Guide to the CRAA

CAD Support Package

***Columbus Regional Airport Authority***

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# Consultant’s Guide Contents

## Overview

All Computer Aided Design (CAD) data created for the Columbus Regional Airport Authority (CRAA) must be developed and submitted according to the specifications documented in the CRAA CAD Standard and CRAA GIS Data Standard. This includes data prepared both internally by CRAA employees and by outside organizations for work performed on behalf of Airport tenants and consultants to the CRAA. The objective is to standardize design deliverables so that data and drawing files received from these multiple sources can easily be integrated into the CRAA Aviation Department’s Geographic Information System (GIS) and/or submitted to the FAA Airport’s GIS (AGIS).

The purpose of this guide is to create a link between the CRAA CAD Standards, GIS Data Standards and the digital files found on the CAD Support Package; typically either a zip file for download or on a CD-ROM. This document is not intended to provide instructions on the detailed use of CAD software, nor on the CAD of GIS Data Standards themselves.

Columbus Regional Airport Authority has provided the digital documents on the CAD Support Package to facilitate the creation and delivery of digital documents in an acceptable form. Not conforming to these standards may result in rejection of the digital delivery.

The contents of the CAD Support Package and its directory structure and files are described in the following sections. The files are meant to be compatible with the CAD Standards content and appendices for layer names, blocks and symbols.

## CAD Support Standard

The CAD Standards Document folder contains the standards that provide uniform requirements to ensure that all digital documents are consistent.

The Consultant’s Package directory is further broken into seven folders under each CADD software vendor:

Blocks and Symbols

Border Sheet Templates

Line Styles

Patterns

Plot Style – .CTB Color table

### Block and Symbols

Blocks are single or multiple entities grouped together to create a single element. The Block and Symbols folder contains one subfolder for various disciplines. The discipline folders contain drawing files of blocks as listed in **Appendix E** of the CAD Standards.

### Border Sheet Templates

This folder contains the standardized versions of the Title sheets available from CRAA. A selection of plan sheet border files is provided covering the usual range of Architectural and ANSI sheet sizes.

Coordinate with the CRAA Project Manager and CRAA GIS Supervisor to determine the sheet size(s) to be used for a given project.

Each CRAA border sheet template file contains all of the line work and text in model space. It is expected that the consultant will configure the chosen file data fields as needed to suit their project plan set needs, without modifying the sheet boxes or “blocks” as defined in the CAD Standards. Typically this will mean configuring the file for use as an externally referenced file (Xref) for the plan set sheet files by editing the project-specific text objects, adding consultant logos, etc. and wblocking the sheet-specific text objects (sheet title, name, number, etc.) into a separate file for insertion and editing on individual sheet tabs.

#### Border Sheet Plotting

Each border file has a “cut-line” rectangle on the defpoints layer that defines the intended sheet size and border object placement. The insert point of 0,0 is at the lower left corner of the rectangle. To simplify plan sheet layout tab creation in AutoCAD, go to the ‘**Plot and Publish**’ tab of the **Options Menu** and set the **‘Specify Plot Offset Relative To’ Radio Button** (in the lower right corner) to “**Edge of Paper**”.

Then attach the border Xref on the layout tab at 0,0 with a relative path after defining the sheet size with Page Setup Manager. Relative paths and proper handling of Xref files are defined in the CAD Standards.

### Line Styles

The Line Styles folder contains the standard line styles approved by CRAA. Use these line styles in all digital documents for delivery to CRAA. While the template files have the CRAA line types loaded into them, the two line type files are enclosed to allow consultants to load CRAA line types individually when creating new sheets from scratch.

### Patterns

Patterns are repeated drawing elements used to signify various materials. This folder contains the patterns that are approved or recommended by CRAA. Use these patterns for all Airport digital documents.

### Plot Styles - .CTB Color Table

Printers and plotters are controlled by files called pen tables. This folder contains the file to convert thicknesses and/or color in an electronic file to line thicknesses on a paper drawing. This file is called the CRAA.ctb.

The CRAA.ctb is the color-based pen table to be used for all monochrome plans involving CRAA work. The pen table is set up with a repeating group of ten lineweight/screening combinations for colors 1 to 250 based on ISO standard line weights. Colors 251 to 255 are varied percent screened “pens” intended for area hatch patterns. Color 255 – 0% screen – is useful for solid hatch patterns used to mask plan area to be overwritten with text/mtext objects, plan sheet legends, etc, and for white text on dark backgrounds. A table of pen sizes is provided in the CRAA CAD Standards manual.

### Templates

This folder contains templates with predefined layers as listed in **Appendix D** of the CADD Standards document, split into different templates by discipline/use. Use these templates for all Airport digital documents. Some layers appear in multiple templates due to their nature (e.g. electrical). The existing CRAA templates are:

Civil\_Site

Civil\_Airfield\_Elec

Civil\_Utilities

Civil\_General

Bldg\_Architectural

Bldg\_Structural

Bldg\_Mech\_HVAC

Bldg\_Mech\_Plumbing

Bldg\_FAA\_Electrical

Bldg\_Electrial

Bldg\_General

These template files (.dwt files) are provided to contain in pre-defined digital form, the layers and linetypes for various disciplines to be used in performing CRAA CAD work. These are documented in Appendix D of the CRAA CAD Standards manual. While the template layers have pen colors/line weights initially assigned, it is expected that consultant will make changes based on their needs and preferences for creating the project plan set. Line types may be supplemented with approval to suit the work and the consultant’s approach in developing the plan set. See the CAD Standards manual for submission requirements if a line type is desired that is not currently defined in the CRAA Standard.

# Suggested Procedures for Developing and Delivering Digital Documents

## Obtain CAD Support Package, CAD Standards and supporting files

All users (internal staff, vendors, and contractors) should obtain the following documents and media before initiating any design or data creation activities. Contact the CRAA GIS Supervisor or designated Project Manager if these documents are not available for download via the CRAA website:

* + **CAD Support Package (.ZIP File download or CD-ROM)**

The consultant should use tools that they are familiar with when developing the digital drawings. The CAD Support Package is provided to augment the consultant’s design process. This package includes CRAA’s CAD Standards. It is important that consultants (data providers) carefully adhere to these standards when developing any drawings that will be delivered to CRAA. Not conforming to these standards may result in rejection of the digital delivery. Note that the standards and supporting digital files and tools will change over time and the most current copy should be requested when starting a new contract.

* + **Supporting Files**

The consultant should contact the appropriate CRAA Project Manager to acquire any existing airport data and supporting files that are necessary for the design and construction of a particular project.

## Ensure drawings comply with digital format

Consultants may prepare their design and construction documents using the version of CAD software stated on the Project Data Specifications form to be submitted to CRAA (Appendix A to the CAD Standards). However, all deliverable products for the phased submittal will use “current” AutoCAD (.DWG) drawing file format only. All deliverables should also conform to the standards that are set forth in the CRAA CAD Standards.

## Comply with electronic drawing file naming conventions

The CAD Standards specify a file naming structure that defines the content of a digital file. The file naming structure determines the type of data that is in the file and how it will be stored. Detailed information describing naming conventions can be found in the **Electronic Drawing File Naming Conventions** section of the CAD Standards document.

The standards identify the layer names, color, and linestyle of each feature that can be placed or modified in a drawing. The format and patterns of the layer naming conventions ensure that there is no duplication of graphic information and to improve coordination of information between projects.

To identify the layer in which a feature should be placed, refer to **Appendix D** of the CAD Standards document and look up that feature’s description in the layer tables.

To help reduce errors and drawing time, CRAA has supplied template drawing files with defined layers for each drawing type. They are located in the Template**s** folder.

You can also install line styles that follow the standards if for some reason using the templates doesn’t fit your purposes. If you do not follow these instructions, you may encounter errors when loading the line styles. The follow files are in the Line Styles folder. These steps may need to be repeated if the software is upgraded. These files will add lines styles required by the CRAA but will not affect drawings created for others.

Two files are included which function at different scales – Civil for outside of building plots and Architectural for inside the building plots:

CRAA ARCHITECTURAL\_Rev2.lin

CRAA CIVIL\_Rev2.lin

1. Copy the files found in the Line Styles folder into the ..\Support\ folder under the AutoCAD root folder. An example of this path would be c:\Program Files\AutoDesk2005\Support\.
2. Start AutoCAD.
3. Create a new drawing or open an existing drawing.
4. Load the line styles from the .lin files.

## Audit drawings for standards violations

Using the Batch Standards Checker program provided by Autodesk, data providers can audit all drawings for standards violations and create a summary report. To use the Batch Standards Checker, you must first create a standards check file that specifies the drawings to audit and the standards files used for the audit.

For detailed instructions on the Batch Standards Checker, refer to Autodesk help functions.

## Format drawing deliverable

Before you place files on digital media for delivery to CRAA, follow the procedures documented in the **Submittal Compliance Check Process** section of the CAD Standards.