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STANDARDS FOR USE WITH MicroStation/GEOPAK V8i

Chapter 2: Directory Structures

Project Directory Structure

Project related files, including CADD drawing files, survey and mapping data, and engineering data files, will be contained within a specific project directory structure. Files also contained within this directory structure include; correspondence, project documentation, reports, etc. Following the directory structure as indicated in this chapter will allow for consistent handling of all project files, as well as allow for easier archiving at project completion. The first level project directory is shown below, the following pages outline each first level directory in much greater detail, including subdirectories, purpose of each directory, and types of files typically stored within each directory.
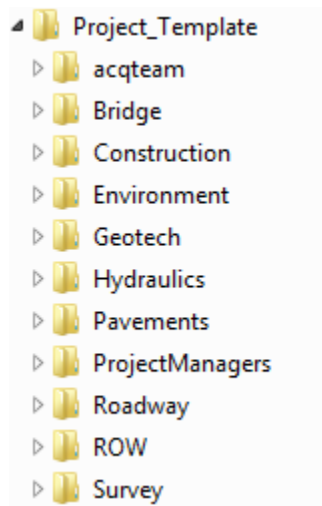

Figure 2-1: Project Directory (Template)

While not all directories will be needed for each project, the structure naming convention must be followed where applicable. Sub-directories addressed in this chapter include Roadway, ROW, Survey, and Bridge.

The project directory structure has evolved over the last few years so the directory structure for older projects may not match what is shown here. The directory structure and file locations for older projects need not be changed. However, all new projects should use the directory structure outlined in this chapter.

Roadway

The primary sub-directories of the Roadway directory are detailed below. Individual files should not be placed under the root Roadway directory. These main subfolders within Roadway should not be edited.
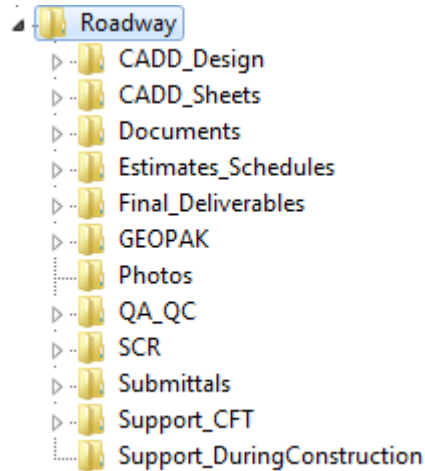

Figure 2-2: Roadway Directory

Each sub-directory contains additional folders and/or specific files related to each project. The table below outlines the files to be contained within each sub-directory.

Folder	Content Description
CADD_Design 	This is the primary folder for current CADD files. Overall files used to prepare plans other than CFT transmitted files. Including; Alignment file, utility and drainage, traffic control, signing and striping, erosion control, superelevation shapes, patterns, surface, and overall cross-sections including ref-hub cross sections. **The Design directory is used for design files only; no plan sheets.** A Temp folder is added for design files that are a "work in progress" or not currently used in plan production which may be deleted.

CADD_Sheets	(Borders): Project's Plan Sheet Border file/s.
▲ 📁 CADD_Sheets	A–Gen_sht: Title sheet, plan symbols and abbreviations, typical sections
📁 (Borders)	B–Summ: Plan sheets with summary/quantities content. All Excel files used for summaries go under the Spreadsheets sub-folder.
📁 A-Gen_sht	C–ML_P&P: Mainline plan and profiles
▲ 📁 B-Summ	D–Minor_P&P: Approach road plan and profile, layout plans, parking area plan sheets, intersection details
📁 Spreadsheets	E, F, G, H, & K: Division 150-400, layouts, standards, details, and specials (categorized by FP section numbers)
📁 C-ML_P&P	R-500 & S-550: Division 500 and 550, Structural. Exact sheets and sheet names to be included will be determined and managed by structural group. Samples may include; bridge layout, wall layout, box culvert layout. **Do not place copies of bridge group plan sheets in these folders.**
📁 D-Minor_P&P	
📁 E-150	
📁 F-200	
📁 G-250	
📁 H-300	T-600: Division 600 layouts, standards, details, and specials
📁 K-400	X-ML_Xsec: Mainline cross-section sheets
📁 R-500	Y-Minor_Xsec: Minor road and Parking area cross-section sheets
📁 S-550	Z-Drain_Xsec: Drainage cross-sections including ditches and culvert cross-sections
📁 T-600	
📁 X-ML_Xsec	
📁 Y-Minor_Xsec	**Note that if a record of a project's plan submittal is desired, PDF's should be created and placed in the Deliverables_Submittals folder**
📁 Z-Drain_Xsec	

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Documents	Design correspondences, forms, memos, notes, and reports files are located in additional sub folders under Documents.

▲ 📁 Documents
  ▲ 📁 Correspondences
    📁 contact list
    📁 email archives
    📁 incoming
    📁 outgoing
  📁 Forms_Highway Design Standards
  📁 Memos_Design Technical
  📁 Memos_PE
  ▲ 📁 Notes_Meetings
    📁 agendas
    📁 minutes
  📁 Notes_Misc
  ▲ 📁 Reports_Scoping
    📁 _Archive
  ▲ 📁 Reports_Trip
    📁 _Archive
  ▲ 📁 Reports_Value Engineering
    📁 _Archive
  📁 WorkBreakdownStructure(WBS)
	Please note that many final documents will be kept in the Project Managers directory, and other Project Plan files are located under the Support_CFT folders.

Estimates_Schedules	This directory's primary use is to document and record Construction Schedules and Estimates.

📁 Estimates_Schedules
  ▲ 📁 Construction Schedule
    📁 _Archive
  ▲ 📁 Engineer Estimates
    📁 _Archive
    📁 UPAs
	Any and all files used for preparing, documenting and developing cost estimates for projects. Note that UPAs and other files are deliverables and should be moved/copied to the Deliverables folder at the time of submittal.
	
	Any documentation for production rates, application rates, price inflations, pay item requests, or cost-based unit price calculations are stored in this directory's sub folders.

Final_Deliverables	This directory's primary use is to document and record final deliverables for project advertisement.

▲ 📁 Final_Deliverables
  ▲ 📁 Final_to_P&A
    📁 Documents
    📁 Plan_PDFs
  ▲ 📁 PE&Design_Notebooks
    📁 Documents
    ▲ 📁 StakingReports
      📁 temp
	Place files in the appropriate subfolder upon file creation. Working files can be placed under this directory, and updated to final status.
	
	Note that Staking notes are placed in this directory and should not be anywhere else.

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GEOPAK	Project's Coordinate Geometry Database (jobxxx.gpk) file, Project Manager (.prj), and other related files should be placed directly under GEOPAK.
GEOPAK 　alignment_listings 　backup 　Corridor_Modeler 　　DTMs 　　Templates 　input_files 　　earthwork 　　superelevation 　output_files	Project's Corridor Modeler preference file (.rdp), and roadway designer file (.ird) should be placed in the Corridor Modeler folder. Existing and proposed project .dtms, and proposed project .tins should be placed in the DTMs sub-folder and the project template library (.itl) should be placed in the Templates sub-folder. Horizontal and vertical alignment listings, earthwork & superelevation input files, GEOPAK reports, log files and outputted files should be placed in separate sub-folders.
Photos 　Photos	Design specific photos may be stored here. Ideally with CFT coordination, one Photo directory would be set up for each project under a shared folder.
QA/QC 　QA_QC 　　15% Review 　　30% Review 　　50% Review 　　70% Review 　　95% Review 　　100% Review	QA/QC documentation and comment forms are kept in the QA_QC sub folders based upon the appropriate milestone.
SCR 　SCR 　　development	"In development" or pre-final submittal Special Contract Requirement files. **Note that final SCRs and major PS&E submittal SCRs should be placed in the Submittals folder when completed.**
Submittals	This directory's primary use is to document and record submittals for major project milestones. Place files in the appropriate subfolder at PS&E review periods. Working files should not be placed under this directory. If necessary, archived or backed-up files may be placed in this directory. Note that Staking notes are placed in "Final" deliverables.

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Support_CFT
 	
Support_CFT
  bridge
  construction
  environment
  geotechnical
  hydraulics
  pave&materials
  permits
  PM support
  procurement&acquisitions
  safety
    traffic & accident
  survey&row
  utilities
	Project files of any type used in the design process. Files that are received from or delivered to other CFT members. Any file should be placed under specific subfolders for individual part of CFT. Note that basic CADD design files would not be placed here. Instead, those would be placed in Roadway/CADD_Design.

Support_DuringConstruction Support_DuringConstruction	Project files of any type used for support during the construction phase. There is additional flexibility with the addition of sub folders based upon the file "type" or project needs. CADD design files for options are placed here.

Table 2-3: Roadway Sub-directory Files

Each project has unique requirements. For most projects this directory structure is adequate. It is acceptable to make changes based on the needs of specific projects. Examples of acceptable changes would be; the creation of a new Sheets subfolder "U-UCP" for inclusion of Utility Conflict Plans, or creating a T2-600 folder to separate the 600 Divisional sheets.

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ROW

The primary sub-directories of the Right of Way (ROW) directory are detailed below. Individual files should not be placed under the root ROW directory. These main subfolders within ROW should not be edited.
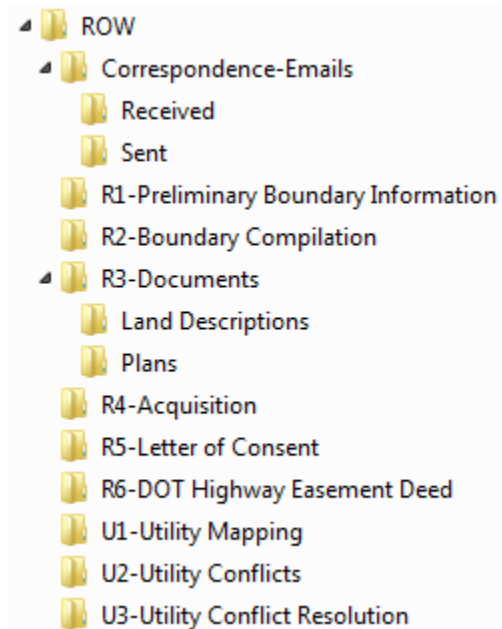

Figure 2-4: ROW Directory

The project directory structure has evolved over the last few years so the directory structure for older projects may not match what is shown here. The directory structure and file locations for older projects need not be changed. However, all new projects should use the directory structure outlined in this chapter.

Each sub-directory contains additional folders and/or specific files related to each project. The table below outlines the files to be contained within each sub-directory.

Folder	Content Description

Correspondence-Emails
Correspondence-Emails
  Received
  Sent
	Project Budget and SOW. Emails, other correspondence like field trip notes, FedEx shipping forms, faxes, etc. The Project Contacts Excel file also resides here.

R1-Preliminary Boundary Information R1-Preliminary Boundary Information	Research documents from federal and local public agencies, like parcel and tax maps, survey and monument records, property deeds, etc.
R2-Boundary Compilation R2-Boundary Compilation	Title Search documents, including additional property research and contract budget and SOW documents. The ROW Summary Report also resides here.

R3-Documents
R3-Documents
  Land Descriptions
  Plans
	The **main ROW MicroStation file** and gpk file(s) in the root, Land Description documents of acquisition parcels, and permanent and construction easements, Plans folder contains ROW plans sheet files and landowner exhibits.

R4-Acquisition R4-Acquisition	Right-of-Way Certification documents, and meeting notes with the Local Public Agency, and notes on revisions to the primary ROW file.
R5-Letter of Consent R5-Letter of Consent	Request for Letter of Consent, and the completed, signed Letter of Consent.
R6-DOT Highway Easement Deed R6-DOT Highway Easement Deed	Draft HED and exhibit map, and a copy of the signed, recorded HED.

Folder	Content Description
U1-Utility Mapping U1-Utility Mapping	Easements, agreements, and mapping data from utilities, other entities. Utility Data Quality Certification, and utility locate call documentation.
U2-Utility Conflicts U2-Utility Conflicts	Utility Summary Report, and meeting notes with utilities representatives. Costs & liability documentation.
U3-Utility Conflict Resolution U3-Utility Conflict Resolution	Conflict exhibits, new Utility Agreement documents, and Utility Certification documents.

Table 2-5: ROW Sub-directory Files

Survey

The primary sub-directories of the Survey directory are detailed below.
Individual files should not be placed under the root Survey directory. These
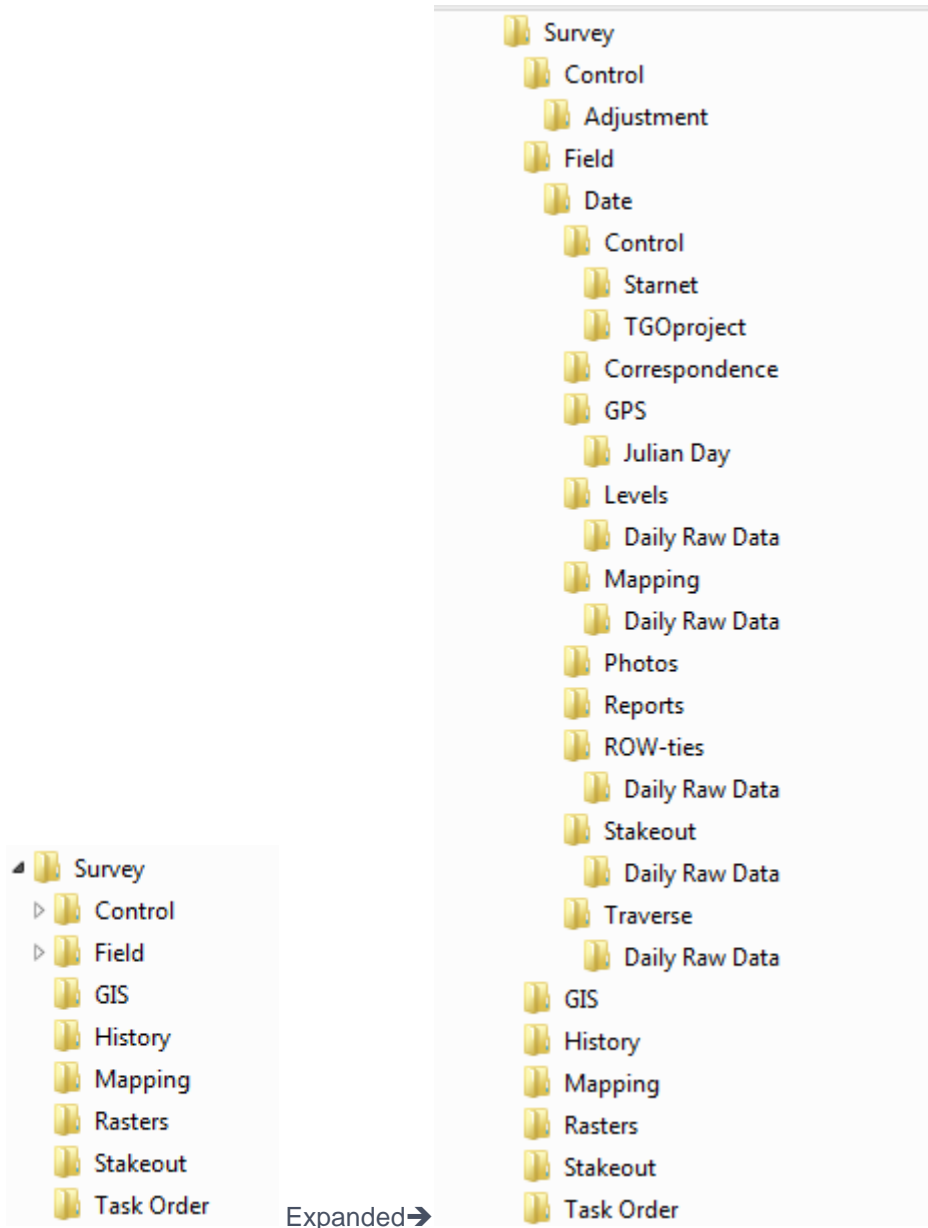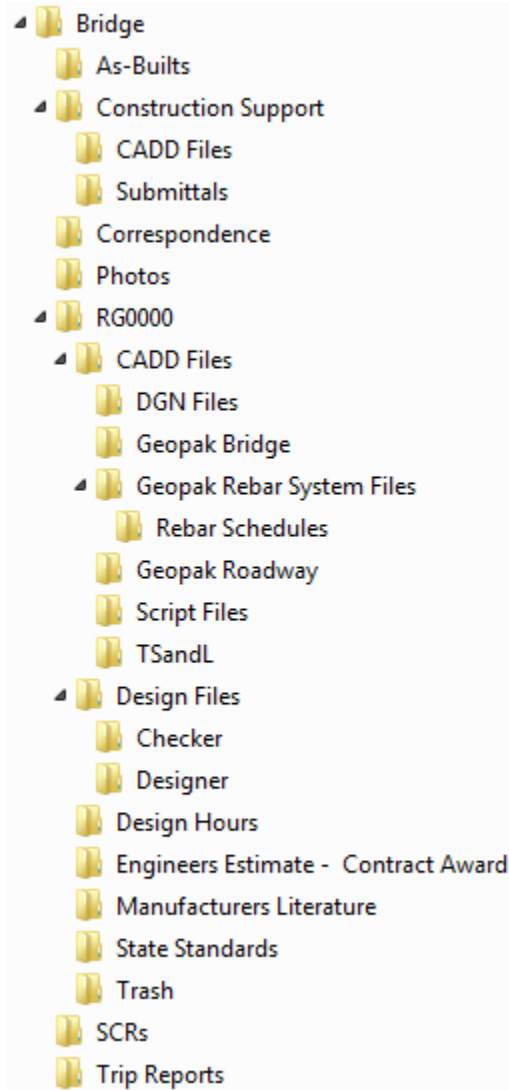main subfolders within Survey should not be edited.

Expanded➔

Figure 2-6: Survey Directory

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Each sub-directory contains additional folders and/or specific files related to each project. The table below outlines the files to be contained within each sub-directory.

Folder	Content Description

Control
 	
▲ 📁 Control
  📁 Adjustment
	Control sheets and overall drawings, to designers for final use and control reports **(.csv)**
	
	    Adjustment: Starnet adjustment, TGO (Trimble Geomatic Office), TBC (Trimble Business Center), Opus Solutions

Field
 	
▲ 📁 Field
  ▲ 📁 Date
    ▲ 📁 Control
      📁 Starnet
      📁 Trimble
    📁 Correspondence
    ▲ 📁 GPS
      📁 Julian Day
    ▲ 📁 Levels
      📁 Daily Raw Data
    ▲ 📁 Mapping
      📁 Daily Raw Data
    📁 Photos
    📁 Reports
    ▲ 📁 ROW-ties
      📁 Daily Raw Data
    ▲ 📁 Stakeout
      📁 Daily Raw Data
    ▲ 📁 Traverse
      📁 Daily Raw Data
	Date (rename folder with format yyyy_mm):
	
	    Control>Starnet: Field Starnet Adjustment or Starnet adjusted coordinates
	    Control>Trimble: Field Trimble Adjustment or Trimble Coordinates
	
	    Correspondence: Emails and other correspondences between the Denver Office and the field crew.
	
	    GPS>Julian Day: Julian day of collected data.
	
	    Levels: Field Level adjustment
	        Daily Raw Data: Raw data from each day of differential leveling
	
	    Mapping: Drawing for each day checks
	        Daily Raw Data: Raw daily data of mapping data
	
	    Photos: Digital photos of project. Includes photos of ROW points tied in.
	
	    Reports: Field reports. Final report
	
	    ROW-ties: Mapping drawings of ROW ties.
	        Daily Raw Data: Raw daily data of ROW ties.
	
	    Stakeout: Alignment file that is uploaded into the controller and plots of the alignment to be staked.
	        Daily Raw Data: Raw daily data of stakeout files.
	
	    Traverse: Field traverse adjustment.
	        Daily Raw Data: Raw daily data of traverse data.

GIS	Project using Trimble Pathfinder Office. This software is used for data collect in the Geo XT and Geo XH.
History	Transmittal letters, Index files
Mapping	Final design files, final tin file **(.tin, .utl, .map, .con)**
Rasters	Final .hmr, .tif, .ecw and doqq files.
Stakeout	Trimble Geomatic Office files, Trimble Business Office Fines, design cross section files
Task Order	Project using Trimble Pathfinder Office. This software is used for data collect in the Geo XT and Geo XH.

Table 2-7: Survey Sub-directory Files

Bridge

The primary sub-directories of the Bridge directory are detailed below. Individual files should not be placed under the root Bridge directory. These main subfolders within Bridge should not be edited.

Figure 2-8: Bridge Directory

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Each sub-directory contains additional folders and/or specific files related to each project. The table below outlines the files to be contained within each sub-directory.

| Folder	Content Description
As-Builts 📁 As-Builts	Final construction as-built plans

Construction Support
 	
📁 Construction Support
   📁 CADD Files
   📁 Submittals
	CADD Files: Solutions to construction problems or additional information. (.doc, .dgn, .xls, etc.)
	
	Submittals: Documents from construction for evaluation. (.doc, .dgn, .xls, etc.)

Correspondence 📁 Correspondence	e-mails, transmittals, etc.
Photos 📁 Photos	Project photos

RG0000 (Structure number)
 	
📁 RG0000
   📁 CADD Files
     📁 DGN Files
     📁 Geopak Bridge
     📁 Geopak Rebar System Files
       📁 Rebar Schedules
     📁 Geopak Roadway
     📁 Script Files
     📁 TSandL
   📁 Design Files
     📁 Checker
     📁 Designer
   📁 Design Hours
   📁 Engineers Estimate - Contract Award
   📁 Manufacturers Literature
   📁 State Standards
   📁 Trash
	CADD Files:
	
	    DGN Files: Standard bridge design files.
	
	    GEOPAK Bridge: Files created by GEOPAK Bridge.
	
	    GEOPAK Rebar System Files:
	
	    Rebar Schedules: Files created by GEOPAK Rebar.
	
	    GEOPAK Roadway: .map, .gpk, .tin, .dgn, files from the roadway group.
	
	    Script Files: Final design plans in PostScript format.
	
	    TSandL: Preliminary location of new structure.
	
	Design Files:
	
	    Checker: Calculations made by design checker
	
	    Designer: Calculations made by designer
	
	Design Hours: .doc, .xls files.
	
	Engineers Estimate – Contract Award: Files that show man-hour estimates.
	
	Manufacturers Literature: Documentation for material suppliers.
	
	State Standards: Standards for the state the structure is in.
	
	Trash: Temporary and deleted files to be purged.

SCRs 📁 SCRs	Special Contract Requirements for the structure.
Trip Reports 📁 Trip Reports	.doc files of field visits.

Table 2-9: Bridge Sub-directory Files

CADD Resource Directory Structure (V8i_resource)

The CADD resource directories contain the standard CADD resource files detailed in the following chapters. These include set up, configuration, and resource files for MicroStation and GEOPAK such as MicroStation seed files and cell libraries, and GEOPAK database files and superelevation tables.

This portion of the chapter is for information only. For CFLHD employees the individual CADD machines have been configured with **project configuration files (.pcf)** to automatically find and attach these files. Use of fonts, line styles, etc., should be seamless.

For our consultants, the *V8i Edition of standard files download (V8i_resource.zip)* can be used to setup the standard CADD support directory structure. Project configuration file *(CFL-V8i_English.pcf)* is also provided in the download for the ease of setting up project configuration.

Select to link to the CFLHD Website and to download files: V8i Edition of standard files download

The standard CADD resource files are set up and maintained by the CADD Coordinator. The resource files are "read-only", as are the directories they reside in, so users cannot make changes to these files or create additional alternate versions of them on the server. These resource files are the "official" versions that should be used throughout CFLHD. Any errors discovered in these files should be reported to the CADD Coordinator so that they can be fixed.

The folder structure of the CADD resources within the V8i Edition has changed significantly from prior editions. This was done for interdivisional project sharing opportunities, to be more intuitive, clear and concise, and to separate files based upon MicroStation and GEOPAK application. Each division has their own unique or "local" resources as well as shared or "common" ones.

📁 V8i_resource
▷ 📁 CFL_Local
▷ 📁 EFL_Local
▷ 📁 FLH_Common
▷ 📁 Project_Configurations
▷ 📁 WFL_Local
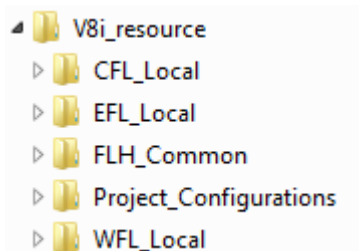
The CADD resource files (V8i_resource) are centrally located on the N: drive, and are accessed by all CFLHD users from there. CFLHD's three directories used under the V8i_resources directory are as shown below:
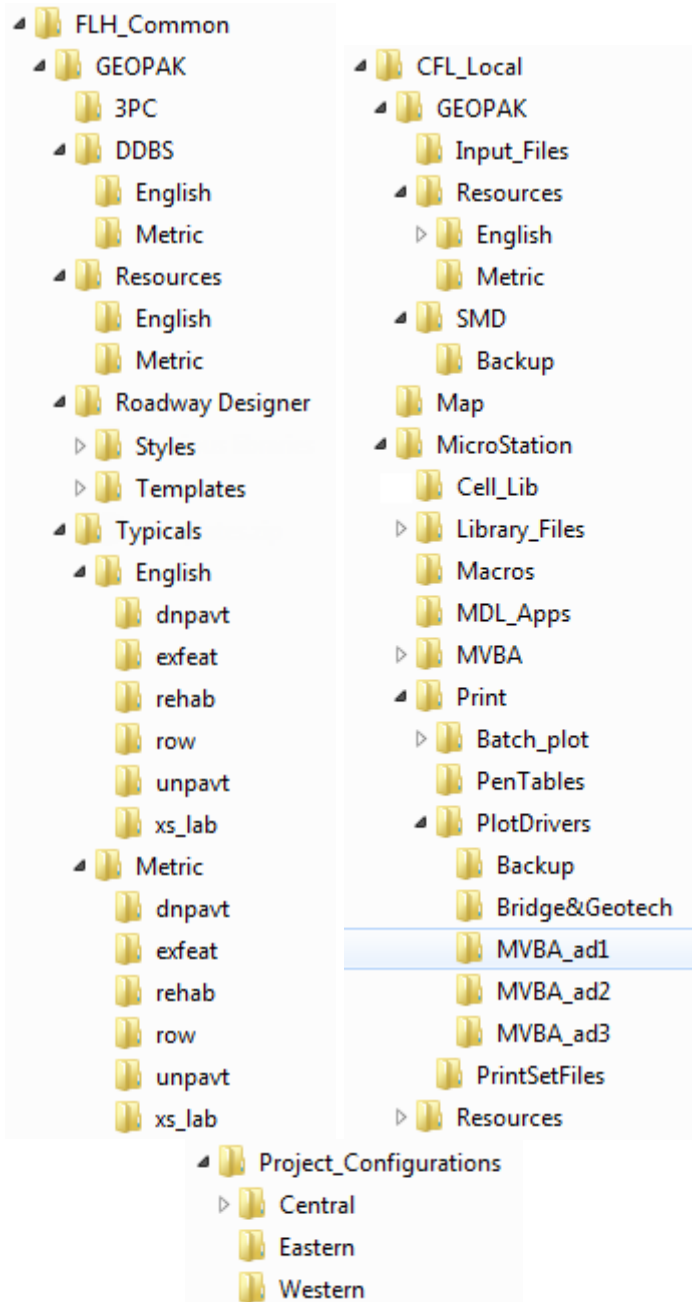
Figure 2-10: CADD Resource Files

The FLH_Common and CFL_Local folders are very similar in the sub structure. The key to location a file within the V8i_resources is to understand if the file is specific to a division or share commonly by all three FLH divisions. As advancements are made in the future, it is a goal for all divisions to share all files. Below are sub folder lists and a description of the files that are located in each. Significant resources will be identified as either CFL_Local or FLH_Common.

Folder	Content Description
GEOPAK> **Input_Files** 📁 Input_Files	CFL_Local only: contains earthwork and clearing limit input files. Also there are sample "lists" for running cross section reports.
GEOPAK>**3PC** 📁 3PC	FLH_Common only: contains various Three Port Criteria (3PC) files.

GEOPAK>**DDBS**
 	
 📁 DDBS
  📁 English
  📁 Metric
	FLH_Common only: contains US Customary and Metric **D&C Manager database files (*.ddb)**

GEOPAK>**Resources**
 	
 📁 Resources
  📁 English
  📁 Metric
	FLH_Common & CFL_Local: contains various resources used within GEOPAK applications.
	
	   FLH folder contains shared superelevation, horizontal and vertical curve tables and preferences.
	
	   CFL_Local contains labeler preferences, sheet composition files & settings

GEOPAK>**SMD** 📁 3PC	CFL_Local only: contains CFLHD's Survey Manager Database (.smd) files

GEOPAK>**Roadway Designer**
 	
 📁 Roadway Designer
  📁 Styles
  📁 Templates
	FLH_Common only: contains US Customary styles library (.xin and .ddb) and FLH standard template library (.itl) These are used for Corridor Modeler/Roadway Designer.

GEOPAK>**Typicals**
 	
 📁 Typicals
  📁 English
   📁 dnpavt
   📁 exfeat
   📁 rehab
   📁 row
   📁 unpavt
   📁 xs_lab
  📁 Metric
   📁 dnpavt
   📁 exfeat
   📁 rehab
   📁 row
   📁 unpavt
   📁 xs_lab
	FLH_Common only: contains US Customary and Metric **Criteria files (.x30)** for Typical Section Generator and help files (*.wri). These are used for FLH's automation processes for drawing cross sections.

MicroStation>**Cell_Lib**	FLH_Common & CFL_Local: contains various cell library (.cel) files used in drafting and annotation.
	FLH folder contains shared cells used with the FLH criteria (.x30 files), and common terminators used in text and dimension styles.
	CFL_Local contains standard CFL cell libraries for CFL design and plan preparation.
MicroStation>**Library_Files**	FLH_Common & CFL_Local: contains various dgn libraries (.dgnlib) that set many standards for CFL plan delivery.
	FLH folder contains the **FLH_Combined.dgnlib**, which establishes the FLH Level Library. Also, it contains the .dgnlibs that sets **FLH's text and dimension styles.**
	CFL_Local contains .dgnlib files that set **Level Filters** and **Print Styles** used within the CFL office.
MicroStation>**Macros**	CFL_Local only: Miscellaneous macros for MicroStation V8 (*.bas)
MicroStation>**MDL_Apps**	CFL_Local only: This folder is currently empty, but may be used for custom MicroStation Applications
MicroStation>**MVBA**	FLH_Common & CFL_Local: Miscellaneous MicroStation Visual Basic for Applications (*.mvba). MVBAs run from the D&C manager are located under the FLH_Common directory.
MicroStation>**Print** Print — Batch_plot — PenTables — PlotDrivers —— Bridge&Geotech —— MVBA_ad1 —— MVBA_ad2 —— MVBA_ad3 — PrintSetFiles	CFL_Local only: Miscellaneous **plot drivers, pen tables, print set files,** and preference/settings files used for CFLHD printing methods **(Print, Batch Plot, Print Organizer).**
MicroStation>**Resources**	FLH_Common & CFL_Local: Miscellaneous resources for fonts and line styles.
	FLH folder contains the **FLH_LineStyles.rsc**, which establishes FLH's common line style library**.**
	CFL_Local contains **CFL_Linestyles.rsc** that supplements the FLH line style library with additional styles.
MicroStation>**Seed** Seed — English — Metric	FLH_Common only: contains US Customary and Metric 2D and 3D seed files (*.dgn)

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MicroStation>**Tables** Seed English Metric	FLH_Common only: contains the standard color table for FLH.
Project_Configurations> **Central** Central	CFL only: This folder contains **Project Configuration Files (.pcf)** that sets CFL's MicroStation workspace environments. It also contains configuration files (.cfg) for proper MicroStation loading and set up.
Project_Configurations> **Eastern** Eastern	EFL only: This folder contains **Project Configuration Files (.pcf)** that sets EFL's MicroStation workspace environments.
Project_Configurations> **Western** Western	WFL only: EFL only: This folder contains **Project Configuration Files (.pcf)** that sets WFL's MicroStation workspace environments.

Table 2-11: Sub-directory Files

STANDARDS FOR USE WITH MicroStation/GEOPAK V8i