standards) was developed to ensure that high-quality, usable CADD and GIS data and products are provided by the contractors performing this work. The Tri-Service A-E Deliverables Standards can be downloaded from the Tri-Service Center's Internet Web site (<http://tsc.wes.army.mil>) or by submitting an e-mail request to Mr. Bobby Carpenter at [carpenb@ex1.wes.army.mil](mailto:carpenb@ex1.wes.army.mil). Parts 1.1 and 1.2 of the Standards are available as described below:

↳ Part 1.1 provides guidance and recommended procedures for the preparation of *Commerce Business Daily* (CBD) announcements and con-

tract provisions for use in acquiring the services of A-E firms to prepare and deliver CADD products for A/E/C projects and activities.

↳ Part 1.2 provides guidance and recommended procedures for the preparation of CBD announcements and contract provisions for use in acquiring the services of A-E and consulting firms to acquire and deliver geospatial data and related products in a digital format readily usable by geospatial data systems (GDS). Geospatial data consist of any information that identifies the geographic location and characteristics of natural or constructed features and boundaries on the earth. GDS include GIS, land information systems, remote sensing or image processing systems, CADD, and automated mapping/facilities management systems.

## Tri-Service Community News

Congratulations to the Marine Corps Air and Ground Combat Center, 29 Palms, CA, and to Mr. Kip Otis-Diehl, GIS and Remote Sensing Coordinator, as the lead group on GIS issues for the U.S. Marine Corps.

Welcome to the newest staff member of the Tri-Service CADD/GIS Technology Center, Dr. Vaiyapuri Danushkodi, coming from the USACE Jacksonville District (FL), and to Ms. Nancy Blylar on her new position as USACE,

Assistant Geospatial Data and Systems Coordinator.

Accolades to Colonel Dan-Michael Bradford, Commander, and the 18th Civil Engineer Group at the Kadena Air Base, Okinawa, Japan, on their coordination and implementation of a Tri-Service, island-wide CADD/GIS project and to Mr. Greg Kuester on his CADD/GIS coordination of the Aberdeen Proving Ground Facilities Management Project.

### Call for Productivity Enhancement Utilities

The Tri-Service Center welcomes utilities for inclusion. Please send e-mail to [arrenoe@ex1.wes.army.mil](mailto:arrenoe@ex1.wes.army.mil). To date, users have contributed AutoCAD, MicroStation, Online Internet, and Metric Utilities. Only public domain utilities from the original author are accepted. Please visit the Web site for Productivity Enhancement Utilities at:

<http://fwgcom.wes.army.mil/center/projects/peu>

## **CADD Details Library, Version 2.0**

*by Stephen Spangler, Tri-Service CADD/GIS Technology Center*

Version 2.0 of the CADD Details Library will be released in conjunction with the A/E/C CADD Standards this FY. Currently, the Center has distributed over 1,500 copies of the CADD Details Library, Version 1.0, on CD-ROM. With the time and cost savings associated with the use of already existing CADD details, this product has become one of the Center's most popular and requested CDs.

Version 1.0 of the CADD Details Library contained over 1,200 generic construction details representing the architectural; mechanical; electrical; and hazardous, toxic, and radioactive waste disciplines in both AutoCAD and MicroStation formats. Along with the CD-ROM, hard-copy reports for each discipline were distributed.

Version 2.0 of the CADD Details Library will contain details included in the first CD-ROM and will add the structural and civil/site disciplines to the library. Also, since most Tri-Service sites are now required to develop projects in metric units (SI) of measurement, over 100 architectural details contained on the first CD-ROM have been

converted. To solve the problem of distributing hard-copy reports, Version 2.0 will contain all hard-copy reports in PDF format. With the reports distributed in this manner, architects and engineers can print the documents (or even pages) that apply to their disciplines, thus saving money in reproduction costs.

One common comment about Version 1.0 was that the levels/layers developed for details were not specific enough for determining where elements should be placed in details. The reports developed for Version 2.0 include discipline-specific levels/layers for details. At the request of the Executive Working Group, Version 2.0 of the CADD Details Library will be released along with the revised A/E/C CADD Standards on a single A/E/C CD-ROM. Anyone who received a copy of Version 1.0 will automatically be sent a copy of Version 2.0 by mail.

If you would like to receive a copy of Version 2.0 of the CADD Details Library and future releases, please e-mail Stephen Spangler at [spangls@ex1.wes.army.mil](mailto:spangls@ex1.wes.army.mil).

## Tri-Service CADD/GIS Calendar

Date	Event
<b>Organizational Meetings</b>	
June 26	<b>Executive Steering Group (ESG) Meeting.</b> Washington, DC POC: Dave Horner, (601) 634-3106, <a href="mailto:hornerd3@ex1.wes.army.mil">hornerd3@ex1.wes.army.mil</a>
August 18	<b>EWG, FTAG, and FWG Meetings.</b> Adam's Mark Hotel, St. Louis, MO POC: Respective Center Coordinators
August 20	<b>ESG Meeting.</b> Adam's Mark Hotel, St. Louis, MO
<b>Conferences of Interest</b>	
June 26-29	<b>Construction Specification Institute 41st Annual Convention and Exhibit.</b> Orlando, FL Register online at: <a href="http://www.csinet.org/events/97conv/convform.htm">http://www.csinet.org/events/97conv/convform.htm</a> Center POC: Toby Wilson, (601) 634-3604, <a href="mailto:wilsonj@ex1.wes.army.mil">wilsonj@ex1.wes.army.mil</a>
July 8-11	<b>17th Annual ESRI's User Conference.</b> San Diego Convention Center, San Diego, CA. Registration deadline is June 6. ATTN: User Conference Committee, (909) 793-2853, ext. 1-1363; <a href="mailto:ucregis@esri.com">ucregis@esri.com</a> ; <a href="http://www.esri.com">http://www.esri.com</a> Center POC: Laurel Gorman, (601) 634-4484, <a href="mailto:gormanl@ex1.wes.army.mil">gormanl@ex1.wes.army.mil</a>
July 28 – August 1	<b>Facilities CAD2 Geospatial Data Users Conference.</b> Embassy Suites Resort and Conference Center, Mandalay Beach, CA POC: Ms. Leta Holman, (601) 933-6200, Fax: (601) 933-6208, <a href="mailto:lholman@mbakercorp.com">lholman@mbakercorp.com</a>
August 18-22	<b>Tri-Service CADD/GIS/FM '97 Symposium.</b> Adam's Mark Hotel, St. Louis, MO There will be no registration or workshop fees. POC: Stephen Spangler, <a href="mailto:spangls@ex1.wes.army.mil">spangls@ex1.wes.army.mil</a> , and <a href="http://tsc.wes.army.mil">http://tsc.wes.army.mil</a>  <b>USACE/NOAA Surveying, Mapping, and Remote Sensing Conference,</b> Adam's Mark Hotel, St. Louis, MO POC: Bob Mesko, USACE St. Louis District, <a href="mailto:conference@smtp.lms.usace.army.mil">conference@smtp.lms.usace.army.mil</a> , and <a href="http://www.lms.usace.army.mil/sympo97.htm">http://www.lms.usace.army.mil/sympo97.htm</a>




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## Tri-Service CADD/GIS/FM Symposium '97 Workshop Schedule

Date	Time	Title of Workshop
August 18	8:30–12:00 a.m.	TSSDS Development and Implementation A/E/C CADD Standards Implementation
	1:30–5:00 p.m.	TSSDS Development and Implementation A/E/C CADD Standards Implementation
August 19	1:30–5:00 p.m.	CADD/GIS/FM Integration
		Implementing a GIS for Installation Management
		CAD2 Vendor (Intergraph) Software Demonstrations CAD2 Vendor (Cordant) Software Demonstrations
August 20	1:30–5:00 p.m.	Implementing a GIS for Installation Management
		CAD2 Vendor (Intergraph) Software Demonstrations CAD2 Vendor (Cordant) Software Demonstrations
		Electronic Bid Solicitation
	3:30–5:00 p.m.	Electronic Bid Solicitation
August 21	1:30–5:00 p.m.	Metadata
		CAD2 Vendor (Intergraph) Software Demonstrations CAD2 Vendor (Cordant) Software Demonstrations
		3:30–5:00 p.m.

For additional information, contact:

**Laurel Gorman, Symposium Workshop Coordinator**

E-mail: [gormanl@ex1.wes.army.mil](mailto:gormanl@ex1.wes.army.mil)

Web: <http://tsc.wes.army.mil>

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