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Chapter 5 - PROJECT STRUCTURE

CADD Production Criteria Handbook

5.1 INTRODUCTION

This chapter defines the standard Florida Department of Transportation (FDOT) project structure. Deviations should always be documented and the appropriate Project Management staff should be informed and concur.

5.2 STANDARD PROJECT DIRECTORY

The data for each FDOT Project is organized and delivered using a standard directory structure as defined in this chapter. This promotes consistency, predictability and repeatability (CPR). In order to ensure the uniqueness of the Project directory name, the project directory root folder will be named the FDOT Financial Project Identification Number (FPID), using a minimum of all eleven digits. The FPID is available from FDOT Project Management. New (seed) projects should be created using tools developed and provided by the Engineering / CADD Systems Office (ECSO), and delivered with the FDOT CADD Software. FDOT provides an application called FileChecker to help confirm directory structures and file names.

5.2.1 CLASSICAL ELECTRONIC DELIVERY –VS– DIGITAL DELIVERY PROJECTS

In May of 2000, FDOT directed that all plans prepared with CADD would be delivered electronically. The “Classical” Electronic Delivery process and the tools available to support that process were required. Since then, FDOT recognizes there are opportunities for efficiencies. Several of the following chapters in this Handbook will describe more efficient “Digital” Delivery processes and deliverables in contrast with the Classical Electronic Delivery. However, the Classical Electronic Delivery process and tools will remain for projects currently using those classical processes and tools.

5.2.2 CREATE PROJECT

The Create Project application, included in Electronic Delivery tools, creates the “seed” project directory structure and prompts the user for additional project specific information. A seed project is a copy of the FDOT standard directory structure created under the project directory (FPID) name as defined in this chapter.

The project directory contains standard sub-directories for defined disciplines, PEDDS data, along with support and resource files specific to the project. For Classical Electronic Delivery Projects, when a sub-directory is not used in a specific project, the unused sub-directory in the standard directory structure shall remain intact. However Digital Delivery projects allow unused sub-folders of the project directory to be deleted. Sub-folders have a purpose for the file content they will receive, for example, a cell library developed for a specific project has a dedicated holding sub-directory, *lcell* in the standard project directory structure.

For Classical Electronic Delivery projects, the *_META_INFO* sub-folder contains the files created and used by PEDDS and used by the FDOT workspace to establish the top level of the project directory structure. Therefore only one *_META_INFO* sub-directory shall exist anywhere in a project's directory structure. Digital Delivery projects may not use PEDDS for Signing and Sealing, instead relying upon certificate based Digital Signatures. Regardless, the *_META_INFO* sub-directory shall remain in the project directory, and that this folder is used by the FDOT workspace to establish the top level of the project directory structure.

5.2.3 DISCIPLINE SUB-DIRECTORIES

The discipline sub-directories are defined for the division of work by file ownership. Roadway designers would typically place their files (the files they create and “own”) under the ***Roadway*** sub-directory, Surveyors under the ***Survey*** sub-directory, and so forth. In some cases, disciplines may have work that overlaps with other areas of a design. For example, if a roadway designer develops the drainage sheets, the files produced would, by the above convention, go in the ***Roadway*** directory, rather than the ***Drainage*** directory, as the “roadway” designer is the owner of the work. However, if so desired, the files could be put in the ***Drainage*** sub-directory, but file management permissions (for access control systems such as TIMS, ProjectWise, etc.) must be taken into consideration.

5.2.3.1 Sub-Directories Under the Discipline Directories

In some cases, it is desirable to create “non-standard” sub-directories for additional segregation of work. This is common when multiple parties work on a single discipline design and the data must be managed and merged, or when subdivision of the files into additional folders just makes sense. These additional sub-directories can be created under the discipline specific standard project sub-directories to accommodate these circumstances. **These custom sub-directories shall adhere to the restrictions for sub-directory names as defined in the following section of this handbook.**

5.2.4 CUSTOM SUB-DIRECTORIES

Custom sub-directories can be created under the standard discipline sub-directory folders, but are not to be created under the root directory for the project.

Certain characters are not readable by some programs for sub-directory names and must be avoided. Limited alphanumeric characters, dashes (-), and underscores (_) are the only permissible characters. Spaces are not to be used in any directory, or file name for an FDOT project. Directory names must not exceed 16 characters. Examples of characters that should NEVER be used in sub-directory (or file) names include: &, %, |, \$, ?, <, >, !, and so forth (even if permissible by the Windows Operating System (OS)). Some characters represent escape sequences to certain programs and will just cause problems.

File full path lengths are also generally limited to 255 characters total. This must be taken into account when creating directory (and file) names (for overall path length) and limit the number of sub-directory levels below the project level. Remember that, even if you have a path mapped to a logical drive letter during development, the computer (or application) must resolve the full Universal Naming Convention (UNC) path length which could exceed the 255 character limit for some applications. Try to keep your custom directory and file names as concise as possible.

5.2.5 ENGINEERING DATA SUB-DIRECTORIES

Each discipline sub-directory contains an additional sub-directory named *leng_data*. These sub-directories are designated to hold the sheet image files of the plan sheets printed for that discipline, and the Quality Control (QC) reports (produced by the QC tools). Note that in a Digital Delivery, plan sheets may not be printed to the *leng_data* sub-folders (more about this later), but printed directly to a multi-sheet PDF of the plans.

5.2.6 STANDARD PROJECT DIRECTORY FORMAT

The FDOT standard project directory structure and file naming conventions are based on the normal Classical Electronic Delivery workflow of FDOT projects and the separation of work. For Classical projects, none of the sub-folders shown in the table following are to be renamed or deleted. However for Digital Delivery projects, any unused (empty) subfolder can be deleted with the exception of *_meta_info*.

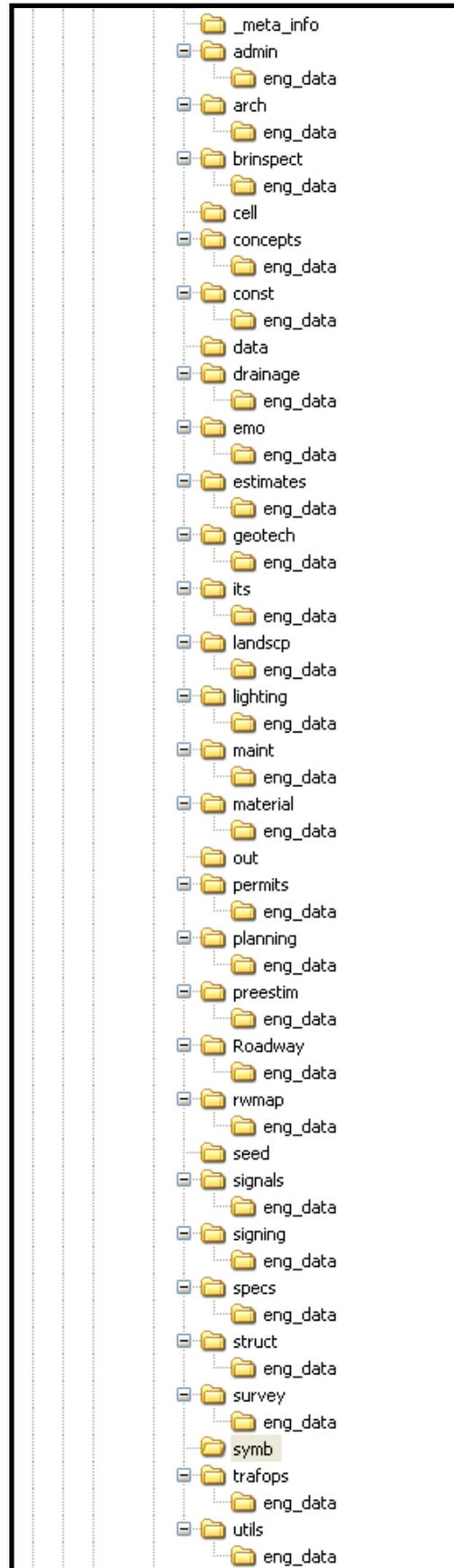
The standard project directory structure with a description of each directory's purpose:

| Folder Names | Purpose |
|--|--|
| Project Name (FPID) - Root Project folder contains <i>fpid</i> PLANS.PDF for Digital Delivery Projects. For Classical Electronic Delivery Project, the root Project folder contains: Project.pdf, FileChecker.htm, ProjectIndex.xml, SheetInfo.xml, SheetNDX.htm, etc. | |
| _meta_info | Files used by the PEDDS application (and the FDOT Workspace) |
| _Shortcuts | Data shortcuts (data for Civil 3D projects only - not for MicroStation) |
| \admin | Administrative documents (email, correspondence, etc.) |
| \leng_data | These \leng_data subfolders contain prints of plan sheets and QC reports, typically |
| \arch | Architectural design files |
| \leng_data | |
| \brinspect | Bridge Inspection files |
| \leng_data | |
| \Cell (Block) | Project specific cell libraries (or project Block libraries for Civil 3D) |
| \concepts | Various preliminary concepts |
| \leng_data | |
| \const | Construction files (i.e.: "As-builts") |
| \leng_data | |
| \data | Project data files (i.e.: journals, material backgrounds for rendering, pen tables, print configuration files, etc.) |
| \drainage | Drainage calculation and design files |
| \leng_data | |
| \emo | Environmental Management files |
| \leng_data | |
| \estimates | Estimates files |
| \leng_data | |
| \geotech | Geotechnical data files |
| \leng_data | |
| \ITS | Intelligent Transportation Systems design files |
| \leng_data | |
| \landscp | Landscape design files |

| Folder Names | | Purpose |
|--------------|-----------|---|
| | \eng_data | |
| \lighting | | Lighting design files |
| | \eng_data | |
| \maint | | Maintenance department (This is not Maintenance of Traffic). |
| | \eng_data | |
| \material | | Other Materials data files |
| | \eng_data | |
| \out | | Other Output files |
| \permits | | Permits for various items (i.e.: ponds, driveways, mailboxes, etc.) |
| | \eng_data | |
| \planning | | Planning files |
| | \eng_data | |
| \preestim | | Preliminary estimates files |
| | \eng_data | |
| \roadway | | Roadway design files, also may include the "Comp Book" |
| | \eng_data | |
| \rwmap | | Right of Way Mapping files |
| | \eng_data | |
| \seed | | Project specific seed files |
| \signals | | Signalization design files |
| | \eng_data | |
| \signing | | Signing and Pavement Marking design files |
| | \eng_data | |
| \specs | | Specification package |
| | \eng_data | |
| \struct | | Structure calculations and design files |
| | \eng_data | |
| \survey | | Survey database and files |
| | \eng_data | |
| \symb | | Project specific resource files for fonts and custom line styles |
| \trafops | | Traffic Operations data files |
| | \eng_data | |
| \utils | | Utility data and design files |
| | \eng_data | |

The image to the right is a screen shot of Windows Explorer displaying the directory structure of a Classical Electronic Delivery project. This directory structure is always delivered with the Project CD delivery of a Classical Electronic Delivery.

For Digital Delivery projects, with the exception of the _meta_info folder, empty folders may be eliminated when delivering the Digital Delivery projects.



5.3 STANDARD FILE NAMES

This section describes the file naming conventions used for all graphical design files, standard input files and criteria files. In the event a particular file type needed for the project is not addressed, consult with either the Project Manager or the District CADD Manager to determine the proper file name to use.

FDOT identifies all standard graphic file names as “Critical” or “Non-critical.” Critical files are frequently used in downstream applications, shared across disciplines and used in quantifying pay items. These critical files must meet a minimum compliancy threshold for CADD symbology as detailed in Chapter 7. Standard file names are discipline specific and are detailed within the respective discipline chapters of this Handbook.

5.3.1 STANDARD DESIGN FILE NAMING CONVENTION

FDOT utilizes standard naming conventions for design 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 user of the data contained in the design file.

Standard design file names should follow this format: **AAAABB##.ext**

Where

- AAAA** = Abbreviated File Description,
- BB** = Discipline Denotation,
- ##** = Sequence Number (*padded integer, i.e. “00”, “01”, “02” ... “99”, used to sequence additional files of the same Description/Discipline*),
- ext** = File Extension indicating the type of file.

Example: The first proposed roadway cross section file would be named – **rdxsrd01.dgn**

The first six (6) characters of the standard design file naming convention discussed above are critical for QC software and symbology filters. If it is necessary to add additional descriptive information in the design filename, this descriptive information should be inserted after the discipline denotation “BB” and preceding the sequence number “##”. Doing so should be only on rare exception. Example: **rdxsrd_rampa_01.dgn**, indicating this proposed cross section file includes ramp A. Large projects might necessitate the need to exceed two digit sequence numbers (100+); otherwise the sequence should be limited two digits. FDOT delivers a CreateFile application to assist in producing Design files with the proper naming convention.

5.3.2 PRINT IMAGE FILE NAMING CONVENTION

For MicroStation projects, **Sheet Navigator** is an interactive application (or runs in the background by **Electronic Delivery Indexer (EDI)**) to extract the sheet and title block data from design files containing sheets. The source design file name and data extracted from those files yields resulting image file names (and defines the sheet’s relationship to which plans component of the project). **Sheet Navigator** uses the **SheetInfo.xml** control file to provide the component order for sheets also using their location in the project directory structure, and in conjunction with the sheet number prefix. The Sheetinfo.xml control file defines the standard search criteria to identify sheets in a project and is located in the FDOT CADD Software `\mdlapps\` sub-directory.

AutoCAD Civil 3D projects use a similar tool called **Sheet Set Organizer (SSO)**. SSO also uses the source design file name, and data extracted from the Sheet Layouts in AutoCAD to contribute resulting image file names (and defines the sheet’s relationship to which plans component of the project).

The printing of individual sheets to a unique sheet image files described below is only required for Classical Electronic Delivery projects. For Digital Delivery projects, an Adobe Acrobat Portable Document Format (PDF) of the plans may be produced by whatever means available.

In Classical Electronic Delivery, one print image file was produced for each sheet in a plans set. This was necessary because Florida Board rules required each sheet of plans to be individually Signed and Sealed, and ambiguity could arise as to which professional Signatory was responsible for which sheet if a multi-sheet document needed to be Signed and Sealed by more than one Signatory.

For Digital Delivery, multi-sheet files representing the plans may be produced and Signed and Sealed. Recently the Boards have clarified their rules regarding notice of accountability within electronic files Signed and Sealed by a professional, and decisions were made to resolve any potential ambiguity regarding who is responsible for what sheet. These developments open the door for widespread use of a PDF to represent the entire plans set. Adobe PDF files are ubiquitous, and are the desired format for producing an electronic image of plans. These files have rich support for Public Key Infrastructure (PKI), including certificate based Digital Signing and Sealing. More information will be provided later in this Handbook regarding a comprehensive PDF of the plans, which may be Digitally Signed and Sealed.

5.3.2.1 Sheet Numbers

Sheet numbers used in the title blocks of plan sheets can be composed of multiple parts using the format: **AAA-####Z**.

AAA Represents the Sheet Number Prefix, using multiple alpha characters as placeholders. Refer to the FDOT Plans Preparation Manual and Structures Manual for Prefix definitions.

####(Z) Defines the numeric order of the sheets within the Project Component. The (Z) allows for the insertion of appended sheets after the project has started. A single alpha character suffix, A-Z, is added for each subsequent sheet inserted.

(Examples: S-001A, S-001B, PNC-01, A-15, A-16, T-1, T-2, and 1, 2, 3, etc).

Structures and Architecture disciplines have extended the sheet numbering schema and the respective discipline instructions should be consulted for guidance. These are found at:

FDOT Structures Manual

<http://www.dot.state.fl.us/structures/StructuresManual/CurrentRelease/StructuresManual.shtm>

This Handbook, Chapter 23

<http://www.dot.state.fl.us/ecso/downloads/publications/CriteriaHandBook/>

The following shows how **Sheet Navigator / SSO** and **EDI** will interpret sheet numbers to attempt to discern what plans component each sheet belongs to:

| <u>Prefix</u> | <u>Component</u> |
|-----------------|---|
| No prefix | Roadway Plans <i>(Typically - only an integer is used for sheet number)</i> |
| CTL | Roadway Plans |
| GR | Roadway Plans |
| PNC | Roadway Plans |
| TR | Roadway Plans |
| UTV | Roadway Plans |
| GS | Signing and Pavement Marking Plans |
| S | Signing and Pavement Marking Plans |
| GT | Signalization Plans |
| PTM | Signalization Plans |
| T | Signalization Plans |
| GL | Lighting Plans |
| L | Lighting Plans |
| GI | Intelligent Transportation System (ITS) Plans |
| IT | Intelligent Transportation System (ITS) Plans |
| LD | Landscape Plans |
| Begins with "A" | Architectural Plans |
| Begins with "B" | Structures Plans |
| Begins with "U" | Utility Joint Participation Agreement Plans |

Roadway plans are typically the primary component of an FDOT Project plans set containing multiple plans components and can have non-prefixed sheet numbers (1,2,3,... etc.). Other disciplines can be the primary plans component only in the absence of a Roadway plan component. For example: a Lighting only project may omit the plans component prefix, and use the numbering format of 1, 2, 3, etc, although this practice is strongly discouraged.

5.3.2.2 Print Image File Naming Format

EDI / SSO implements an output file naming scheme for print image files that removes ambiguity about which sheet the file represents (regardless of the sheet-numbering scheme used in the design file) and supports the more complex sheet numbering now being expected by some disciplines. This applies to Classical Electronic Delivery projects, as Digital Delivery projects do not require individual Sheet image files to be delivered. If individual sheets are printed, even if a Digital Delivery is elected, the format file naming convention will be followed as shown below:

EX: **01_BB1-1A_keysrc01.extension**

 ↓ ↓ ↓

Plans Component Code Sheet # Parent Drawing File Name

Note Image file extension will be .PS for PostScript files, .PDF for Adobe Acrobat Portable Document files, .TIF for tagged image format files, etc. Note that PDF is the preferred file format.

Plans Component Code [01] The first two numbers represent the Plans Component with zero (0) padding used as place holder (for file name sorting purposes).

The FDOT Standard Plans Component codes (corresponding to the PPM components) are as follows:

- 01 – Roadway Plans
- 02 – Signing and Pavement Marking Plans
- 03 – Signalization Plans
- 04 – Intelligent Transportation System (ITS) Plans
- 05 – Lighting Plans
- 06 – Landscaping Plans
- 07 – Architectural Plans
- 08 – Structures Plans
- 09 – Utility Work by Highway Contractor Agreement Plans
- 10 – Right of Way Maps
- 99 – Unknown

Sheet # After the Plans Component Code, an underscore (_) is inserted as a separator, followed by the actual sheet number (i.e.: BB1-1A) appearing in the title block of the sheet.

Parent Drawing File Name After the Sheet #, an underscore (_) is inserted as a separator followed by the name of the source design files (i.e.: keysrc01).

5.3.3 STANDARD FILE NAME EXTENSIONS

| File Name | Ext. | Saved-in Folder |
|--|------|--|
| 3 Port Criteria Files | .3pc | Most appropriate discipline folder |
| Adobe Acrobat Files for sheet image files | .pdf | Discipline folder's \eng_data subfolder if Classical Electronic Delivery |
| AutoCAD ASCII Drawing Interchange file Format | .dxf | Most appropriate discipline folder |
| AutoCAD Design Files | .dwg | Most appropriate discipline folder |
| AutoCAD Drawing Sheet Set | .dst | \eng_data subfolder for the discipline |
| AutoCAD Drawing Template <i>(if user created)</i> | .dwt | \seed subfolder of the project |
| AutoCAD Linetype <i>(if user created)</i> | .lin | \symb subfolder of the project |
| AutoCAD Printer Configuration <i>(if user created)</i> | .pc3 | \eng_data subfolder for discipline |
| AutoCAD Shape Compiled <i>(if user created)</i> | .shx | \symb subfolder of the project |
| AutoCAD Shape Files are ASCII Files <i>(if user created)</i> | .shp | \symb subfolder of the project |
| AutoCAD Style Tables <i>(if user created)</i> | .stb | \eng_data subfolder for discipline |
| Cell Count Report | .ccp | Most appropriate discipline folder |
| Civil 3D Data Shortcuts | .xml | _Shortcuts subfolder of the project |
| Comma Separated Values | .csv | Most appropriate discipline folder |
| Coordinate Geometry Database Files | .gpk | Most appropriate discipline folder |
| Corridor Modeling Alignment Database | .alg | Most appropriate discipline folder |
| Corridor Modeling Cross Section Labeling Preference File | .xlp | Most appropriate discipline folder |
| Corridor Modeling Drafting Standards | .xin | Most appropriate discipline folder |
| Corridor Modeling Roadway Design Preference File | .rdp | Most appropriate discipline folder |
| Corridor Modeling Roadway Designer database | .ird | Most appropriate discipline folder |
| Corridor Modeling Surface Database | .dtm | Most appropriate discipline folder |
| Corridor Modeling Template Library | .itl | Most appropriate discipline folder |
| Cross Section Sheet Design Files <i>(No longer used in V8 or XM, but may be allowed.)</i> | .shg | Most appropriate discipline folder |
| Cross Section Sheet Layout Files <i>(No longer used in V8 or XM, but may be allowed.)</i> | .plg | Most appropriate discipline folder |
| Crystal Reports | .rpt | Most appropriate discipline folder |
| Descartes Raster Image Files | .hmr | Most appropriate discipline folder |

| File Name | Ext. | Saved-in Folder |
|--|------------|---|
| Electronic Delivery Index Settings Files | .edi | Project Root folder |
| GDM QC Rule Files | .rul | Most appropriate discipline folder |
| GEOPAK COGO Database | .gpk | Most appropriate discipline folder |
| GEOPAK Criteria Files | .x | Most appropriate discipline folder |
| GEOPAK D&C Manager Database Files | .ddb | Most appropriate discipline folder |
| GEOPAK Input Files | .inp | Most appropriate discipline folder |
| GEOPAK Project Manager project File | .prj | Most appropriate discipline folder |
| GEOPAK Surface Database | .tin | Most appropriate discipline folder |
| Log File | .log | Most appropriate discipline folder |
| Microsoft Excel Spreadsheets | .xls | Most appropriate discipline folder |
| Microsoft Word Documents | .doc | Most appropriate discipline folder |
| MicroStation & GEOPAK Resource Files | .rsc | \eng_data subfolder for discipline |
| MicroStation Batch Print Job Files | .job | \eng_data subfolder for discipline |
| MicroStation Cell Libraries | .cel | Cell Folder |
| MicroStation Design Files | .dgn | Most appropriate discipline folder |
| MicroStation Pen Tables | .tbl | \eng_data subfolder for discipline |
| MicroStation Print Drivers | .plt | \eng_data subfolder for discipline |
| MicroStation Print Organizer Print Set | .pset | Most appropriate discipline folder |
| MicroStation Project Configuration | .pcf | Project Root folder |
| MicroStation Standards Database | .dgnlib | \symb if copied to local project |
| Postscript Sheet Image Files | .ps | \eng_data subfolder for discipline |
| QC Exception Files | .xcp | \eng_data subfolder for discipline |
| QC Reports, QC"folder name" | .rpt, .txt | \eng_data subfolder for discipline |
| Web Pages | .htm | Project Root folder and \data subfolder |
| Web Pages | .html | Project Root folder and \data subfolder |
| XML Files | .xml | Project Root folder and \data subfolder |

5.3.4 DUPLICATE FILES

There shall be no duplicate CADD (.dgn, dwg, etc) file names within a project directory structure. This is necessary to ensure proper reference attachment in CADD files. FDOT delivers the **FileChecker** application that can be used to help find duplicate filenames with the project directory structure.

When using FDOT's workspace in MicroStation, a **sub-directory** named "_meta_info" must be present in the root of the project to have proper attachments of reference files within the project. The FDOT workspace configuration in MicroStation is set up such that, when attaching a reference file, the software looks for the _meta_info directory, then goes up one folder level (the root directory of the project) and scans down the entire project directory structure, listing all directories below that level in the reference file path. The first occurrence of the file name found is used as the reference file.

AutoCAD relies upon the attachment method (always use relative path, never full or no path) to find its references.

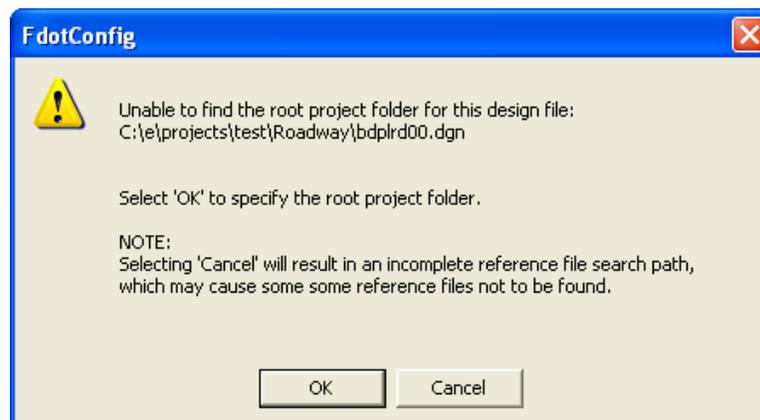
5.4 REFERENCE FILES

A reference file can be a MicroStation design file, an AutoCAD design file, a raster image file (such as a SID, TIF, or HMR) or a PDF. A reference file is attached as a "background file" to an active design file being edited, thus allowing multiple users to share the information in the reference file without the need to copy the file(s) into the active design file directory, or copy the referenced file's content into the active design file.

Important Under no circumstances should the absolute or full path be used when attaching a reference file. Use relative referencing - ALWAYS. All reference files for the project must reside within the project directory structure.

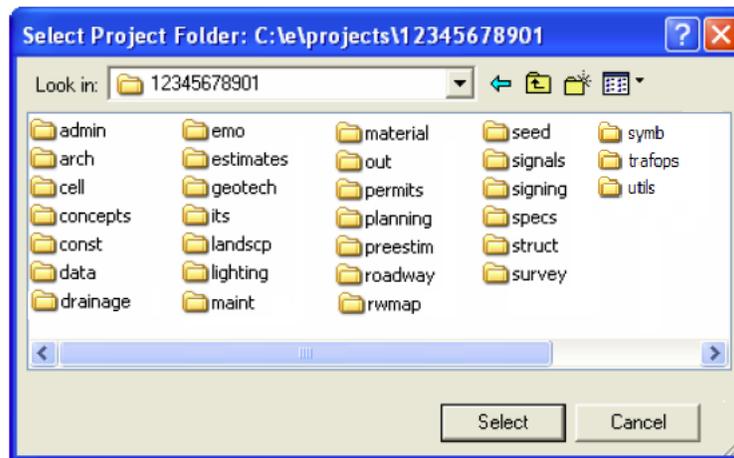
In MicroStation this capability is managed by an application (FDOTCONFIG) that is run at startup of any MicroStation file opened in the FDOT workspace. This application looks for the _meta_info folder and then moves up one folder to set the parent directory of the project. It then dynamically sets the MicroStation configuration variable, MS_RFDIR, to search downward from the parent directory through all the found subdirectories to identify any reference files. Therefore all design files for a project must reside in the standard FDOT directory structure or its subdirectories in order to be located as a reference file. If it is necessary to reference a file that is external to the project, it must be done through the FDOTCONFIG application. FDOTConfig will manage the path to the file for referencing purposes. This capability is available from the FDOT Menu option **Actions > Reference File Utilities > Attach Project External Reference Files**. The configuration variable that initiates this application is preset in the FDOT workspace in the *sitedot.txt* file.

When a file is opened in MicroStation in an FDOT workspace, if the _meta_info does not exist, the user will be prompted to define the parent folder of the project, so that the application can set the search path for reference files. See the image below.



If Cancel is selected any reference to the models of files located in different subdirectories will not be displayed because the MS_RFDIR variable could not be populated automatically.

If OK is selected the user will be given the opportunity to define the root of the project. The user can then navigate to the root of the project, named for the Financial Project Identification Number. In the example below notice the directory shown in the title bar of the dialog. A _meta_info folder will be created directly under the directory shown in the title bar.



Important: If duplicate file names exist in the sub-directories of the project, MicroStation will attach the first matching filename it finds in the path. Therefore, duplicate file names are prohibited.

5.5 FILE SHARING AND MERGING

Every Classical Electronic Delivery project will utilize and incorporate the entire FDOT Standard Directory Structure during development regardless of the project requirements. Digital Delivery projects permit unused sub-directories to be deleted. Data for each discipline is maintained in its sub-directory. **If a discipline requires information from another discipline, the needed design file(s) or individual models shall be referenced from the original directory, not copied.**

There are times when disciplines share files with other disciplines, such as the case where Roadway must differentiate between existing edge of pavement to be replaced and that to remain. This is because the elements representing existing edge of pavement often span several plan sheets.

For example, the Signing and Pavement marking design file (*DSGNSP*) references the Roadway design file (*DSGNRD*) and the Topography file (*TOPORD*). These files should not be copied into the Signing and Pavement Marking discipline sub-directory unless absolutely necessary.

Note If there is a specific justification to copy a file into another directory, the filename must be modified to reflect the discipline file name usage. For example, topord01.dgn (from the .\survey sub-directory) would become toposp01.dgn, if copied to the .\signing sub-directory, or as a minimum the sequence number would change to ensure that there is no doubt the copied file differs from the original file.

The data producer is responsible to ensure that up-to-date content of the original file is always reflected in their copied design file. Making copies of design files to different locations is strongly discouraged for this reason.

5.6 PROJECT INDEXING AND JOURNALING

5.6.1 INDEX GUIDELINES AND FORMAT

FDOT Project Index files will be produced and delivered in accordance with the FDOT CADD Manual only for Classical Electronic Delivery projects. Digital Delivery Projects do not rely upon the Index, as the user/designer has full control and responsibility for placing the plan sheets into the PDF file that will eventually represent the Plans Set. For Classical Electronic Delivery projects, the purpose of the index is to document delivered project print sheet image files and their source design files belonging to the plan set. The index is then used by downstream programs to produce a PDF of the overall plans set, and for other purposes.

FDOT provides the software tool, Electronic Delivery Indexer (EDI) for MicroStation projects to produce FDOT Project Indexes in the required formats. Since the index files are text based in .XML format, a user could conceivably produce these by other means, albeit with difficulty. Likewise for AutoCAD Civil 3D projects, the Sheet Set Organizer (SSO) is used to produce the index.

Indexes are crucial to the successful use of the electronic data in Classical Electronic Delivery projects by downstream customers. They should be updated and reviewed as the work progresses. These indexes may be maintained by software in the Electronic Delivery software suite mentioned above. The indexes noted above include:

❖ **Index.XML**

This is a comprehensive index of file attribute meta-data produced by the EDI which contains all indexed data as mined, or user input attribute data for the graphics files of the project. This file is placed by software in the root directory of the project. This file is not required of Digital Delivery Projects.

❖ **ProjectIndex.XML**

This is the primary index of all plan sheets and their associated files produced by the EDI, or SSO applications. From this index, an HTML report can be produced (Sheetndx.htm) by the EDI or SSO that is used as an interface to the plans image files by persons who do not have the FDOT Electronic Delivery software loaded, such as contractors, the public, etc. This file is also placed in the root directory of the project. This file is not required of Digital Delivery Projects.

❖ **ProjectFiles.HTM**

This is a report of project files (documentation) and their “EDMS” comments included with the delivery, and produced by EDI. EDMS comments are additional metadata that users can add to file descriptions when documenting those files using EDI. Projectfiles.htm differs from Index.XML in that for many files of a standard name, EDI will look up what that file type represents and include that in the documentation for that file present in the delivery. If the data producer added EDMS comments to any given file using EDI, those comments will be represented in the output ProjectFiles.HTM. This file is also placed in the root directory of the project. This file is not required of Digital Delivery Projects.

The EDI application also provides the following:

- Mining of attribute data from design files being indexed, which includes properties, such as global origin, working units, attached reference files, etc. Design files containing plan sheets have additional sheet index information, such as sheet number, title, etc. Sheet Navigator application is called by to pass this sheet index data to EDI.

Note EDI relies upon data produced by Sheet Navigator, an FDOT software process running in the MicroStation environment which tags sheets in the MicroStation DGN file. If Sheet Navigator has not been executed, the sheets within the design file have not been tagged. Though a manual method is provided in EDI to enter/edit sheet information, the manual method for building the index is significantly more time consuming, and therefore not recommended. The main purpose of the manual edit function is to provide additional or corrective data that will add intelligence about a file or sheet.

- Provides the interface to the Journals, which are Rich Text Format (RTF) files, (changed from XML format in previous EDI releases). Allows users to manually record comment data to the attribute index files using EDI as the interface. Note that since EDI would not be used, typically, in a Digital Delivery, an EDI Journal would not get produced. Any Project documentation the design / development team wishes to include should be done so by whatever means that team has at their disposal.
- Produces the index of plans sheets (Sheetndx.htm) used in the advertisement for letting, which also uses ProjectIndex.XML as input.
- Produces an index of files (ProjectFiles.XML) with the option to save a report in HTML format (ProjectFiles.htm).
- Produces a single file (Project.PDF), containing all indexed sheets in the project found in the project root folder.
- Provides for batch printing of sheets to the specified formats in this Handbook.

For AutoCAD Civil 3D projects, the Sheet Set Organizer (SSO) application replaces EDI. SSO also creates: Projectindex.xml, Sheetndx.htm, and Project.PDF. SSO does not have any journaling capability.

5.6.2 JOURNAL GUIDELINES AND FORMAT

Project documentation is delivered in accordance with the FDOT CADD Manual. The purpose of this documentation is to detail design aspects and decisions made during the life of the project, documenting processes used during the course of design that would be communicated to a down-stream user of the project data.

The Project Journal files may be delivered with the Project documentation to document the activities of a given professional discipline, or may be created to document a particular design activity (i.e. creating cross sections), or be the personal journal of a user/designer. Journal file entries should document methods employed, procedures used, decisions made, problems encountered, fixes included or other issues encountered during the design process.

For example: If custom line styles were created, the justification for the custom line style and the resource file name containing the custom line style should be documented in the Journal. Any information that would help in the regeneration of CADD files and/or prints should be recorded. The geometry information, database, controlling alignment, profile names, relevant survey and cross section information and the methodology used to obtain the final geometric controls in the CADD product should be recorded.

EDI includes the functionality to create and maintain Journals. Rich Text Format (RTF) Journals are created by EDI. Create additional Journals in the RTF format as needed. Using EDI, Journal files are stored in the **ldata** sub-folder of projects and are maintained as RTF files.

The Journal tool in EDI currently provided by FDOT has the following properties:

- Creates / edits a journal file through a dialog box. The journal file can be viewed with a standard editor or by the journal tool.
- Provides for automated text entry.
- Allows pre-loaded text inserts (a type of pick list), with user and company information. Each journal entry is date stamped.
- Provides for adding custom (reusable) text inserts.
- Allows for the storage and viewing of images attached to Journals.

The indexing tools mentioned in this chapter are documented in the Electronic Delivery software interface and in the applications themselves. Videos have been created to document the operation of these tools and can be found on the FDOT website at:

<http://www.dot.state.fl.us/ecso/downloads/clips/>