D3.01 General
D3.02 Project Name
D3.03 Required WSDOT CAE Standard Project Folders
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D3.05 CAD
D3.06 Engineering Data Construction
D3.07 Engineering Data Design
D3.08 Survey
D3.09 Project Documentation
D3.10 Additional Project Folders

D3.01 General

The project directory structure discussed in this section is intended as the WSDOT standard structure for Computer Aided Engineering (CAE) data storage to consolidate all of a project's electronic engineering data files into one folder structure. The CAE structure will complement a WSDOT Enterprise Content Management (ECM) system, as the ECM is the primary location for project documentation and the CAE structure stores the data files. In the absence of an ECM, this structure provides guidance for storage of typical, relevant information pertaining to the project.

Survey, design, drafting, construction, and other supporting data files will be located in this structure on a common computer resource for access by all project team members. This consolidated directory structure will simplify archiving project data in a consistent manner and facilitate future retrieval.

Typically, the project lead designer will create the standard project folder structure when creating a new project, and place it on the common network location for access by all stakeholders. WSDOT provides the Create WSDOT Project utility that automates the standard folder structure creation, sets up many project level resources, allows for the input of metadata for the project and creates files that allow the WSDOT applications to work more efficiently. This utility is available in the WSDOT CAE resource file set for all customers. WSDOT projects should always be created with this project utility and sufficient care should be taken with the metadata and other information supplied at the time of project creation.

Although a working copy of this structure may reside on a local computer hard drive (e.g., field survey crew laptops), the master files should always be stored in the standard directory structure on a network resource and the final deliverables must be delivered in the standard project directory structure.

Exhibit 3-1 is an expanded view of the standard CAE project structure.

D3.02 Project Name

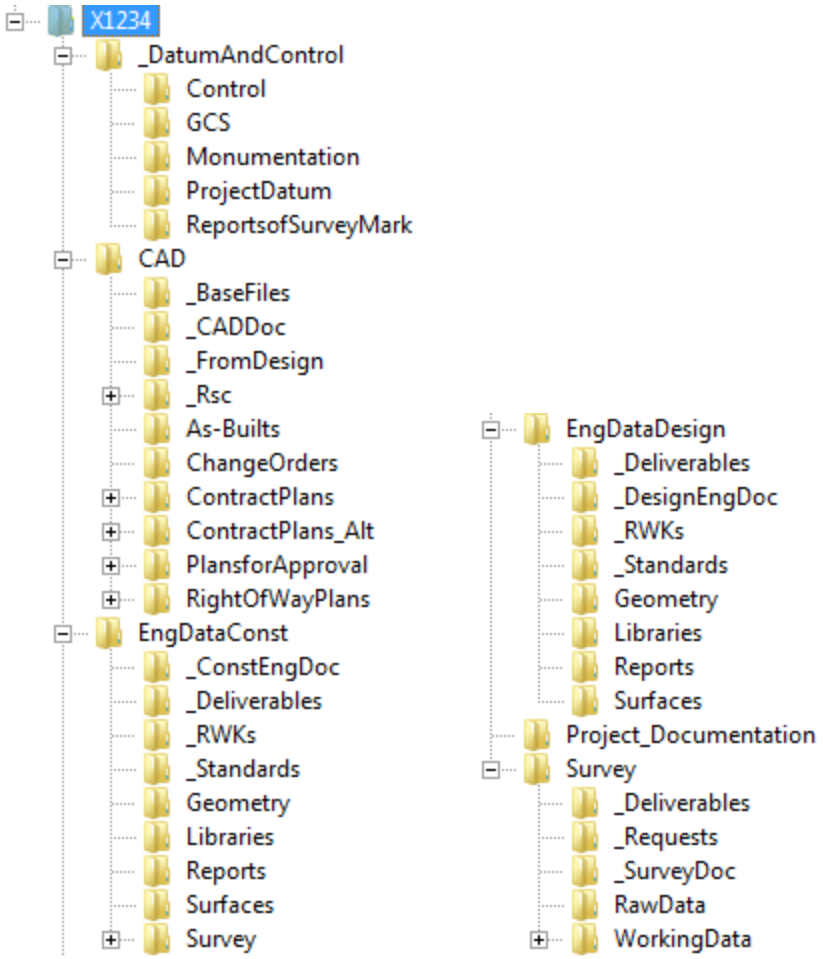
Each project is stored in a uniquely named folder. Project names are often derived from the project's work order number, Work Item Number (WIN) number or other project identifier. It is important ***not*** to revise the name of the project root folder after creating the project as metadata and project resource settings become ineffective.

D3.03 Required WSDOT CAE Standard Project Folders

In each project folder structure, there are five specific folders for WSDOT standard CAE applications. These folders are **_DatumAndControl**, **CAD**, **EngDataConst**, **EngDataDesign**, and **Survey**. These five primary folders must remain intact, although additional subfolders may be added to them. It is recommended that no more than two additional levels be added to any folder beneath **_DatumAndControl**, **CAD**, **EngDataConst**, **EngDataDesign**, or **Survey**.

The total number of nested folders or path characters anywhere in the project structure *must not exceed* limitations of backup and data transfer media used, such as CD-R. Check the path limitation constraints for each type of media.

Exhibit 3-1 Standard CAE Folder Structure



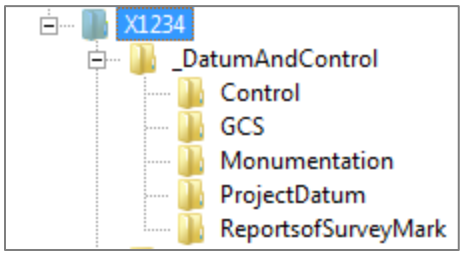
In addition to the five required project folders, each project structure may include additional folders that aid in organizing related project files in a consistent and logical manner.

The following sections include a more detailed description of requirements for the required WSDOT standard project folders **_DatumAndControl**, **CAD**, **EngDataConst**, **EngDataDesign**, and **Survey**.

D3.04 _DatumAndControl

The **_DatumAndControl** directory is the primary location for project coordinate system documentation.

Exhibit 3-2 Standard _DatumAndControl Folder Structure



Control

This folder's purpose is to document the survey control points used in the project's scoping, location, design and construction. Data organization could be in WSDOT ASCII Survey format, ALG or LandXML. Other report formats could be used to supplement data and provide additional information.

GCS

This folder's purpose is to document the PD GCS (Project Datum Geographic Coordinate System). If the project is using PD, this folder would contain a DGN with a PD GCS defined in it, which is used to import GCS into another DGN so the file is geographically aware, and a **PD_GCS.PRJ** file, which is used to import DGNs into ArcMap, where the PRJ file tells ArcMap what projection and coordinates the data is in.

Monumentation

This is the location for all supporting documents for Record of Survey, Record of Monumentation, DNR permits and completion reports for monumentation removal or destruction and other related documentation.

Project Datum

This folder's purpose is to document the PD CF (combined factor) calculations. This folder would contain the PD Calculation Report, which could be a scanned manually calculated worksheet, spreadsheet or Project Datum XML report.

ReportsofSurveyMark

This folder's purpose is to document the primary control used for the project. This folder would contain a Report of Survey Mark PDF file for each primary control point used in the project. Each file would have the highlighted values used for the project.

See **Deliverables 5** for more details about each folder type.

D3.05 CAD

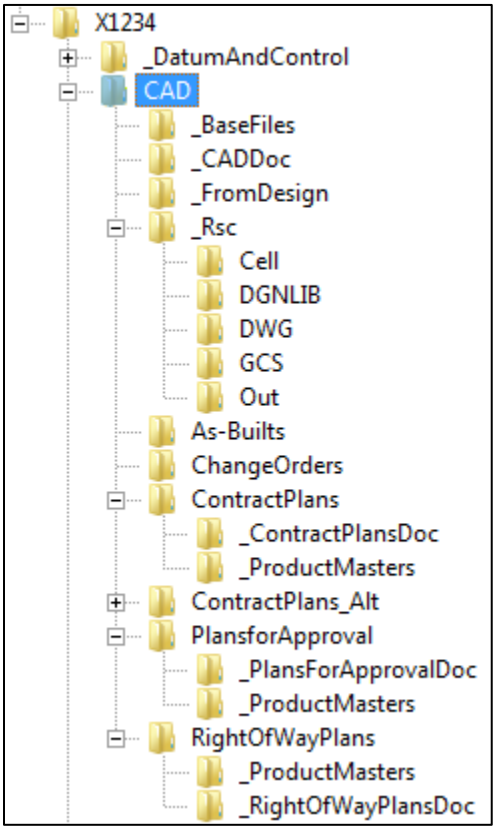
The CAD directory is the primary location for drafting files. Folders beginning with an under bar character contain files used in the creation of more than a single CAD product or resource files that facilitate the creation of a product, but are not themselves part of that final product.

See **Deliverables 7** for more details about each folder type.

Folders without the initial under bar character contain files and data used only in the product specified by the folder name.

This directory consists of the following required subfolders.

Exhibit 3-3 Standard CAD Folder Structure



_BaseFiles

This folder is used for all project files referenced by other files. These are generally coordinate based MicroStation files, but may include other files such as large profiles received from design referenced to multiple sheets or raster image DGNs that are referenced to multiple sheets and displays in the project.

_CADDoc

This folder is used for all drafting-related documentation including file indexes, journals, filters and user level usage.

_FromDesign

This folder is used for files from InRoads designers for access by drafters. This folder should only be used as a posting point for transmitting or receiving files from design to drafting.

_Rsc

This is the location for project-specific cell libraries, DGN Libraries, AutoCAD resources (provided by external partners). Also an Out folder specified in the WSDOT configuration as the output location for files by certain drafting operations such as exports and translations.

As-Builts

This is the location for "As Constructed" or "asbuilts" DGN files.

ChangeOrders

Construction change order DGN files are stored in this folder.

ContractPlans[_*Milestone*]

This directory contains sheet and Container files during the Design phase and a complete stand-alone product representing a specific deliverable.

_ContractPlansDoc

Documentation specific to the deliverable contained in ContractPlans[_Milestone]. Typically a snapshot of the appropriate _CADDoc files.

_ProductMasters

At the time of deliverable completion, a copy of all required base and other files necessary to support the ContractPlans deliverable package will be stored here.

PlansForApproval[_*Milestone*]

This directory contains DGN files related specifically to Plans for Approval. Once approved, referenced master base plan files will be included and the folder name appended to indicate "_Approved".

_PlansForApprovalDoc

Documentation specific to the deliverable contained in PlansForApproval[_Milestone]. Typically a snapshot of the appropriate _CADDoc files.

_ProductMasters

At the time of deliverable completion, a copy of all required base and other files necessary to support the **PlansForApproval** deliverable package will be stored here.

RightOfWayPlans[_Milestone]

Sheet files for Right of Way developed by the Design office (plans developed by the Right of Way Office are stored in the project Survey folder structure). Once approved,

referenced master base plan files will be included and the folder name appended to indicate "_Approved".

_RightOfWayPlansDoc

Documentation specific to the deliverable contained in RightOfWayPlans[_Milestone]. Typically a snapshot of the appropriate _CADDoc files.

_ProductMasters

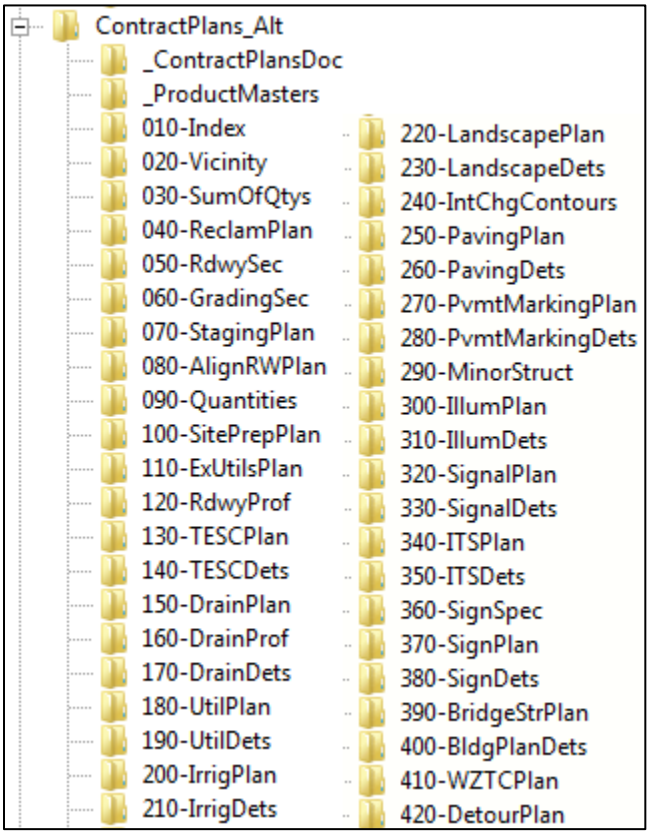
At the time of deliverable completion, a copy of all required base and other files necessary to support the RightOfWayPlans deliverable package will be stored here.

D3.05(1) Alternate ContractPlans Subfolders

The Contract Plans directory may alternately contain subfolders. This may help organize data with large projects and/or when the single-sheet per file approach is used.

The example sub-folders shown in Exhibit 3-4 place each plan type sequentially according to the Plans Preparation Manual Section 400.06(1)(a) via numeric prefix. Not all subfolders may be needed and additional ones may be created as needed by the project.

Exhibit 3-4 Alternative Contract Plans Subfolder



Index – index.

Vicinity – Vicinity map.

SumOfQtys – Summary of Quantities report are generally created outside of MicroStation using the WSDOT EBASE application. PDF output of EBASE reports may be stored here.

ReclamPlan – Borrow, pit, quarry, stockpile, waste sites, and reclamation plans.

RdwySec – Roadway sections for main roadway, ramps, frontage roads, detours, others.

GradingSec – Grading sections, if applicable.

StagingPlan – Stage construction plans, if applicable.

AlignRWPlan – Alignment or alignment/right of way.

Quantities – Quantity tabulation and Structure Notes sheets are generally created outside of MicroStation using the WSDOT Q-tabs application. Actual production sheets may be stored here. For final output, these sheets will be placed immediately prior to the plan sheets showing the work being tabulated per the WSDOT *Plans Preparation Manual* section 4, such as:

- Site Preparation items
- Temporary Erosion and Sediment Control (TESC) items
- Drainage structure notes
- Utility structure notes
- Irrigation structure notes
- Guardrail and Traffic items

SitePrepPlan – Site preparation is existing topography and removal and demolition work may be shown on Alignment Plans; however, if extensive details are required and the plan sheet becomes too crowded, it should be on a separate series.

ExUtilsPlan – Existing utilities is an extension of the Site Preparation Plan and is only required if the existing utilities are so extensive that they cannot be clearly shown on the Site Preparation Plan.

RdwyProf – Roadway profiles normally only required when grade is being revised.

TESCPlan – TESC Plans may not be required if work is minor and can be combined with Drainage Plans or other plan sheets.

TESCDets – Temporary Erosion and Sediment Control (TESC) details. These plans may not be required, depending on the project, and may be combined with Drainage Plans or other plan sheets.

DrainPlan – Drainage plans may not be required if work is minor and can be combined with another series of plans.

DrainProf – Drainage profiles will follow plan series showing drainage features.

DrainDets – Drainage details.

UtilPlan – Utility plans only required if there is work to be done by the contractor on existing utilities.

UtilDets – Utility details only required if there is work to be done by the contractor on existing utilities.

IrrigPlans – Irrigation plans.

IrrigationDets – Irrigation details.

LandscapePlan – Landscape, wetland, rest areas, and viewpoints.

LandscapeDets – Landscape details.

IntChgContours – Interchange contours.

PavingPlan – Paving plans are required for overlay projects when paving breaks, paving dimensions, intersection paving, taper lengths, dimensions of taper widths, and so on, can't be shown adequately on the roadway sections. In this case, the roadway sections, Paving Plans, and Paving Detail sheets are to be prepared in conjunction with each other to show all the paving work.

PavingDets – Paving details.

PvmtMarkingPlan – Pavement marking plan

PvmtMarkingDets – Pavement marking details

MinorStruct – Minor structures such as retaining walls. *May have separate folder for each minor structure.*

IllumPlan – Illumination plans may be shown on Paving Plans if illumination is minor and Paving Plan will not be too crowded.

IllumDets – Illumination details will follow plan series showing illumination layout.

SignalPlan – Traffic signal plans.

SignalDets – Traffic signal details.

ITSPlan – Intelligent Transportation System (ITS) plans.

ITSDets – ITS details.

SignSpec – Sign specification sheets will precede the plan series showing the signing. These files are generally created outside of MicroStation using the WSDOT SignSpec application. Actual production sheets may be stored here.

SigningPlan – Signing plans may be shown on Paving Plans if signing is minor and Paving Plans will not be too crowded.

SigningDets – Signing details will follow plan series showing signing.

BridgeStrPlan – Bridges and other structures. May have separate folder for each structure.

BuildingPlanDets – Building plans and details.

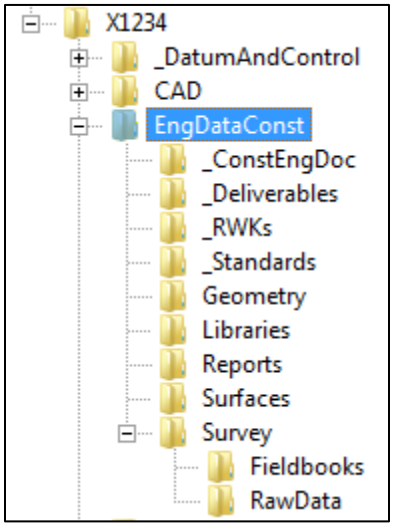
WZTCPlan – Traffic control plans.

DetourPlan – Detour routes and detour signing. If the detour is simple and straightforward, this information may be shown on the Vicinity Map, as long as the additional information does not detract from the Vicinity Map.

D3.06 Engineering Data Construction

All engineering data files developed during the Construction phase, including surveying, will be stored in the **EngDataConst** folder. For ProjectWise projects, see D8.04.

Exhibit 3-5 Standard Engineering Data Construction Folder Structure



D3.06(1) Engineering Data - Construction Project Folder Structure

The Construction project structure consists of:

_ConstEngDoc

For all construction engineering related documentation, including journals, the InRoads project spreadsheet, DTM documentation, and change of condition tracking.

_Deliverables

This is the location for the project copy of deliverable files to customers (Inspection, Contractor, other agency groups, etc.).

_RWKs

This is the location for all construction InRoads project RWK files.

_Standards

All applicable current WSDOT standard references will be copied to the **Standards** folder and pre-pended with the project name. This will create project-specific WSDOT

standards file (for example **ID1234.xin**), which will be stored in this folder and referenced during the project's construction phase. This folder may also contain project-specific drafting note (*.dft) files.

Geometry

All construction InRoads geometry project (*.alg) files will be stored in this folder.

Libraries

All construction project-specific roadway template libraries and roadway definition libraries will be stored in this folder.

Reports

All construction-generated output reports including XML data files, HTML reports, BIN reports, and any ASCII-formatted reports (*.txt, *.rpt, and others) will be stored in this folder.

Surfaces

All construction generated surface (*.dtm) files will be stored in this folder.

Survey

All construction survey files will be stored in this folder.

\Fieldbooks

InRoads fieldbooks (*.fwd), upload files, reports, and other related files.

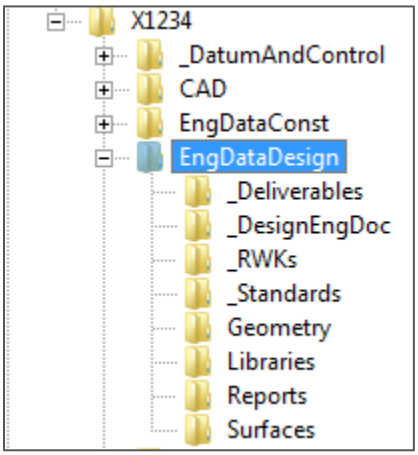
\RawData

This includes data collector download files (*.rw5, *.crd, *.dc, etc.)

D3.07 Engineering Data Design

All engineering data files developed during the design phase will be stored in the **EngDataDesign** folder. For ProjectWise projects, see D8.04.

Exhibit 3-6 Standard Engineering Data Design Folder Structure



D3.07(1) Engineering Data – Design Project Folder Structure

The InRoads design project structure consists of:

_Deliverables

This is the location for project copy of deliverable files to customers (support groups, Construction, other agency groups, etc.) with the exception of drafting (CAD).

_DesignEngDoc

This location is for all engineering data related documentation, including journals, the InRoads project spreadsheet, design-generated project datum calculation reports, geometry and DTM documentation.

_RWKs

This is the location for all design InRoads Project files (*.rwk).

_Standards

All applicable current WSDOT standard references (found in *[…\InRoads_Standards*) will be copied to the **Standards** folder and pre-pended with the project name. This will create the project-specific WSDOT standards file (for example **ID1234.xin***)*, which will be stored in this folder and referenced during the project's design phase. This folder may also contain project-specific drafting note (*.dft) files.

Geometry

All design Geometry Project (*.alg) files will be stored in this folder.

Libraries

All project-specific roadway template libraries will be stored in this folder including Template Libraries (*.itl, *.tml), and Roadway Definitions (*.ird, *.rwl).

Reports

All design-generated output reports including XML reports and any ASCII formatted reports (*.html, *.txt, *.rpt, and others) will be stored in this folder.

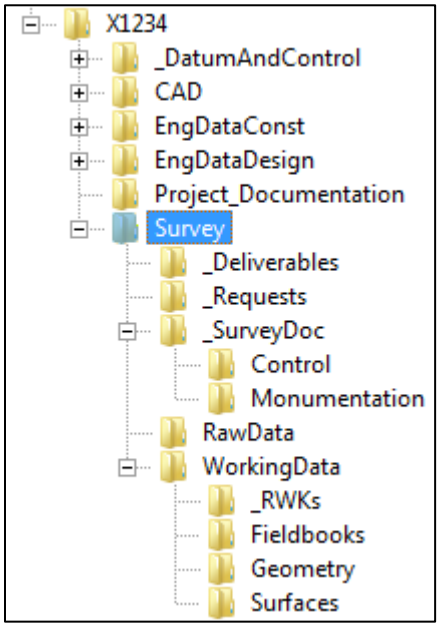
Surfaces

All design-generated surface (*.dtm) files will be stored in this folder.

D3.08 Survey

All survey files collected for scoping, location and design will be stored in the following Survey structure.

Exhibit 3-7 Standard Survey Folder Structure



_Deliverables

This folder contains the complete-to-date survey dataset(s) formatted for use for design purposes.

_Requests

A copy of the completed survey request form will be stored in this folder.

_SurveyDoc

This folder contains audit and revision reports from processing of fwd files and Survey Documentation spreadsheet.

RawData

All original survey data files downloaded from field data collectors (*.crd, *.rw5, *.sdr, etc.) will be stored in this folder.

WorkingData

This folder contains the surveyor's entire working data and is accessed by the surveyor only.

_RWKs

Location for all survey InRoads Project files (*.rwk).

\Fieldbooks

All survey fieldbook (*.fwd) files will be stored in this folder.

\Geometry

All survey Geometry Project (*.alg) files will be stored in this folder.

\Surfaces

All survey-generated surface (*.dtm) files will be stored here.

D3.09 Project Documentation

The **Project_Documentation** folder contains the Project Journal. A project journal template is provided. One application of this journal is to list the reference files that are associated with your CAE data and information.

D3.10 Additional Project Folders

The root level project folders include data and other reference files that are associated with engineering data. These folders may or may not be applicable to the project. However, if applicable, the following standards apply.

Some suggestions for additional folders include:

Commitments	Photos
Correspondence	Presentations
Environmental	Quantities
Estimates	Scoping
Hydraulics_Report	Specials
Permits	