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Chapter 14 - Signing and Pavement Marking Standards

CADD Production Criteria Handbook

14.1 GENERAL

Signing and Pavement Marking Plans are usually a component set of plans (see Chapter 13, Section 13.1). However, if the Signing and Pavement Marking Plans are the lead plan set, then the standards set in Chapter 13, Roadway Standards, pertaining to elements that are specific to the lead plan set shall apply to the Signing and Pavement Marking plan set (i.e., Traffic Control files and elements, preliminary estimate sheets, etc.) Projects requiring minor signing and pavement marking construction work may include these features detailed on sheets in the Roadway Plans. If this is the case, the Signing and Pavement Markings element symbology standards within this chapter shall still apply. However, an exception to the QC rule files must be created and documented in the Roadway discipline journal file. When prepared as component plans, they shall be assembled as a separate plan set complete with a key sheet, tabulation of quantities and all other relevant signing and pavement marking sheets. The sheets shall be numbered consecutively, with sheet numbers prefixed by the letter “S”.

14.2 STANDARD FILE NAMES

Florida Department of Transportation (FDOT) utilizes standard naming conventions for all of its files. Some of the automation implemented in various tools provided by FDOT depends on naming conventions being met. More importantly, the naming convention confers information to the downstream customer of the data.

Standard file names should follow this format: AAAABB##.ext
Where AAAA = *abbreviated file description*, BB = *Discipline Denotation,* ## =S*equence number.*

> ***Note*** *Please see CADD Production Criteria Handbook (CPCH) Chapter 4 for more information.*

The following table defines the Signing & Pavement Marking File Name Standards in regards to FDOT Projects with the understanding that each file name will include sequence numbering. If the need arises to create a file type defined by another discipline, use the first 4 characters of the standard file name and append the signing and pavement marking filename designation (SP) as the fifth and sixth characters, followed by the file sequence numbers. An example is toposp01.dgn.

File Type	File Name	Model Name	File Description	Rule File	Seed File	Critical File
Borders and Sheets	BDPLSP.dgn	Default	Border for Plan Sheets when sheet is referenced	planrd.rul	$(MX_SEEDIR)fdotseed2d.dgn	
Borders and Sheets	BDXSSP.dgn	rdxsrd	Border for Cross Section Sheet when sheet is referenced	rdxssp.rul	$(MX_SEEDIR)fdotseedxs.dgn	
Borders and Sheets	GNNTSP.dgn	Default	General Notes Sheet	planrd.rul	$(MX_SEEDIR)fdotseed2d.dgn	
Borders and Sheets	PLANSP.dgn	Default	Plan Sheet	planrd.rul	$(MX_SEEDIR)fdotseed2d.dgn	
Clip Borders	CLIPSP.dgn	Default	Clip Borders	cliprd.rul	$(MX_SEEDIR)fdotseed2d.dgn	
Clipping	MTPLSP.dgn	Default	Motif file for plan sheets	planrd.rul	$(MX_SEEDIR)fdotseed2d.dgn	

File Type	File Name	Model Name	File Description	Rule File	Seed File	Critical File
Clipping	MTPRSP.dgn	Default	Motif file for profile sheets	plprrd.rul	$(MX_SEEDIR)fdotseed2d.dgn	
Cross Sections	RDXSSP.dgn	rdxsrd	Cross-Sections	rdxssp.rul	$(MX_SEEDIR)fdotseedxs.dgn	X
Existing Topography	TOPOSP.dgn	Default	Topography - Existing	topord.rul	$(MX_SEEDIR)fdotseed2d.dgn	
Key Sheets	KEYSSP.dgn	Default	Key Sheet	keysht.rul	$(MX_SEEDIR)fdotseedkeymap.dgn	
Proposed Design	AUTOSP.dgn	Default	AutoTurn Turning Radius Data	autosp.rul	$(MX_SEEDIR)fdotseed2d.dgn	
Proposed Design	DSGNSP.dgn	Default	Proposed Design	dsgnsp.rul	$(MX_SEEDIR)fdotseed2d.dgn	X
Proposed Design	SAPMSP.dgn	Default	Layout as a Typical Design or Passing Zone	dsgnsp.rul	$(MX_SEEDIR)fdotseed2d.dgn	
Proposed Design	TEXTSP.dgn	Default	Text Label and Miscellaneous Description	planrd.rul	$(MX_SEEDIR)fdotseed2d.dgn	
Special Details	GSWKSP.dgn	Default	Guide Sign Work Sheet and details	gswksp.rul	$(MX_SEEDIR) fdotseed2d.dgn	
Special Details	MSARSP.dgn	Default	Mast Arm Detail for Signing	msarsp.rul	$(MX_SEEDIR)fdotseed2d.dgn	
Special Details	SPDTSP.dgn	Default	Special Details - Miscellaneous (foundation details, boring details, etc.)	spdtrd.rul	$(MX_SEEDIR)fdotseed2d.dgn	
Special Details	SPSGSP.dgn	Default	Special Sign Detail for Overhead	spdtrd.rul	$(MX_SEEDIR)fdotseed2d.dgn	
Summary Boxes/Tables	CESSSP.dgn	Default	Summary of Pay Items	planrd.rul	$(MX_SEEDIR)fdotseed2d.dgn	
Summary Boxes/Tables	TABQSP.dgn	Default	Tabulation Quantity Sheet	planrd.rul	$(MX_SEEDIR)fdotseed2d.dgn	

14.3 RESOURCE FILES

Engineering/CADD Systems Office (ECSO) provides standard resource files for Computer Aided Design and Drafting (CADD) Signing and Pavement Marking Plans, which use MicroStation and GEOPAK to produce an electronic project data delivery. If a custom line style or font is needed, it must either be embedded in the active design file or the corresponding resource file must be copied to the \SYMB sub-directory of the FDOT project directory structure and included as part of the electronic delivery of the project. The justification for the non-standard line style or font must be noted in the journal file.

14.4 ENGINEERING DATA

The Signing and Pavement Marking discipline directory contains an additional sub-directory named **\eng_data**. This sub-directory is designated to contain the following:

- PostScript image files of the Signalization plan sheets
- Quality Control Reports
- ASCII Engineering Data output files
- All computer input and output files (PostScript and Native File Formats) used for design of the signal structures
- All supplemental hand calculations (scanned and saved in PDF and PostScript Formats)
- Other data pertinent to the overall signalization design

14.5 PROFESSIONALS' ELECTRONIC DATA DELIVERY SYSTEM (PEDDS)

PEDDS shall be used to Secure and Authenticate project data. When projects are received, the FDOT authenticates the data on the delivered CD. Each time data is transmitted to or received by FDOT the data shall be secured and authenticated. PEDDS shall also be used to authenticate any project specific data received as part of a delivery from an outside source or discipline. For example, an electronic delivery to Roadway from Survey or EMO should be secured and authenticated. Roadway shall electronically secure all files for delivery.

14.6 SYMBOLOGY STANDARDS

Symbology Standards that apply to FDOT Projects are set up under a listing of Standard Level Names with specific ByLevel Color, Style and Weight attributes. These levels are grouped under specific Rule Files which are associated to each valid Standard Filename of each Discipline for the purpose of performing the Quality Control check for FDOT Standard compliancy of each FDOT project design file. Section 14.2 of this chapter provides for the complete Standard File Name listing with associated Rule File.

> ***Note*** *Refer to Chapter 3 FDOT Resource and Support Files to review the Level names listing for each associated Rule File.*

The following are the basic level naming convention rules to follow to always know what level an element should be placed on:

1) Level Names have 18 maximum characters.
2) The format of the name is: ***object_sv***

object (represents element type)_ ***s*** (represents state) ***v*** (represents view)

states	views
p (proposed)	**x** (cross section)
d (drafting element)	**r** (profile)
e (existing)	**p** (plan) (DTM is the same as plan)

> ***Note*** *Level Names without including the "_sv" portion in the name are assumed proposed plan view elements.*

Example: With this information one can determine the following about the Level names below:

gas	- Proposed Plan view elements for "gas" related items
gas_ep	- Existing Plan view elements
gas_px	- Proposed cross section view elements

14.7 SIGN DESIGN

The DrawSign Program is an application that designs and draws sign panels and posts and determines the corresponding pay item of the assembly based on the wind load and post properties. The DrawSign application requires use of the GEOPAK or MicroStation Civil Extensions Design and Geopak Computation Manager Database (FDOT2008.ddb) to provide automated pay item association.

In addition to the GuidSIGN worksheet design file required for all non-standard sign designs by the Plans Preparation Manual, a DXF output of the sign, for use by a Sign Cutting Shop, shall be provided for creation of the sign panel.

14.8 GUIDSIGN

FDOT has adopted and recommends the GuidSIGN Program as the standard Sign Design software. However, using GuidSIGN is not required and other Sign Design Programs available in the industry may be used for Sign Design. Even if GuidSIGN is not used, FDOT Symbology Standards shall still be met to be compliant with QC Rule Files and Electronic Plans Delivery.

GuidSIGN is designed as a *tool* to create sign panels. Sign panels do not require separate files and can be added to any design file. There is no limit to the number of sign panels that can be placed in a file. A particular effort was made to allow users to create sign panels with as little input as possible and with little or no knowledge of sign standards.

Panel Styles allows border and margin dimensions, as well as text and symbol sizes and spacing to be set automatically. *Text Styles* eliminates formatting codes and allows commonly used text string formats to be created with minimal input.

14.9 AUTOTURN

FDOT has adopted and recommends the AutoTURN Program as the standard Turn Radius Design program. However, using AutoTURN is not required. Turn Radius Design Programs available in the industry may be used for designing the Turn Radius of road intersections. If AutoTURN is not used, FDOT Symbology Standards shall still be met to be compliant with QC Rule Files and Electronic Plans Delivery.

AutoTURN is a CADD based program that simulates low speed turning maneuvers for highway vehicles. AutoTURN operates in both AutoCAD and MicroStation environments. AutoTURN may be used to define vehicles and determine vehicle tire tracking and sweep paths. AutoTURN can be used in the design of road intersections, parking garages, loading ramps and the majority of vehicular facilities.

AutoTURN calculates the location and orientation of the vehicle as the user moves the mouse or “steers” the vehicle through a series of maneuvers, or follows a pre-drawn path. The path is that of the location of the center of the steering axle of the vehicle, which is either generated by AutoTURN or is pre-drawn in the CADD environment using a combination of arcs and tangents. Pre-drawn path segments can be combined into Polylines or Complex Chains.

With AutoTURN, users can create vehicles, vary vehicle dimensions and define turn limitations. The program output includes various combinations of tire, body and clearance envelopes, as well as, full motion animation.