

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

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

16-19 July 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 Louisville District (LRL) in implementing the A/E/C CADD Standard. This implementation visit, 16-19 July 2001, consisted of training on the A/E/C CADD Standard and Workspace tools, and interviews with key personnel from primarily the Engineering Division. The training sessions were designed to introduce LRL to the A/E/C CADD Standard and its implementation tools and to help provide momentum for LRL's migration to the Standard. These sessions also provided valuable feedback on key issues and obstacles in implementing the Standard at LRL. Twenty-five people from LRL 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 LRL. The final product of this team's efforts at LRL is this report with the recommendations listed below.

RECOMMENDATIONS

The SWAT recommends that LRL 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 LRL. 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 pen tables, where appropriate, to best utilize the new Standard.
 - c. Update existing AE contract language to support the Standard.

- d. Revise 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 General Engineering. The implementation committee should prioritize other offices.
 5. Include EN, OD, PM, AE Contract Coordinator, and RE in the Implementation Plan's development.
 6. Coordinate the Implementation Plan with the LRL Geospatial Data and Systems (GD&S) Committee. The collection and dissemination of geospatially correct information is important to the development and maintenance of our civil works projects. As such, it is cost effective to ensure that the best data is made available to all those district elements that support these missions. The LRL GD&S committee may be the best vehicle for that dissemination.
 7. Consider hosting 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 Louisville District (LRL) the week of 16 July 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 4 days of the training, and Appendix III is an index of the LRL SWAT CD.

SWAT ORGANIZATION

Member	Organization	Phone
Stephen Spangler	ERDC - WES	(601) 634-3104
Edward Huell	ERDC - WES	(601) 634-4485
Mary Diel	SPK	(916) 557-6833
Glenn Kato	NWS	(206) 764-3460
John Kincaid	MVR	(309) 794-5492
Ed Mathison	LRL	(502) 315-6398

PURPOSE OF VISIT

HQUSACE has funded two SWAT visits during FY01. SAJ volunteered for the first visit; and LRL volunteered for the second. The primary purpose of the SWAT visiting LRL 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 LRL:

- Education and training on the Standard and MicroStation Workspace Tool.
- Individual and group interviews to define Standard implementation issues with workflows.
- An after action report and draft Implementation Plan, complete with recommendations.

SYNOPSIS OF EVENTS

Overview of the A/E/C CADD Standard

An overview of the A/E/C CADD Standard was held on Monday, 16 July 2001 before each of the training classes. Mr. Stephen Spangler of ERDC-WES presented the overview. The PowerPoint slides of this presentation can be found on the enclosed CD "Louisville SWAT." This overview was designed to introduce the A/E/C CADD Standard to the attendees involved in the production of CADD products at LRL.

Training

The SWAT held two 3-hour A/E/C CADD Standard/Workspace introductory classes on Monday, 16 July 2001. Twenty-five (25) LRL employees attended these classes. These employees were primarily from engineering division. ERDC-WES personnel led the classes. The following topics were covered in each class:

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

Interviews

Additional interviews were conducted with 30 individuals representing the groups listed below. Where practical, each office was invited to participate in a separate interview session lasting approximately 1 hour. There were 10 separate interview sessions scheduled. Disciplines interviewed were as follows:

- Structures
- Geotechnical
- Real Estate
- Survey
- Architectural
- Hydraulics & Hydrology
- Mechanical
- Electrical
- AE Project Management
- Civil

The interview questions and result can be found in Appendix I. All participants in the interviews provided candid information concerning their use of CADD standards and practices within LRL. Without exception, all parties supported the transition to the A/E/C Standard. Programs and Project Management Division, Operations Division, Water Control Section and Planning Division were not interviewed during the SWAT process. It

is apparent that the ISO process that the District embraced in the 1990's can provide the framework for a successful migration of business practices necessary to use the AEC Standard. The implementation of the A/E/C Standard will facilitate better communication and reduce redundancy in data manipulation not only within the District, but also with its business partners and customers.

It was apparent that LRL has a diverse customer base that may have unique requirements for electronic CADD file production (multiple standards, AutoCAD and MicroStation Files, etc).

Several offices noted that there was not a uniform plan for mentoring or fostering the development of new technicians. No comprehensive solution to this issue was offered by the interviewees, but increased targeted training and documentation for common procedures was suggested.

There was concern voiced over changing the LRL CADD file-naming from its current well known convention to that of the AEC Standard. There was considerable discussion during the interviews addressing this issue. While many of the perceived concerns of the LRL employees were addressed in these discussions, there were still some misgivings concerning this portion of the implementation.

Most groups were concerned with the methods that other Corps Districts employed to use the AEC Standard. LRL's role in brokering and providing services to other Corps Districts was also discussed.

Survey Section, Civil Branch and Architectural Section had the most discussion and demonstrated the greatest knowledge of both the in-house and AEC Standards. Their roles in providing CADD services and products to the District were evident.

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 LRL was well prepared for this visit.

It was obvious to the members of the SWAT that the LRL 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 LRL'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 LRL's existing Engineering Document Management (EDM) program should be applied to its current efforts for new EDM software.

Revised contracting language and education on the Standard are essential to bringing the standard on-line. The CADD coordinator for LRL will need to determine a date to implement the standard and get management to support the implementation. The sharing of design files, data files, and images regularly occurs at LRL.

Section 4 - Recommendations

Depending on the type of work being performed, the following recommendations were developed:

RECOMMENDATIONS FOR A/E JOBS

1. New starts could/should be required to be compliant now.
2. Begin new AE requirements for compliance in January 2002
3. With exceptions, AE contracts should be 100% by end of fiscal year 2002
 - a. Examples of possible exceptions:
 - i. MDS projects
 - ii. Customer requested exceptions
 - iii. Additional phases of designs
 - iv. Site adapted designs
4. Appendix A Requirements:
 - a. Develop a document that fully addresses the required CADD Standard. See the LRL SWAT CD for a sample Appendix A.
 - b. Identify a requirement for CADD Standard content checking (symbolology, file names and directory structure).
 - c. Identify submittal requirements (file types, submit with each review, documentation for checking).
 - d. The Government will provide workspace (MicroStation or AutoCAD) with Checker.
 - e. The Government needs to identify compliance level for model files.
5. A/E QC Requirements:
 - a. The Government will provide a copy of the A/E/C Workspace (MicroStation or AutoCAD) with Checker. A/Es will have the option to use their own checker.

- b. The A/E will provide a written report in detail of the findings of the file checker (file name, % compliant, # of elements in the drawing).
 - c. The A/E will identify all CADD software used in the design process.
6. District QA Program:
- a. Establish procedures for spot-checking designs for A/E/C Standard compliance. (Recommend A/E/C Standard Checker or commercial software.)
 - b. Establish procedures for addressing failed QC on A/E/C Standard compliance for A/E's (short term and long term).

RECOMMENDATIONS FOR IN-HOUSE DESIGN:

1. Demo Projects – start January 2002
2. Begin adding selected projects through FY2002
3. 100% new starts by January 2003
4. Time frame is based on having all previously identified elements in place (i.e., training, Revised QA Plan, work instructions, software)
5. Examples of possible exceptions:
 - a. MDS projects
 - b. Customer requested exceptions
 - c. Additional phases of designs
 - d. Site adapted designs
6. Develop migration plan
 - a. Survey section
 - i. Update existing utilities
 - b. Civil Branch, Real Estate, Geotechnical, Hydraulics and Hydrology
 - i. Begin using CADD/GIS Center In-Roads preference files
 - ii. Exceptions on file types for compliance
 - c. Structural, Mechanical, Electrical
 - d. Architectural section
 - i. Dependant on Tri-Forma
7. Revised QC for project:

-
- a. Modify In-House work instructions for standard compliance.
 - i. File names
 - ii. Level symbology
 - iii. File Management
 - b. Identify personnel and provide funding for additional team members\
8. Install Software as needed
- a. Install workspace
 - i. Configuration variables
 - ii. Network or not
 - b. Install Access/Dac/SQL Client
 - c. Determine database configuration for AECCK and AECMGR
9. Train as Needed (on Standard, workspace, QC plan)
- a. Assure that personnel are aware of Standard's requirements to be used for each project and are trained appropriately.
 - b. Assure people are aware of the revised QC plan for the project.
10. Evaluate existing data (if any) from customer and update to Standard when appropriate or necessary.
- a. Look through existing district archive or request data from customer
 - b. Evaluate need to make specific data sets compliant
11. Revise QA plan for CADD
- a. Establish procedures for spot-checking designs for compliance. (Recommend A/E/C CADD Standard Checker or commercial software.)
 - b. Establish procedures for handling drawings that failed A/E/C compliance checks.

ADDITIONAL TOPICS FOR CONSIDERATION:

- Training A/E Contractors. It is important that A/E's who are working on Corps' projects are familiar with the A/E/C standards and in particular the LRL implementation of those standards. It may cost-effective for LRL to host an A/E/C standards overview session for AE's to attend. This practice was well received by construction contractors during the EBS implementation at many districts. Such a proactive approach may reduce confusion and questions by A/E's for specific projects.

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- Custom Workspace for A/E customers. The A/E/C standard is complex. There is a generic workspace available, but it appears that there are elements within LRL that are accustomed to specific menu's that support their work. It may be in the best interest of the District to invest the time to revise those menus or create new menus to support an efficient implementation of the standard.
 - Determine which files to be checked. The A/E/C Standard supports standardization for both model and sheet files. Within these files, there are varieties of discipline specific information. Drawings such as detail sheets may be the most difficult to migrate to the new standard. It may be in the best interest of LRL to list those file types that are to be A/E/C complaint and those that are to use the best drafting techniques available. Most districts are working toward model file compliance, but using a slightly less rigid approach towards detail sheets. There needs to be standardization on those sheets, but a rigid A/E/C compliance may not be appropriate.
 - File Naming. LRL has file-naming conventions that have been in place for many years. Close consideration should be given to the use of the optional naming characters within the A/E/C Standard. Many of the conventions currently used in LRL may be incorporated in this manor.
 - Plotting Pen Tables. The A/E/C Standard lends itself to more generic pen tables for new and existing work. LRL may be able to utilize this feature of the standard to minimize its use of custom drawing specific pen tables

Appendix I

Attendance List

A/E/C CADD Standard Implementation

Military Branch

David Dale – Chief, AE Management Section
Craig Shumate – AE Project Engineer
Ron Gasaway – As-built coordinator
Boyd McClellan – Chief, Survey Section
Danny Breckenridge – GIS and Survey
Bob Lambert – Survey field data

Civil Branch

Cliff Jones – Chief, Civil Section
Rick Loehr – Technician – InRoads specialist
Earl Hibbs – Technician – InRoads specialist
Chuck Robinson – Technician – InRoads specialist
Bill Dorsch – Engineer
Barry Schueler – Engineer
Jack Skinner – Chief, H&H Section
John Vinson – Technician

Design Branch

Larry Cozine – Chief, Architectural Section
Count Miller – Technician
Jim Jagers – Technician
Karen Gallman – Interior Designer
Teresa Hibbs – Mechanical technician
Jerry Hitchcock – Electrical technician
Danny Holcomb – Mechanical technician
Jay Hagan – Electrical technician
Richard Nichols – Mechanical engineer
Holly Gittings – Chief, Structural Section
Brian Huston – Structural technician
Bill Stevens – Structural technician

Operations Division

Chaz Gauld – Technician
Lloyd Harlow – Technician

Real Estate Division

Bert Baldes – Technician
Scott Giller – Technician

Reserve Support

Anthony Huffines - Technician

Appendix II

LRL SWAT CD Index

These directories contain all of the SWAT material used during the week of 16 July 2001 at LRL.

\Class_tsws	Class CADD Materials
courseguide.pdf	Class Training Book
\Interviews	Interviews returned, includes original questions
Jacksonville.ppt	Toby Wilson CADD Standards and Louisville's Implementation
Louisville workshp.ppt	Workshop Power Point
Lessons learned from SWAT Workshop.doc	

Appendix III

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Louisville District

SWAT Visit Briefing

19 July 2001

Goals for Louisville Visit:

- Assist the District in Implementing Mandated A/E/C CAD Standard
- Assist in Development of an Implementation Plan
- Provide Feedback to District on Implementation Issues and Processes
- Provide Trip Report and Outline Implementation Plan by 24 August 2001

Schedule for SWAT Visit

- | | |
|------------|---|
| 16 July 01 | Conducted two training classes for 23 persons on AEC Standard and MicroStation Workspace |
| 17 July 01 | Conducted CADD workflow interviews in Structures, Civil, H&H, Geotech, Survey, Real Estate, Architecture, Electrical, Mechanical and AE Project Management. |
| 18 July 01 | Evaluated the interviews and discussed workflows with Ed Mathison |
| 19 July 01 | Had additional discussions with Electrical, Mechanical, Geotech, Civil and H&H. |

Working Notes from Discussion Sessions

- **Good Prior Preparation**
- **Enthusiastic People**
- **Prior Knowledge of Standard**
- **Some Very Organized Groups**
 - Defined Workflows
 - Not All Sections\Branches Have Defined Standards
- **Receptive to Implementation of AEC Standard**
- **AE Refinements**

Recommendations

- Modification of QC, QA and WI to include AEC Standard compliance
 - In-house
 - AE
- Set schedules for phasing the implementation
 - Migration plans for specific workflows for in-house and AE requirements

Notes from LRL Discussion Sessions

Customer

In-House (Civil)

Military:

Air Force

Army

Reserves

SFO

NASA

Other COE Districts

FEMA

Service Providers

A/E and In-House

A/E

A/E

A/E and In-House

(mds)

In-House

In-House

- LRL has a wide variety of customers
- For each customer, LRL needs to determine whether or not they want to use the standard
 - In-house customers, use the AEC Standards
 - Customers without a preference, use the AEC Standards
 - Customers with a preference, give them what they want

Thoughts/Steps

1. Determine customer requirements for CADD requirements
2. Modify Internal Contract with PPMD-ED to address the CADD standards requirements
 - a. If A/E
 - i. Add appropriate Appendix A clauses for standard
 - ii. Incorporate QC requirements for CADD work
 1. software

- 2. reporting
- iii. District QA program for CADD
 - 1. people
 - 2. process
 - 3. software
- iv. Execute terms on contract
- b. In-house
 - i. Develop individual QC plan for the project
 - ii. Install software needed to implement standards
 - iii. Train individuals
 - 1. standards
 - 2. software
 - 3. QC plan
 - iv. Evaluate existing data and update as required
 - v. Establish QA plan for CADD
 - vi. Perform the design

Implementing the A/E/C CADD Standard at Louisville District



AE Project Management Section

Answering the following questions should help identify areas within the workflow of the AE Project Management Section that will likely be affected by implementing the Standard.

1. What CADD products does the AE Project Management Section produce?
Our main customer is military AE management, some civil AE management. We do not do environmental or ordinance work. Mostly vertical construction with some horizontal (range work).

2. Do you have standard AE contract clauses for electronic deliverables?
A section on CADD in their Appendix A..
 - a. Do they include CADD or GIS standards?
Yes.
What are they?
The latest Tri-Service standards. There is no GIS work done out of this section at this time.
 - b. Do they include EBS deliverables?
Yes.
Do they include other electronic deliverables for engineering products?

Design analysis and other supplemental data comes in as hard copy only. We would like to see an all electronic submittal someday. Currently what is reviewed is the mstn files but what goes to the contractor for construction is the calcs files. We need some quality control built in to verify that the calcs files and the dgn (or dwg) files are the same. There are valid uses for both formats so you can't get rid of one or the other, but they need to look alike. We need to have the signed hard copies be plotted from the calcs files and not the cadd software files. Our Appendix A requires that the contractor have an independent technical review done for quality control on each submittal. It does not require that it be done by a different AE firm.

- c. What is the current policy on software for use by AE contractors?

We ask for the submittals in a format compatible with the users software. We allow them to design in any format, but the submittal must be provided in the format of the customer. There are quality control problems with translations. For the next revision of the Appendix A, we would like to require that each submittal be given in the format of the customer (so translation problems can be detected early).

- d. What is the current policy on providing CADD files in native format to others (internal use, as-built drawings)?

3. Explain the review procedures for AE electronic deliverables?

- a. Who is involved in this review?

A Quality Control team leader will look at the files to make sure the contractor performed his Internal Technical Review correctly and has completed everything on the checklist properly. Section experts will also review the submittal to make sure everything looks good. The project engineer (GS-13? technical expert) is responsible for making sure everything is routed through the process correctly.

- b. In your opinion, would enhanced review of AE electronic deliverables be beneficial or detrimental to the District or its customer?

It would be beneficial if the cost is reasonable. But then the question comes up as to what you are going to do if the submittal is not acceptable.

4. Are you familiar with the National CADD Standard or the AEC CADD Standard? The Spatial Data Standard?

No, I am not and I suspect the rest of the section isn't either. We rely on the CADD group to handle compliance with the standards.

5. What type(s) of projects in AE Project Management Section typically involve the use of CADD, and the creation of CADD files (DGN, DWG, and DTM)?

6. When CADD is to be used on a particular project, where does the data used to create CADD files originate?

We use both existing data and new survey data.

What percentage is historic data vs. new data?

95% or more is new data. LRL gives hard copies of design analysis to the customer, but we don't always give the customer all the design data that was used for the project. Most customers are not looking for the electronic data, but it would be available to them if it was asked for.

7. What other groups and/or organizations within LRL does the AE Project Management Section share CADD files with? How do you share CADD files with these groups?

8. How does AE Project Management Section facilitate the creation of life cycle of project CADD files?

We provide CADD files to the customer at the end of the project for As-Builts. The customer usually has their own group for creating the facility management files.

a. Who outside of LRL does the AE Project Management Section typically share CADD files?

- b. When the AE Project Management Section is involved with outside agencies, partners, clients, etc. on a particular project, how are CADD files shared?

We have no system set up for looking at files from outside people directly during the design process.

9. Does AE Project Management Section share CADD data with GIS users? If so, which offices do these users work and how is the data exchanged? Do you have a GIS standard and is it enforced?

N/A

10. In what other ways will implementing the standard affect the workflow of the AE Project Management Section?

I do not see a major impact other than it will be a change and we will have to exert some effort to get the contractors to work with it. It will require a bit of coordination with other groups.

Comments: In general, the COE does not look at the electronic deliverables as the product. If the hard copy looks ok, what is the problem? Why do we care about using the standards as long as the hard copy looks ok? This tends to be the attitude. We need to make more effort in communicating what value is added by using the standards. Also, we need to talk to the customers more to find out what they need in the electronic format so the files better fit into their CADD or facility management plans.

Interviewees: David Dale, Craig Shumate

Implementing the A/E/C CADD Standard at Louisville District



Architectural Section

Answering the following questions should help identify areas within the workflow of the Architectural Section that will likely be affected by implementing the Standard.

Interviewed:

Council Miller – Technician

Jim Jagger - Technician

1. Do you currently have a CADD drawing standard that you follow? Explain. Do you follow AIA or UDC drawing layout standards? Do other offices follow those standards?

They do have a CADD standard and follow it. The standard is “WI40107 LRL Engineering Division Policy for CADD Standardization.” The standard does have a convention for file naming. The “Work Instructions for Product Identification” is used as the source for the file naming convention.

2. How do you locate the building on Civil Site plans? Does Structures or Others determine building location? Are building locations geospatially located? Are floor plans geospatially located?

Civil section locates the footprint of the building on the site plan according to the proper coordinates. Architectural section only draws the floor plan and civil references it.

3. Do you use Auxiliary coordinate systems?

They do not use Auxiliary coordinate systems.

4. Do you use named views? If so do you have Standard named views? What are their purposes?

They do use named views. The views are named according to the sheet name. Named views are only used for references purposes.

5. How are architectural items (i.e., structure locations for columns) coordinated with the other sections? For example, does civil locate the buildings by referencing the architectural files or does architectural manipulate site reference files?

The coordinate with Structural section where columns are located but they place them and make changes as needed based on structural section's review of the plans.

6. Do you presently use Design Software? If so, what are they? (FrameWorks, Tri-Forma, MathCAD) Explain your experiences with any software listed.

The only use MicroStation to produce CADD drawings and have played with Triforma, which they do like. They previously used Project Architect some time ago but moved to MicroStation.

7. Explain how you use MDS.

They have used MDS but not as their primary design tool. Other sections use MDS more frequently.

8. Do you have custom menus or programs created in you district\Corps that you regularly use?

They have their own barmenus and some technicians use Function Keys often. The barmenus have not been updated recently.

9. Do you presently work in 3D? Do you work with Models?

All files are created using 3D seed files but the designs are 2D. Z-axis values are zero. The do work with model and sheet files.

10. Explain how you create your drawing sets?

- a. How do you create your Sections?

Sections are drawn full size with the border scaled up around the design.

- b. How do you create your Details?

Details are created as 2D files. A portion of a drawing is referenced and scaled up to make an enlarged plan. They use CSI format to number details. Details are housed on a central server.

- c. Do you use self-referencing files for Details?

- d. Do you use reference files for details?

They sometimes use reference files as details.

- e. How do you use Auto Dimensioning?

Some users use Auto-dimensioning.

f. How do you dimension Sections and Details?

A portion of a drawing is referenced and scaled up to make an enlarged plan and dimensioned

11. Do you use images in your drawings? Explain.

They do use images in their designs but not normally. They sometimes scan hardcopies of files and reference them into their DGN.

12. Since Architectural section is the manager for most of the military projects, are there any inconsistencies in how the files are assembled between sections? Are there any inconsistencies between the way military and civil works projects are done?

Yes there are inconsistencies. Example: Some sections will copy the floor plan into their design instead of referencing the design which renders their floor plan useless if the architectural section makes changes to the floor plan.

Extra Comments:

They do use lplot. They have custom pen tables, which are maintained by Ed Mathison. They seldom use screening. They plot using a scale factor and not 1:1. They scale the border up around the design. They occasionally sit with new employees while working on project to teach them their standard way of producing designs.

Implementing the A/E/C CADD Standard at Louisville District



Architectural Section

Answering the following questions should help identify areas within the workflow of the Architectural Section that will likely be affected by implementing the Standard.

13. Do you currently have a CADD drawing standard that you follow? Explain. Do you follow AIA or UDC drawing layout standards? Do other offices follow those standards?

Yes, we use our yellow book (local CADD standards) and our Workflow Document (from 1998, created in conjunction with ISO documentation) as well as the tri-service standards. WE do not name our levels. Sheet naming convention was developed locally (in workflow document).

14. How do you locate the building on Civil Site plans? Does Structures or Others determine building location? Are building locations geospatially located? Are floor plans geospatially located?

The architectural section does not locate the buildings. Civil references the floor plan into the site plan and scales it.

15. Do you use Auxiliary coordinate systems?

Typically not.

16. Do you use named views? If so do you have Standard named views? What are their purposes?

Yes, the sheet is the most common named view and it has a standard name (sheet). Others, other than sheet views, will be individually named.

-
17. How are architectural items (i.e., structure locations for columns) coordinated with the other sections? For example, does civil locate the buildings by referencing the architectural files or does architectural manipulate site reference files?

It is a coordinated effort. We discuss it with the other sections. We often locate the columns in the early stages with input from structures. We like to have control of column locations with the coordination. Second part of answer is answered in question 2.

18. Do you presently use Design Software? If so, what are they? (FrameWorks, Tri-Forma, MathCAD) Explain your experiences with any software listed.

We have played around with tri-forma and are moving in that direction. We are excited about tri-forma and like it a lot (Council). Currently using just straight microstation. Haven't really done any projects from the ground up lately. Mostly doing barracks projects and using existing data to jump start. Did use Project Architecture for a while, but that has gone by the wayside.

19. Explain how you use MDS.

We do not use it.

20. Do you have custom menus or programs created in you district\Corps that you regularly use?

Yes, function key menus, bar menus. Stuff that Bill Steinbock developed that are still functional. Jim has a lot of function keys programmed as shortcuts but they do not involve any custom programming.

21. Do you presently work in 3D? Do you work with Models?

Every file is a 3d file, but we are not actually designing in 3d. We give it lip service (Jim) because the civil people use the 3d stuff. Everything is set to elevation 0.

22. Explain how you create your drawing sets?

We do not extract sections and details from the model. We reference them from the design file. We do also have a library of details (our own details) located in a central directory. Our sections are drawn to real life units and then they are referenced out, a smaller border is put on them and then more details are added.

-
- a. How do you create your Sections?
 - b. How do you create your Details?
 - c. Do you use self-referencing files for Details?
 - d. Do you use reference files for details?

Both c and d

- e. How do you use Associative Dimensioning?

Not really, we have done it on occasion, but not normally.

- f. How do you dimension Sections and Details?

23. Do you use images in your drawings? Explain.

Yes, occasionally. Placed scanned images of old drawings into a sheet file to identify asbestos locations. They were bitmaps and placed with Microstation as raster references.

24. Since Architectural section is the manager for most of the military projects, are there any inconsistencies in how the files are assembled between sections? Are there any inconsistencies between the way military and civil works projects are done?

Yes, we have a problem with the other disciplines wanting to copy our information into their drawings instead of referencing them in. We in architectural section do not have much input into true civil projects.

25. How do you plot?

26. Do you use lplot?

Yes.

27. Do you use custom pen tables?

Yes, set up locally.

28. do you use the screen table mdl program?

Not so much in architectural, but other sections do use it occasionally.

29. Do you plot 1:1 or do you scale your plots?

Scale the plots to the border.

30. How do you orient new employees/students?

One on one training as much as possible. Not true in all sections.

31. Do you have a district CADD/Drafting Manual?

Yes, put together by Bill Steinbock but has not been updated for a while. Yellow book, maybe mid-80's. Also have workflow document from ISO process.

Comments:

We think the workspace will be very helpful, especially for summer hires and new people coming in.

Interviewees: Jim Jagers, Council Miller

Implementing the A/E/C CADD Standard at Louisville District



Civil Section

Answering the following questions should help identify areas within the workflow of the Civil Section that will likely be affected by implementing the Standard.

1. Do you currently have a CADD drawing standard that you follow? Explain.

Yes, for Drafting, CADD Symbology, and Procedures (both Military and Civil sides)

2. What type(s) of projects typically involve the use of CADD, and the creation of CADD files (DGN, DWG, DTM)?

Military, Civil, DTM, InExpress files, Parking areas, sites, ranges, barracks, locks and dams.

3. When CADD is to be used on a particular project, how are CADD files created? Where does the data used to create CADD files originate? Explain your use of projections and coordinate systems to create construction drawings.

Take other projects and delete everything out to get the correct settings. Get images from Survey. Survey establishes the coordinate system. Survey Topo file is typically used as a seed file.

4. What other groups and/or organizations within your District does your section share CADD files? What other Districts?

Mechanical, Geotechnical, Electrical. Architectural only uses Civil CADD files for doing Landscape Architectural. Districts – Pittsburgh, Chicago, Huntington, Nashville, and Portland.

-
5. When projects require CADD file production from the your section as well as other groups and/or organizations within your District, how are CADD files shared? Where are they stored?

Ed Mathison creates a 4 digit code and directory. The Civil discipline creates any subdirectories. When finished with a project, they burn their own CD and Ed makes a backup. Civil rarely does as-builts.

6. What outside agencies does your section typically share CADD files with?

Logic Mapping from Cincinnati, MSD, Fort Knox, Fort Campbell, USGS.

7. When your section is involved with outside agencies, partners, clients, etc. on a particular project, how are CADD files shared?

8. How much of the design process for a particular project is accomplished with CADD? Are engineering software applications used? If so, what software?

InRoads, InExpress, Modeler. They get help from Survey on importing images.

9. Do you have custom menus or programs created in you district\Corps that you regularly use?

Gshade and menus developed by Bill Steinbock.

10. Is information contained in CADD files from past or similar projects used to create CADD files for a new project?

Yes. Details are reused over and over.

11. What CADD products does your section produce?

Civil/Site design profiles, X-sections, plans and specs, channel improvements, do CADD work for Real Estate, such as right-of-ways.

12. How are CADD files reviewed within your section? (engineering content, graphic standards, naming conventions, drafting standards?) Explain.

Lead technician reviews. Look at the final plot for errors. Don't have time to examine the CADD file.

13. In what other ways will implementing the Standard affect the workflow of the your section?

The Standard will make it easy to check files for compliance. Incorrect items will stand out. Can catch deviations made by other designers.

14. Do you use GIS? What software do you use? Do you use GIS data for engineering or CADD products? Explain.

No.

15. How do you manage your CADD files for projects? How do you use project directories?

Use the directory structure to manage files.

As far as plotting, they use lplot, lplot organizer, color pen tables and Gshade.

Additional comments: One major problem they had is with mentoring new hires. They do not have the time to take a new hire under their supervision, as well as get their workloads completed.

Commenters: Earl Hibbs, Kathy Dorsch, Chuck Robinson

Implementing the A/E/C CADD Standard at Louisville District



Electrical Section

Answering the following questions should help identify areas within the workflow of the Electrical Section that will likely be affected by implementing the Standard.

1. Do you currently have a CADD drawing standard that you follow? Explain.

No. Don't care about colors – only weights and symbology.

2. What drawing types do you create? Do you primarily use other discipline's files as reference files or vice versa? How often are your files used by others as reference files?

Create model files and sheet files. Create interior and exterior. Reference Architectural and Civil. Civil often references Mechanical and Electrical.

3. How do you locate equipment on Civil Site plans? Does the Electrical Section or others determine building\equipment location? Are building\equipment locations geospatially located? Are floor plans geospatially located?

Place equipment 10' from the building. Coordinates do read out correctly.

4. Do you use Auxiliary coordinate systems?

No

-
5. Do you use named views? If so do you have Standard named views? What are their purposes?

No

6. Do you reference Survey or Civil Files? How do you reference them? Do the Coordinates read out correctly?

Yes. See response to #3.

7. Do you presently use Design Software? If so, what are they? (Tri-Forma, MathCAD)

Modeler – playing with it. Will use Tri-Forma eventually.

8. Do you have custom menus or programs created in you district\Corps that you regularly use?

No. Do have cell libraries.

9. Do you presently work in 3D? Do you work with Models?

Use 3D Floor Plans, however draw only in 2D.

10. How do you create your Sections? How do you create your wire diagrams?

Reference the Architectural sections and use it to create a section. Home run arrows take care of the need for a wire diagram.

11. How do you create your Details? Do you have custom details created in your district? Do they follow a standard?

Have custom details that are used over and over, as well as the Center's details.

12. Do you use self-referencing files for Details?

Very rarely.

13. Do you use reference files for details?

See answer to #10

14. How do you dimension Sections and Details?

Very seldom put a dimension. When they do, they dimension either with associative or snappable.

Use lplot. IPS sets for contract drawings.

Use custom pen tables. Ed Mathison maintains them.

Use screening and screentbl.ma. Jerry doesn't screen. His work is bold and he references the other work and uses level symbology to turn reference file linework to 0.

Draw 1:1. Scale sheet border up around files.

Student hires do corrections. New hires get a set of CADD requirements per job. Have a learning curve moving from AutoCAD to MicroStation.

Used to have a standard, but don't anymore. Don't change old drawings to new standards. Take previous plans and keep those settings.

Commentors:

Jerry Hitchcock

Theresa Hibbs (Mechanical)

Implementing the A/E/C CADD Standard at Louisville District



Geotechnical Section

Answering the following questions should help identify areas within the workflow of the Geotechnical Section that will likely be affected by implementing the Standard.

1. Do you currently have a CADD drawing standard that you follow? Explain.

No.

2. How do you locate your explorations? Do you create boring location sheets? Do you create test hole log sheets?

Get boring locations from Civil section. They only create the reports not the CADD drawings.

3. Who is responsible for laying out test hole locations?

Civil section

4. Do you use GIS?

No.

5. How do you get the facility/structure location? Does it depend on type of project?

Get from Civil section.

6. Do you use Auxiliary coordinate systems? Do you use named views? If so do you have Standard named views? What are their purposes?

Do not do any CADD drawings.

7. Do you reference Survey or Civil Files? How do you reference them? Do the Coordinates read out correctly?

Civil section does this work for them.

8. Do you work totally independently on your projects? When working with other sections, who sets the standard on assemble of files and information. Does Survey or Civil Reference your Files? How do they reference them?

Coordinate with Civil section on getting CADD work done.

9. Do you presently use Design Software? If so, What are they? (InSitu, Geographics, InRoads, Others)

They use Geosystem software to produce the exploration logs. This software will write to AutoCAD format but they have to still modify the file before including giving it to Civil.

10. Do you have custom menus or programs created in you district\Corps that you regularly use?

No custom menus.

11. Do you presently work in 3D? Do you work with Models?

No CADD designing.

12. How do you create your Sections?

Coordinate with Civil section.

13. How do you create your Details? Do you use self-referencing files for Details?

Coordinate with Civil section.

14. How do you use Auto Dimensioning? How do you dimension Sections and Details?

Coordinate with Civil section.

15. How do you plot your boring information for inclusion into contract documents? Explain in detail.

Implementing the A/E/C CADD Standard at Louisville District



Hydrology & Hydraulics Section

Answering the following questions should help identify areas within the workflow of the Hydrology & Hydraulics Section that will likely be affected by implementing the Standard.

1. What type(s) of projects typically involve the use of CADD, and the creation of CADD files (DGN, DWG, DTM)?

Flood plain mapping. We use Microstation and Irasc to map boundaries and measure areas.

2. Do you currently have a CADD drafting standard that you are following? Explain.

No.

3. When CADD is to be used on a particular project, how are CADD files created? Where does the data used to create CADD files originate?

I get the mapping (master file or model file) from surveys or civil section. Then I will create another file called floodplain and reference in the model file. I do my work on the floodplain file and also create other sheet files. Previously all work was done locally (with older, slower computer) but will start doing work across the network now that I have a new computer.

4. What other groups and/or organizations within your District does the Hydrology & Hydraulics Section share CADD files? How does H & H share CADD files with these groups?

Sometimes survey and mapping will reuse the files and we also give them to planning division on occasion. We usually give planning the maps in hard copy. We usually share the data in hard copy form.

-
5. Does the Hydrology & Hydraulics Section maintain project information to be used throughout the life cycle of a project in CADD files? Navigation project layouts? Reservoir projects?

I don't know, but we do not use any form of standard project or directory structures.

6. What outside agencies does the Hydrology & Hydraulics Section typically share CADD files?

FEMA, DOT.

7. When the Hydrology & Hydraulics Section is involved with outside agencies, partners, clients, etc. on a particular project, how are CADD files shared?

Currently only providing hard copies to the outside agencies.

8. Does the Hydrology & Hydraulics Section use CADD to determine calculations, quantity estimates, etc.?

Yes, areas and lengths.

Is CADD used in the planning and design process performed by H & H?

Yes in the early stages.

Are engineering software applications used?

Yes.

If so, what software?

5% of work is done with CADD. Does RAS modeling (hec1 and hec2, hec ras), hms modeling.

GIS?

No.

9. Do you have custom menus or programs created in you district\Corps that you regularly use?

The corps standard bar menu, but not often.

10. Is information contained in CADD files from past or similar projects used to create CADD files for a new project?

No, but I will scan old drawings in occasionally and use IRasC to view and do heads up digitizing.

11. What CADD products does the Hydrology & Hydraulics Section produce?
Flood Plain Mapping primarily.

12. What GIS products does the Hydrology & Hydraulics Section produce?
N/A

13. How are CADD files reviewed within the Hydrology & Hydraulics Section?
FEMA (or the customer) do the review.

14. How are GIS files reviewed within the Hydrology & Hydraulics Section?
None

15. Do you exchange data between CADD and GIS? Explain.
N/A

16. In what other ways will implementing the Standard affect the workflow of the Hydrology & Hydraulics Section?
Should not have any impact.

17. What actions do you perform in the design of military projects?
Storm sewer flow analysis (this is a new application for us). Civil section actually does the layout and we will size the pipe and the detention basins. We are the number crunchers.

18. Do you use lplot?
Yes.

19. Do you use Custom Pen Tables?
Not asked.

20. Do you use the screen table mdl program, screentbl.ma?
Not asked.

21. Do you plot 1:1 or do you scale your plots?

Not asked.

22. How do you orient new employees\students to do CADD work?

Not asked.

23. Do you have a District CADD\Drafting Manual?

Not asked.

Comments: Where are the standards for flood plain mapping and naming conventions?

Interviewee: John Vinson

Implementing the A/E/C CADD Standard at Louisville District



Mechanical Section

Answering the following questions should help identify areas within the workflow of the Electrical Section that will likely be affected by implementing the Standard.

1. Do you currently have a CADD drawing standard that you follow? Explain.
Yes. They have their own system. The project lead technician typically dictates the standard. They have files and cell libraries that they use.
2. What drawing types do you create? Do you primarily use other discipline's files as reference files or vice versa? How often are your files used by others as reference files?
Civil and military. Use Structural, Civil, Architectural, and Electrical files. They are familiar with other discipline levels. Each project has one directory. They create discipline subdirectories under that directory.
3. How do you locate equipment on Civil Site plans? Does the Electrical Section or others determine building\equipment location? Are building\equipment locations geospatially located? Are floor plans geospatially located?
For military, the files are not geospatially located. Locks and dams are geospatially located.
4. Do you use Auxiliary coordinate systems?
No

-
5. Do you use named views? If so do you have Standard named views? What are their purposes?

No. If they do, they are given very generic names.

6. Do you reference Survey or Civil Files? How do you reference them? Do the Coordinates read out correctly?

Civil yes, Survey sometimes. Reference them coincidentally. For Civil Works, the coordinates read out correctly, for military no.

7. Do you presently use Design Software? If so, what are they? (Tri-Forma, MathCAD)

Modeler, MathCAD, and SmartsSketch. Will start using Tri-Forma.

8. Do you have custom menus or programs created in you district\Corps that you regularly use?

Yes. Use Bill Steinbock menus. Also custom mdl's.

9. Do you presently work in 3D? Do you work with Models?

Yes. Work with Models for Finite Element Analysis.

10. How do you create your Sections? How do you create your wire diagrams?

Reference the Architectural section and add the Mechanical information.

11. How do you create your Details? Do you have custom details created in your district? Do they follow a standard?

Create details 1:1. Follow office standard for details.

12. Do you use self-referencing files for Details?

Yes.

13. Do you use reference files for details?

Yes. Reference the architectural details.

14. How do you dimension Sections and Details?

Use regular dimensioning, sometimes automatic dimensioning. Often have to modify it so linework is lw=0 and text is lw=2.

Use Iplot for large sets of drawings and CALS files.

Have standard pen tables. Use gshade.

Draw everything 1:1. Some Mechanical designs have to scale to fit into a border sheet. Would like to be able to draw 1:1 outside the border and reference into the border to a scale and keep automatic dimensioning. For reference files, they don't use environment variables. Details and sections go into the border sheet wherever they fit.

For new employees, they have a mentoring process. Print out the job requirements for them.

Used to have a printed CADD manual. It is outdated now.

With the A/E/C Standard, the hardest part is going to be getting people to use them. Learning the icons and symbology is going to be hard.

Rarely review stuff going to the A/E contractors.

Commentors:

Danny Holcomb

Richard Nichols

Implementing the A/E/C CADD Standard at Louisville District



Real Estate Division

Answering the following questions should help identify areas within the workflow of the Real Estate Division that will likely be affected by implementing the Standard.

1. Do you currently have a CADD drawing standard that you follow? Explain. **Yes, we use a local standard (from the old drafting standards). It does not go into levels and colors, etc. but a lot of that is built into the cells. Has the set of real estate standard symbols. We have not had a lot of new drawings, most is historical data and files. They do use hybrid products.**
2. What CADD products does the Real Estate Division produce? **Segment maps, right of way maps for flood control projects. Most work is contracted out (by the local sponsor) and we review but we do some of the work in-house.** What GIS products do the Real Estate Division Produce? **We have used ArcView once, may be going that way.**
3. Does Real Estate Division use CADD to produce segment maps or other property documents?
Yes. We have a program now that will read descriptions and plots out the boundaries. DeedPlotter and it works within Word. We have not tried to bring in the information into Mstn.
If not, how are these documents created? Are products created by AE reviewed by Survey Section or cartographers?
If they have a cadd file, we will review the cadd files. Files are reviewed for presentation not for how the files are constructed.

Are these documents part of a larger RE GIS or facilities management system?

No

4. When CADD is to be used on a particular project, how are CADD files created?

We use a custom seed file.

Where does the data used to create CADD files originate?

Some comes from existing data in house, some from AE, or from existing customers. If we have geographic coordinates then we will use them. We usually work in feet/inches.

Do you have a CADD or GIS interface with REMIS?

No.

5. What other groups and/or organizations within LRL does the Real Estate Division share CADD files with?

Engineering and some Planning. Not sharing data with operations.

How does Real Estate share CADD files with these groups?

E-mail, sharing out directories with planning of their real estate maps.

6. Does the Real Estate Division maintain project information to be used throughout the life cycle of a project in CADD files?

Yes, they have a directory structure set up so that they can find their files for future use.

7. What outside agencies does the Real Estate Division typically share CADD files with?

USGS, State Natural Resource people, DOT's, local sponsors, AE.

8. Do you have custom menus or programs created in you district\Corps that you regularly use?

No.

9. When the Real Estate Division is involved with outside agencies, partners, clients, etc. on a particular project, how are CADD files shared?

Usually e-mail or send out on a cd.

10. Does the Real Estate Division use CADD to determine calculations, quantity estimates, etc?
Yes.
Are survey software applications used? If so, what software?
DeedPlotter, IrasB, IrasC (once).
11. Is information contained in CADD files from past or similar projects used to create CADD files for a new project?
Yes
12. Does Real Estate Division share CADD data with GIS users?
Yes, planning div and survey branch.
If so, which offices do these users work and how is the data exchanged?
Data is exchanged through e-mail or shared directories.
Do you have a GIS standard and is it enforced?
No.
13. In what other ways will implementing the standard affect the workflow of the Real Estate Division?
We could use it if it is more RE oriented.
14. Do you use lplot?
Yes.
15. Do you use Custom Pen Tables.
Yes, those normally set upstairs.
16. Do you use the screen table mdl program, screentbl.ma?
No.
17. Do you plot 1:1 or do you scale your plots?
Draw 1:1 and scale down to plot

18. How do you orient new employees\students to do CADD work?
Haven't gotten any new employees in a while.

19. Do you have a District CADD\Drafting Manual?
Yes, RE Standard

Comment: Check with Steve re: RE boundary stuff in the standards.

Implementing the A/E/C CADD Standard at Louisville District



Structural Section

Answering the following questions should help identify areas within the workflow of the Structural Section that will likely be affected by implementing the Standard.

Interviewed:

Brian Huston – Project Lead Technician

He was the project lead technician for the civil project section. He was responsible for reviewing projects, providing CADD requirements on new projects, project coordination, and managing the files of the project. The CADD Requirements document he uses for new projects comes from the district's ISO 9000 document. He works primarily on navigational structures projects but has done work on O&M projects, Military Building projects, and Flood Control projects. He reviews the structural CADD files from A/E's and also other files for consistence on format. (border layout, text sizes, level assignments, reference files, etc.)

1. Ask how they plot.

They plot 1/2, FULL, grayscale.

2. Do you use lplot

They use lplot. They use lplot Organizer to batch plot.

-
3. Do you use Custom Pen Tables

Does use pen tables developed by Ed Mathison.

4. Do you use the screen table mdl program, screentbl.ma?

Does not use Screentbl.ma for screening. They use lplot to halftone.

5. Do you plot 1:1 or do you scale your plots?

They plot ½ and FULL.

6. How do you orient new employees\students to do CADD work?

The Project Lead Technician sits with new employees and goes over the local district standard.

7. Do you have a District CADD\Drafting Manual?

The Louisville District does have a standard.

8. Do you have a disclaimer on your drawings?

9. Do you currently have a CADD drawing standard that you follow? Explain.

They use the Louisville District standard.

10. How do you locate the building on Civil Site plans? Does Structures or others determine building location? Are building locations geospatially located? Are floor plans geospatially located?

They do not georeference they structure. They just draw the plans and Civil references the structure into the site plan.

11. Do you use Auxiliary coordinate systems?

They do not use auxiliary coordinate systems.

12. Do you use named views? If so do you have Standard named views? What are their purposes?

They do use names views but do not have a standard naming convention for the view names.

13. Who is responsible for the building Column (Line) Spacing?

14. Do you reference Survey or Civil Files? How do you reference them? Do the Coordinates read out correctly?

They do not reference survey or civil files but survey references their files.

15. Do you use images in your contract drawings? Explain.

They do use images in their CAD designs. They scan hand drawn sheets and reference the raster image into their design.

16. Do you presently use Design Software? If so, What are they? (FrameWorks, Tri-Forma, MathCAD)

They have used FrameWorks and MathCAD.

17. Do you have custom menus or programs created in you district\Corps that you regularly use?

They use Steel.ma in the barmenu and also the CADD Details library (CDL) developed by the CADD Center. They have modified the CDL to name details according to CSI format.

18. Do you presently work in 3D? Do you work with Models?

They have worked with Project Architect for 3D modeling but rarely do 3D modeling.

19. Do you have your own custom cell library? How was it created? Is it documented?

Have a cell library.

20. Explain how you create your drawing sets?
- a. How do you create your Sections?
 - b. How do you create your Details?

The user normally modifies existing details from previous projects and adds the new detail to the current project.

- c. Do you use self-referencing files for Details?

Does not self-reference files.

- d. Do you use reference files for details?

The user normally modifies existing details from previous projects and adds the new detail to the current project.

e. How do you use Auto Dimensioning?

The user does not use auto-dimensioning or associating.

f. How do you dimension Sections and Details?

Depending on the case either by redrawing the section/detail or referencing a portion of the design and detailing it.

Implementing the A/E/C CADD Standard at Louisville District



Survey Section

Answering the following questions should help identify areas within the workflow of the Survey Section that will likely be affected by implementing

1. Ask how they plot

Use Iplot also use ArcView

2. Do you use Iplot

Yes

3. Do you use Custom Pen Tables

No, Default that come from MicroStation, Ed Helps out, Use mostly 6-7 colors

4. Do you use the screen table mdl program, screentbl.ma?

Yes, gray shade

5. Do you plot 1:1 or do you scale your plots?

Put Borders on it for work outside of design branch.

6. How do you orient new employees\students to do CADD work?

No new employees, in general on the job training

7. Do you have a District CADD\Drafting Manual?

Not specifically

8. Do you have a disclaimer on your drawings?

No

9. Do you map in GIS?

If it is required.

10. Do you currently have a CADD drawing standard that you follow? Explain.

Not specific to section, use LRL CADD Standards, but also do work for outside customers, and use SDS and Tri-Services. Thinks it would be beneficial for the District to go to AEC.

11. What types of surveys are conducted?

Lidar, photogramatric, conventional topo, hydrographic, movement studies, control surveys, occasional cadastral RE.

12. Are surveys conducted by in-house survey personnel, or are surveys contracted by outside agencies/contract?

Survey writes most of the scopes for the surveys they do, if the survey is for cadastral for RE, RE will write the scope. Operations does hydrographic in-house. Surveys in conjunction with design, scope by A/E management group. In-house and indefinite delivery contracts.

13. When is a CADD file (DGN, DWG, DTM, etc.) the final product produced from any of the different types of surveys conducted? Explain.

Fairly often. Not for movement studies. May include data from different sources. Do provide DTM, more so in the past.

14. When a CADD file is produced from survey information, is the CADD file produced in the field? If so, what type(s) of CADD files are produced?

In general the final product is done in the office. At time dgns are reviewed in the field.

15. When the final product received from the field is not a CADD file, is the field data to be used to generate a CADD file later? If so, by whom? What is the product received from the field? How is the product received from the field input into a CADD file(s)? What type(s) of CADD file is produced? Do you review the final product?

Depends on the job, if it is for a map, yes. For others such as movement no. But movement studies may overlay a map. Receive coordinate file, to create an ascii file, to produce a dgn file.

16. To whom does the Survey Section provide field data or finished CADD files?

Field data could go to anyone in the district, A/E management group, geotech.

To whom does the Survey Section receive information? Who does the survey section receive instructions and guidance from on design projects?

Most of what they want to acquire we define in verbal form, then put into contract form. They also have survey manuals.

17. What types of data collectors and software applications do field personnel use when a CADD file is the desired product?

Most instruments are electronic, gps, total stations, hydrographics, some will work with both gps and total stations.

18. Are CADD files that contain information specific to frequently surveyed locations or projects regularly maintained? If so, by whom?

Yes and no. We have a project folder in hard copy form. At completion of project save all electronic data including data files to CD. Also post SMS data to intranet site. Also post some digital photographs to intranet.

19. Do you use Auxiliary coordinate systems? **Not typically.** Do you use named views? If so do you have Standard named views? What are their purposes?
no

20. Do you reference files in creating your products?

Yes

How do you reference them?

Supposedly everything has the same global origin 0,0 lower left and working units 1000 and 1 english.

Do the Coordinates read out correctly? What coordinate systems do you regularly use? Do your customers understand coordinate systems and projections?

Some Do and Some don't. State Plane, UTM, Lambert Projects used by water management and operations.

21. Do other offices Reference your Files?

Yes.

How do they reference them?

Civil references like survey, others may strip coordinates off by rotating, or moving, etc.

Are commonly used survey files, images and DGN, stored in a central location and referenced from that point or are they copied into each project as needed?

For outside agents, put on CD or email or ftp.

22. Do you have custom menus or programs created in you district\Corps that you regularly use?

Convert CVD data,

23. Do you presently work in 3D? Do you work with Models?

Only 3D

24. In what other ways will implementing the Standard affect the workflow of the Survey Section?

Want a translator between AEC and SDS. Changing the tables in the CVD data . Different matter for taking older data. Translator form LRL standards to AEC Standards. LRL Standards probably based on old APDP. Civsur cell library and cell library.

25. Explain your major workflows, in general terms, and the software you used to complete those workflows.

26. Do you use GIS? Who are your primary GIS customers?

Some has special requirements.

27. Do you have a GIS standard?

SDS

Do you use it? What is it?

Boyd Chief

Chris Heintz

Bob Lambart

Andy Breckinridge

Survey is a possible good starting section for the AEC Standard as they are a generator of information. However, some work will be required to create AEC compliant tables for CVT Data. Generally survey section thinks moving to the AEC Standard is a good thing. It will not be easy or quick, but in the long run is a good move. Survey does files to GIS Spacial Data Standards when the job requires it. They use lplot with default color tables, and use some gray shading (possibly using screentbl.ma). Most CADD data is input to CAD files using CVT data MDL.