

**A/E/C CADD Standard/Workspace Assistance
Team (SWAT) Report**

**Jacksonville District
U.S. Army Corps of Engineers**

27-29 March 2001



**US Army Corps
of Engineers®**



Executive Overview

INTRODUCTION

Headquarters, U.S. Army Corps of Engineers (HQUSACE) funded a Standard/Workspace Assistance Team (SWAT) to visit and assist the Jacksonville District (SAJ) in implementing the A/E/C CADD Standard. This implementation visit, 27-29 March 2001, consisted of training on the A/E/C CADD Standard and Workspace tools, an implementation workshop, and interviews with key personnel from primarily the Engineering Division. The training sessions were designed to introduce SAJ to the A/E/C CADD Standard and its implementation tools and to help provide momentum for SAJ's migration to the Standard. These sessions also provided valuable feedback on key issues and obstacles in implementing the Standard at SAJ. Forty-five people from SAJ were able to participate in these sessions. This report provides recommendations on assembling an Implementation Plan (IP) and its execution based on the findings of the SWAT at SAJ. The final product of this team's efforts at SAJ is this report with the recommendations listed below.

RECOMMENDATIONS

The SWAT recommends that SAJ consider the following in their effort to achieve a successful implementation of the A/E/C CADD Standard:

1. Appoint an Implementation Team to develop an Implementation Plan for SAJ. The Implementation Team should follow the System Field Action CADD Group's (SFAC) "A/E/C CADD Standard Implementation Plan Guidance" document and perform the following items at a minimum:
 - a. Work with each office in reviewing and discussing standard implementation guidance.
 - b. Modify existing plotting techniques to best utilize the new Standard.
 - c. Update existing AE contract language to support the Standard.

- d. Develop in-house review processes for AE work that includes a review for the A/E/C CADD Standard compliance in AE deliverables.
 - e. Modify existing customized design tools to comply with the Standard (e.g., Hydrographic Survey design menus and InRoads preference files).
 - f. Provide more Standard/Workspace training for engineers and technicians.
 - g. Develop metadata for all geospatial data collected.
2. Treat the implementation like a project with schedules and upward responsibility.
 3. Appoint a Technical Manager to oversee and report on the implementation.
 4. Begin the implementation in Survey Section and Levees and Waterways. The implementation committee should prioritize other offices.
 5. Include EN, Con/Ops, PM, AE Contract Coordinator, and RE in the Implementation Plan's development.
 6. Coordinate the Implementation Plan with the SAJ Geospatial Data and Systems (GD&S) Committee.
 7. Consider standards overview sessions for contractors.

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Section 1 - Introduction

GENERAL

This report provides recommendations in assembling an Implementation Plan (IP) and its execution based on the findings of the A/E/C CADD Standard/Workspace Assistance Team (SWAT) at Jacksonville District (SAJ) the week of 26 March 2001. The findings of the SWAT during the visit also are summarized.

Appendix I summarizes the recommendations to improve training/workshop/interviews. Appendix II contains the attendance list for the 3 days of the training, and Appendix III is an index of the SAJ SWAT CD.

SWAT ORGANIZATION

Member	Organization	Phone
Toby Wilson	ERDC - WES	(601) 634-3604
Stephen Spangler	ERDC - WES	(601) 634-3104
Edward Huell	ERDC - WES	(601) 634-4485
Steve Hutsell	SWF	(817) 978-3495
Scott Flanagan	NAE	(978) 318-8899
Glenn Kato	NWS	(206) 764-3460
John Kincaid	MVR	(309) 794-5492
Debbie Solis	SAJ	(904) 232-1189

PURPOSE OF VISIT

HQUSACE has funded two SWAT visits during FY01. SAJ volunteered for the first visit; the second site has not been determined at this time. The primary purpose of the SWAT visiting SAJ was to assist the District with implementing the Corps-mandated A/E/C CADD Standard by:

- Assembling information for the District regarding the development of an A/E/C Standard Implementation Plan.
- Providing feedback to the District on implementation issues and processes.

The secondary purpose of this visit was to evaluate the SWAT concept and determine its value to the A/E/C CADD Standard implementation process at districts.

Section 2 - Development of the Guide Implementation Plan

The System Field Action CADD Group (SFAC) recognized a need throughout the Corps of Engineers for guidance on how to implement the A/E/C CADD Standard. The SFAC began an initiative in the summer of 2000 to define implementation issues and requirements. The result of this effort was the development of the "A/E/C CADD Standard Implementation Guidance" document in December 2000.

This document was presented to the Senior Advisory CADD (SAC) Group. The document included guidance on developing a successful implementation plan at a district and the fielding of an A/E/C CADD Standard/Workspace Assistance Team (SWAT) at each district. HQUSACE approved a plan to use the SWAT process to energize the Corps' A/E/C CADD Standard implementation process. The SAC and HQUSACE approved funding for SWAT visits to two districts (one military and one civil works) in order to provide experience for teams and to develop proven procedures. Once the initial two visits were completed, future SWAT visits would be accomplished at other districts through a fee for services arrangement.

SWAT DELIVERABLES

The following deliverables were to be provided to the SAJ:

- Education and training on the Standard and MicroStation Workspace Tool.
- Workshops with a core group of users.
- Individual and group interviews to define Standard implementation issues with workflows.
- An after action report, complete with recommendations.

SYNOPSIS OF EVENTS

Executive Overview of the A/E/C CADD Standard

An executive overview of the A/E/C CADD Standard was held on Tuesday, 27 March 2001. Supervisors and training session students attended this session, which was presented by Mr. James Wilson of ERDC-WES. The PowerPoint slides of this presentation can be found on the enclosed CD "Jacksonville SWAT." Appendix III is an index of the CD. This session was designed to introduce the A/E/C CADD Standard to the supervisors and team leaders involved in the production of CADD products at SAJ.

Training

The SWAT held three 3-hour A/E/C CADD Standard/Workspace introductory classes on Tuesday and Wednesday, 27-28 March 2001. Thirty-nine (39) SAJ employees attended these classes. These employees were primarily from SAJ-EN. ERDC-WES personnel led the classes. The following topics were covered in each class:

- History of the A/E/C CADD Standard.
- Contributors to the Standard.
- What the Standard covers.
- Tools available to implement (Workspace, Checker, File Manager).
- Hands-on exercises (file naming, creating model and sheet files, checking model files for compliance).

Implementation Workshop

An implementation workshop was held on 28 March 2001 to discuss workflows and implementation issues for SAJ. Twenty (20) people attended the workshop—19 from Engineering Design (ED) and 1 from Real Estate (RE). The objective of this workshop was to promote a dialog about CADD usage throughout the organization. Each office was given an opportunity to discuss their usage of CADD, their products, and their customers. They also were encouraged to discuss how they share CADD files with other offices.

In general, the attendees were enthusiastic and receptive to the Standard. They also were knowledgeable in their fields and appeared to have a good grasp on the impacts that the Standard might have on their workflows.

Workshop Presentation Summaries

Hydrology and Hydraulics (H&H) Branch

CADD Implementation - The H&H Branch uses MicroStation and InRoads to generate engineering plates and drawings. They use scanned images and line work to generate drawings for coastal and navigation projects and compliance evaluations for permitting issues. This work includes the creation of design drawings and report plates.

They primarily coordinate with Survey Branch and also the Structural Section. They also use the MDL program CVTDATA to import ASCII survey data.

CADD Issues - Like most offices, they have inconsistencies among themselves and other offices in implementing CADD Standards to create their products. They are also having coordinate, datum, and projection issues while working with MicroStation and when exchanging data between MicroStation and ArcView. File management (the naming and retrieval of design files) is also a concern that they discussed at length.

Geotechnical Branch

CADD Implementation - The Geotechnical Branch uses MicroStation to create boring log locations for design reports and construction specifications. They have approximately 12 MicroStation users in the branch. They provide data for Structures, Levees and Waterways, and H&H. They currently do not use any CADD standard to create their work. They also use raster images to create plates as appropriate. They do not use MicroStation analysis tools often in their environmental work.

CADD Issues - They need more MicroStation training because of the wide variety of user skills in their organization. They also do not have a good method for creating boring logs that can be printed directly to PDF. They currently print out the boring logs from a DOS program and scan the pages to PDF for the specifications. This may or may not be a problem that can be addressed using MicroStation.

Structural Section

CADD Implementation - Structural Section uses MicroStation to develop plans for structural design. They coordinate with Survey, Real Estate, and Levees and Waterways. In addition to doing structural details and sections, they also create some site drawings for their projects. They currently use scanned line work for their drawing creation. They are currently using CIT images, not TIF. They do not use a uniform naming convention for their design files.

CADD Issues - Structural Section endorses the use of Falcon (a file/document management system) for all CADD drawings. They also believe that in addition to the CADD Standard, uniform drafting standards should be enforced for drawing creation. Documentation for CADD system usage should also be created and disseminated. They have particular requirements for CADD file naming, but believe that the new naming convention in the next release of the A/E/C CADD Standard will address their needs.

Levees and Waterways Branch (Levees and Waterways)

CADD Implementation - Levees and Waterways Branch creates mostly design plans and report plates for levees, waterways, and site projects. They use InRoads for their MicroStation Digital Terrain Modeling (DTM) work. They exchange information with RE, Structures, Survey and H&H. They work with Construction and Operations (Con/Ops) on projects. The symbology and color used in creating their drawings is important for their work. They have existing conventions that convey information to the drawing's users. The A/E/C Standard currently does not recognize some of the conventions that the branch needs to perform their work. They also exchange CADD data with other State and

Federal agencies. They make extensive use of raster images. All of their drawings are converted to Electronic Bid Solicitations (EBS) using batch-plotting techniques.

CADD Issues - Being compliant with the information that Survey provides is important. They also need to use colors and symbology different from the Standard for their hydro-survey information. They have some graphical standards to report stage differences that are important to their work in this area. Standard datums and projections are important to their work.

Real Estate

CADD Implementation - Half of RE's data is created in CADD and the other half in GIS. Their data comes from various sources including contractors (from Survey and Project Management) and local sponsors. They do not have a link between their graphical data and REMIS. They also do not support the current document management software (Falcon) for CADD files. Many of their GIS files reside on a UNIX server.

CADD Issues - It appears that RE is only a CADD viewer. They have limited experience and need to develop data. They did not express an opinion on how the A/E/C Standard would impact their operation.

Interviews

Additional interviews were conducted with 23 individuals representing the groups listed above. Where practical, each office was invited to participate in a separate interview session lasting approximately 1 hour. There were 9 separate interview sessions scheduled, including an interview session with SAJ supervisors. Disciplines interviewed were as follows:

- Structures
- Geotechnical
- Real Estate
- Survey
- Levees & Waterways
- Hydraulics & Hydrology

In general, each session only built upon those points raised during the Implementation Workshop session. Without exception, all parties supported the transition to the A/E/C Standard. They also felt that it was appropriate to begin the transition in Survey. It was apparent that the sessions should have included Con/Ops Division and Project Management. It was also obvious that revised contracting language and education on the Standard are essential to bringing the standard on-line. The PMs, first line supervisors, and technical managers all need to understand the importance of the Standard and how to best do their part to support it. The sharing of design files, GIS overages, data files, and images is regularly occurring at SAJ. The implementation of the A/E/C Standard should facilitate better communication and reduce redundancy in data manipulation.

Section 3 - Findings

All of the sessions were well attended. The participants were knowledgeable and eager to understand the issues at hand. They were also willing to offer their opinions on the topics discussed. The SAJ was well prepared for this visit.

It was obvious to all the members of the SWAT that the SAJ is ready to begin the implementation of the A/E/C CADD Standard. However, there are some significant issues to be resolved before a successful implementation can occur. The most significant of these is training those persons who will be responsible for using the Standard. The timing of the training and the implementation are critical; they have to occur in sequence with one another. Those sections/branches that currently do not have standards may have the most difficult time implementing standards. The SAJ's AE contracting language does not include provisions as suggested in the "A/E/C CADD Standard Implementation Guidance" for electronic deliverables. Current AE contracting language is essential for A/E/C CADD Standard implementation. There also was a significant understanding that document management and CADD Standards are both essential parts of a successful program. Lessons learned from SAJ's existing Engineering Document Management (EDM) program should be applied to its current efforts for new EDM software.

Section 4 - Recommendations

This SWAT recommends assembling an Implementation Plan (IP) based on the findings of its 27-29 March site visit. The IP should follow the SFAC's "A/E/C CADD Standard Implementation Plan Guidance" document and contain the action items below at a minimum. The following approach should be considered:

1. Treat the IP and execution as a project.
 - a. Establish schedules and address funding considerations for planning and execution.
 - b. Regularly report the progress of the implementation to either the PRB or some other executive group.
2. Establish an A/E/C CADD Standard Implementation Team.
 - a. Identify project team (ED, PM, C\OD, IM (GIS) and RE).
 - b. Identify team leader (someone other than the system administrator).
 - c. Define time frame and scope for implementing the Standard.
 - i. Work with each office to review and discuss Standard implementation guidance.
 - ii. Modify existing plotting techniques to best utilize the new Standard.
 - iii. Update SAJ's existing AE contract language to support the Standard.
 - iv. Develop in-house review processes for AE work that includes a review for the Standard.
 - v. Modify existing customized design tools to comply with the Standard (e.g., Hydrographic Survey design menus).
 - vi. Provide more Standard training for engineers and technicians.
 - vii. Develop metadata for all geospatial data collected.
 - viii. Begin the implementation in Survey Branch and Levees and Waterways Section. The implementation committee should prioritize other offices.
 - ix. Consider Standard overview sessions for contractors.

3. Define roles and responsibilities that facilitate an environment for information exchange and regular communication. It is critical to communicate the goals and progress reports of this effort to those persons who will be impacted by adoption of the Standard. Those persons include, but are not limited to, the following groups:
 - a. Management, e.g., supervisors (executive sponsorship).
 - b. Technical, e.g., CADD/system administrators, network/PC administrators.
 - c. Users, e.g., discipline CADD experts (representatives from all affected disciplines/branches).

Appendix I

Summary of Recommendations to Improve Training/Workshop/Interviews

Training

- Separate overview for supervisors
- Separate overview for users (shorter session)
- More practical sessions
- Length of class is about right
- Need to use product immediately after training
- Need more time in class to play with Workspace and become familiar with the layout

Overall

- Excited about easy way to conform to the Standard
- Mental overflow; reduce disciplines into that required by users
- Concern over understanding the Standard and Workspace

Keep the Energy

- Keep the user and management energy flowing
- Full support must be maintained from management and users
- Keep the employees enthusiastic!

Appendix II

Attendance List

A/E/C CADD Standards Implementation

Supervisors

1	Ed Middleton	Engineering Division Chief
2	Tom Leicht	Design Branch Chief
3	Son Vu	Survey Section Chief
4	Paul Stroup	Structures
5	Pete Kendrick	Engineering Tech in Design
6	Byron Farley	Levees & Waterways Chief
7	Shashi Makker	Mechanical & Electrical
8	Ken Byram	Special Projects
9	Eric Holand	Hydraulics Chief

Hydraulics and Hydrology

1	Dave Weston
2	Cynthia Perez
3	Trent Furgeson

Geotechnical Branch

1	Mike Viessman
2	Candida Koenig
3	Karen Pitchford
4	Jay Davis

Design Branch

1	DP	Mike Boe
2	DP	Valdez Chavis or James Crawford
3	L&W	Tony Smith
4	L&W	Brian Hughes
5	L&W	Bob Holt
6	L&W	Jimmy Matthews
7	L&W	Steve Conger
8	L&W	Jason Bohrmann
9	L&W	Murika Davis
10	L&W	Aaron Kelly
11	L&W	Jon Bearce
12	L&W	Ed Morente
13	L&W	Anthony Lee
14	L&W	Frankie Stafford
15	M&E	Don Beter

16	M&E	John Helberg
17	Structures	Jack Fross
18	Structures	Jim Mangold
19	Structures	Wade Popwell
20	Structures	David Shiver
21	Structures	Mike Wolz
22	Structures	Don Cook
23	Survey	Jeff Ware
24	Survey	Bob Hatch
25	Survey	Bill Mahalik
26	Survey	Shanks Gavin
27	Survey	Glenda Kelly
28	Survey	Jack Salzer
29	Survey	Rob Jenkins
30	Survey	David Robar
31	Survey	Bynum Lundsford
32	Survey	Jay Swarm
33	Survey	Jerry Burchfield

Con-Ops

1	Fran Woodward
2	Christina Brusnahan

Real Estate

1	Greg Martin
2	Tom Miller

Planning Division

1	Dan Haubner
2	Annon Bozemann

Appendix III

SAJ SWAT CD Index

These directories contain all of the SWAT material used during the week of 26 March 2001 at SAJ.

\Class_tsws	Class CADD Materials
courseguide.pdf	Class Training Book
\Interviews	Interviews returned, includes original questions
Jacsksonville.ppt	Toby Wilson CADD Standards and Jacksonville's Implementation
Jacksonville workshp.ppt	Workshop Power Point
A/E/C Standard Workspace Assistance Team.ppt	Closing Session Power Point
Lessons learned from SWAT Workshop.doc	