

ODOT MicroStation® V8i User Guide



Photo provided by ODOT Photo/Video



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Table of Contents

Introduction	6
ODOT and Engineering Automation Administration	6
CAD Standards Committee	6
ProjectWise Integration	7
ODOT Engineering Workspace	8
Workspace Servers and ODOT_Space\V8i	9
File Server and F: Drive	10
ODOT_Data Folder	10
USERCFG Folder	11
Naming Files and Folders	12
Engineering Workstation and C: Drive	13
Desktop Shortcuts	14
Working Offline	14
Obtaining Technical Support	15
Creating a Survey Project	16
MicroStation Basics	18
Launching MicroStation	18
Using the ProjectWise File Open Dialog	20
Using the Windows File Open Dialog	22
User Options — Training and Example Files	22
Project Options	23
Interface Options	23
Viewing File History	25
Creating New MicroStation Files	28
Seed Files	28
Using the ProjectWise Document Creation Wizards	30
Using the Windows File System	33
Reference File Attachments and Reference Sets	35
Loading Additional Applications	36
Getting Help with MicroStation	37
Setting User Preferences	38
Accessing Extra Tools – Custom	40

Closing, Exiting, and Saving Files Stored in a ProjectWise Datasource	42
Saving Files to Other Formats	43
ODOT Tasks and Workflows	47
General Workflow	48
Using Tasks and Workflow Tabs	50
Element Templates	53
Text Styles	54
Line Styles	56
ByLevel Symbology	56
Annotation Scale	57
Annotation Cells	58
Levels	60
Project Explorer	61
Print Function	62
Using the ProjectWise Integrated Select ... File Dialogs	62
Print Driver Configuration Files (PLTCFG)	63
Print Definition Files (PSET)	64
Print Styles	65
Pen Tables	66
Creating a PDF	69
Using Print Organizer to Create Print Definitions	71
Creating Print Definitions from Data Stored in ProjectWise	71
Creating Print Definitions in the Windows File System (using the Project Explorer)	75
Printing with Print Organizer	82
Small Format Paper Printing	83
Large Format Paper Printing	86
Save the Print Definition File	87
Source File Data Preparation	88
Printing the File Location	88
Adding a Sheet to Print Organizer	89
MicroStation Add-on Tools	93
AutoTURN 8.0	93
Axiom Microsoft Office Importer	95
Descartes	96

GuidSIGN 6	96
InRoads Lite	98
gINT Civil Tools	98
MDL Applications	99
Bubble Tools	100
Macros and Other Tools	102
Geographic Coordinate Systems	106
Assigning Geographic Coordinate System	107
Oregon Coordinate Reference System (OCRS)	109
Raster and GIS Files	112
Displaying Raster Images	113
Displaying SHP Files	116
User Customization	117
Customizing Your Workspace	118
Creating New Toolboxes and Tools	119
Copying Existing Tool Boxes and Tools	121
Viewing Custom Tool Boxes	122
Creating Custom Tasks and Workflows	123
Appendix A. Using MicroStation V8 2004 file in MicroStation V8i	124
Line Styles	124
Cells	126
Text	128
Appendix B. How to Use Serval Application	129
Accessing Files From a User’s ODOT_Data\Projects Folder on a Server	129
Placing Files in User’s Local PC:\Share Folder	130
FAQ and Troubleshooting Information	130
Appendix C. Viewing Raster and GIS Data	132
ODOT Tutorials	132
Tutorial 1. Set DGN File to Project Reference Data “On the Fly”	133
Tutorial 2. Reproject DGN File From One Coordinate System to Another	135
Tutorial 3. View Geographic Coordinates (Latitude and Longitude)	137
Tutorial 4. Set DGN File in LDP to Align with Data in Other Coordinate Systems	140
Tutorial 5. Raster Imagery	142

Introduction

The Oregon Department of Transportation (ODOT) configures and customizes Bentley MicroStation®, InRoads® and other CAD software for agency use. Therefore, the applications may perform differently than the typical “out of the box” set up. The **ODOT MicroStation® V8i User Guide** provides guidance on how ODOT configures the software for its use.

ODOT and Engineering Automation Administration

The **Automation Engineer** administers the CAD tools and their configuration at ODOT. In this role, the Automation Engineer facilitates a support team and three separate committees to create a CAD environment that supports the various needs of the agency. This position reports to the Strategic Systems and Data Management Manager in the Technical Services Branch of the Highway Division.

The **Engineering Applications Support Team (EAST)** works closely with and receives direction from the Automation Engineer. The team primarily supports MicroStation and InRoads software along with other specialty software. The EAST members report to the Project Delivery Manager in the Transportation Application Development section of the Information Systems branch. Team members are located throughout the state. If you need assistance, contact the Computer Support Desk at 503-986-3800. The Computer Support Desk will submit a trouble ticket and an EAST member will return your call.

The Automation Engineer facilitates the **Engineering Automation Steering Committee (EASC)**. This committee provides direction for automation projects, which result in projects led by business or Information Systems (IS) personnel. The committee prioritizes projects and promotes committee activities as needed. Membership includes managers representing various engineering disciplines in Technical Services Branch and ODOT Regions.

The Automation Engineer facilitates two additional committees, **CAD Standards** and **InRoads Standards**. Committee members provide direction on the standards enforced through automation tools. Membership includes senior drafters and designers located in each Region and in Technical Services Branch.

Your suggestions are welcome on how to improve the CAD tools available for use at ODOT. Contact your CAD Standards or InRoads Standards representative, EAST members or the Automation Engineer. The committee membership is listed on the EAST website at <http://www.oregon.gov/ODOT/CS/east>.

CAD Standards Committee

The CAD Standards Committee (CSC) is a standing subcommittee of the Engineering Automation Steering Committee (EASC) and derives its authority from the EASC. The CSC defines and maintains ODOT CAD standards. (This differs from engineering specifications as this pertains only to engineering automation). The EASC has final approval authority for any decisions recommended by the CSC.

The CAD Standards Committee membership may change or rotate based on available resources and ODOT needs.

The Bentley V8i Steering Committee, the CAD Standards Committee and the CAD Configuration Committee for the Bentley V8i Project elected to make some changes in how ODOT works with the

upgrade to the V8i application suite. More information on how to work with the ODOT customizations and configuration settings are included in this User Guide.

Whenever possible, the committees elected to use functions and tools provided within the software instead of building (or upgrading) ODOT tools. This resulted in removal of macros and other applications from the ODOT engineering workspace if the functionality was available with other tools.

The CAD Standards Committee elected to adopt annotation scale use with the deployment of the Bentley V8i software suite. This resulted in changes to cells, line styles and text styles used in previous versions of MicroStation to accommodate annotation scale settings. Using annotation scale will require the use of a model set correctly for the intended print scale. In other words, you will need to separate elements intended for printing at different scales into different models. Additional details are provided in Appendix A on how to work with files created in versions of MicroStation prior to V8i.

If you have any recommendations for CAD Standards, please contact your department committee member.

ProjectWise Integration

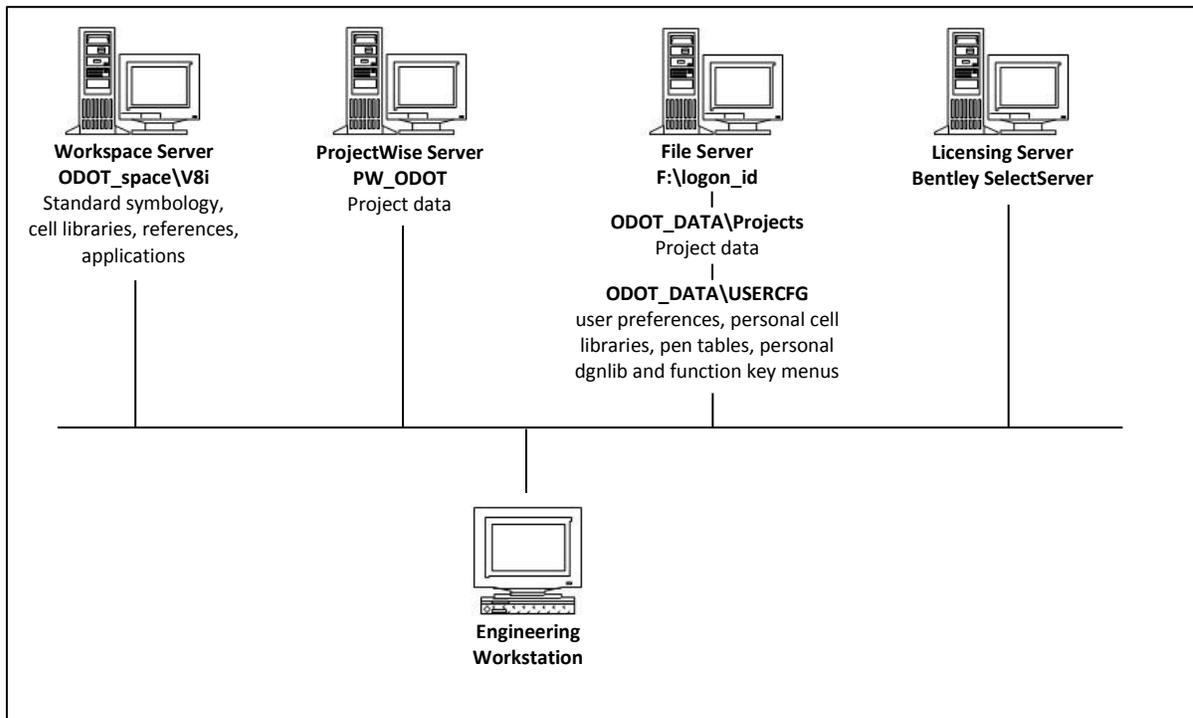
This document was significantly rewritten in March 2016 to add steps and update pictures for operating MicroStation V8i with the integration of ProjectWise as a data source.

ODOT Engineering Workspace

The ODOT Engineering Workspace is comprised of multiple components:

- **Workspace Servers** — The servers store ODOT configuration and standards files, and host some applications.
- **File Servers** — Users save and store project data, user preferences and personal files on Personal Server Share (F: drive) space on the file servers.
- **ProjectWise Data Source** — ProjectWise users save and store project data using the ProjectWise Integration Server and Data Storage Server.
- **Engineering Workstations** — Engineering workstations typically have better video cards and additional RAM to run MicroStation and InRoads than business computers used at ODOT. ODOT installs these and other engineering applications on the hard drive (or C: drive) of an engineering workstation.
- **Licensing Server** — This server hosts the SelectServer application that manages ODOT’s licenses for Bentley MicroStation, InRoads and other applications.
- **Print Servers** — These servers direct the printing from any CAD application to connected printers and plotters.

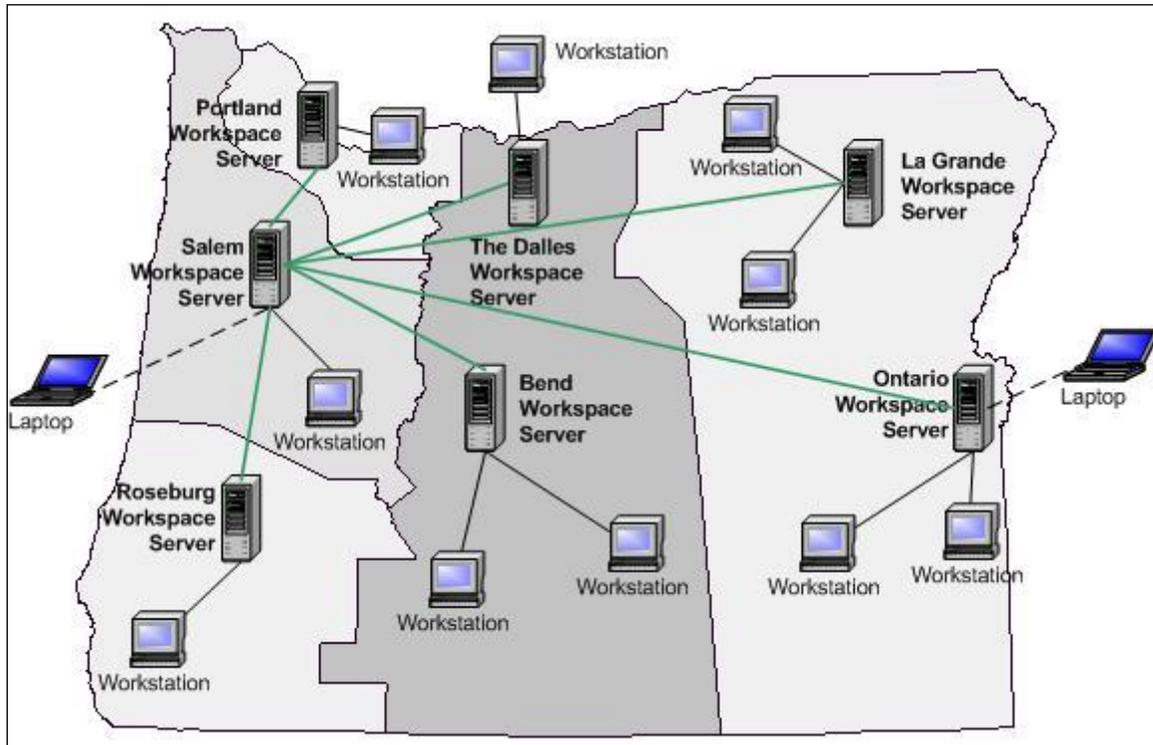
Figure 1. ODOT Engineering Workspace



Workspace Servers and ODOT_Space\V8i

Multiple workspace servers identified as ODOT_Space\V8i, and located at ODOT offices throughout the state, store ODOT configuration and standards files. Storing these files on these servers makes it faster to update engineering workstations with any approved configuration or CAD standards changes. This configuration also provides quicker response times to engineering workstations and decreased downtime.

Figure 2. Workspace Servers



ODOT_Space\V8i contains standard line styles, fonts, DGN libraries (levels, tasks and workflows), MDL applications, macros and cell libraries used by MicroStation and InRoads. These are typically items that have been adopted by the CAD Standards or InRoads Standards Committee to better enable users to produce plans that follow standard ODOT conventions for construction plans.



Note: If you identify ODOT_Space\V8i items that may require revision, contact EAST or your CAD Standards Steering Committee member. A list of the [CAD Standards Steering Committee members](#) is on the [EAST website](#).

Some applications (like Serval) are also maintained on the workspace servers and are not installed on the hard drive of each engineering workstation.

File Server and F: Drive

Your Personal Server Share (referred to as the F: drive) is a server location where you can store work-related data. Files stored on the F: drive are backed up and managed to ensure that data is available in the case of system failures. You may access files on the F: drive from anywhere on the ODOT network and you can share files with others working with you. The ProjectWise datasource named PW_ODOT is another location for storing project data. PW_ODOT is also stored on a server, is backed up, and is accessible to others. Project data that is not stored in PW_ODOT should be stored on a server in either your F: drive or in a crew server share. Please refer to other documentation on usage of the ProjectWise data source.

Server backups are intended for catastrophic failures, and are not intended to be long-term digital archives. The operational procedures on how long backups are kept, how quickly the data is restored and how often they occur may change due to the increased cost of maintenance.

If you will be using engineering applications, you will be set up with an Engineering Personal Server Share. Additional folders and permissions are added to your Personal Server Share (F: drive) with files necessary for MicroStation and InRoads to run.

Customizations made to the engineering applications are also stored on the F: drive. The presence of an ODOT_Data folder indicates you may be able to run engineering applications.



Reminder: If you are **not** set up with an Engineering Personal Server Share, you will not be able to run MicroStation or InRoads, even if the applications are installed on the computer. Instead a black text window will open with the error:

“ODOT User Configuration not found — Refer to Support for Assistance”

Contact the Computer Support Desk for assistance with setting up an Engineering Personal Server Share.



Note: In accordance with ODOT policies, you may not store personal data on the F: drive. To review the Acceptable Use of State Information Systems and Information Assets policy, go to <http://transnet.odot.state.or.us/cs/BSS/Policies%20and%20Procedures/ADM%2005-08-01.pdf>.



Note: The Documents and Pictures libraries are redirected to your F: drive. Many Microsoft Office applications will default to saving in the Documents library.

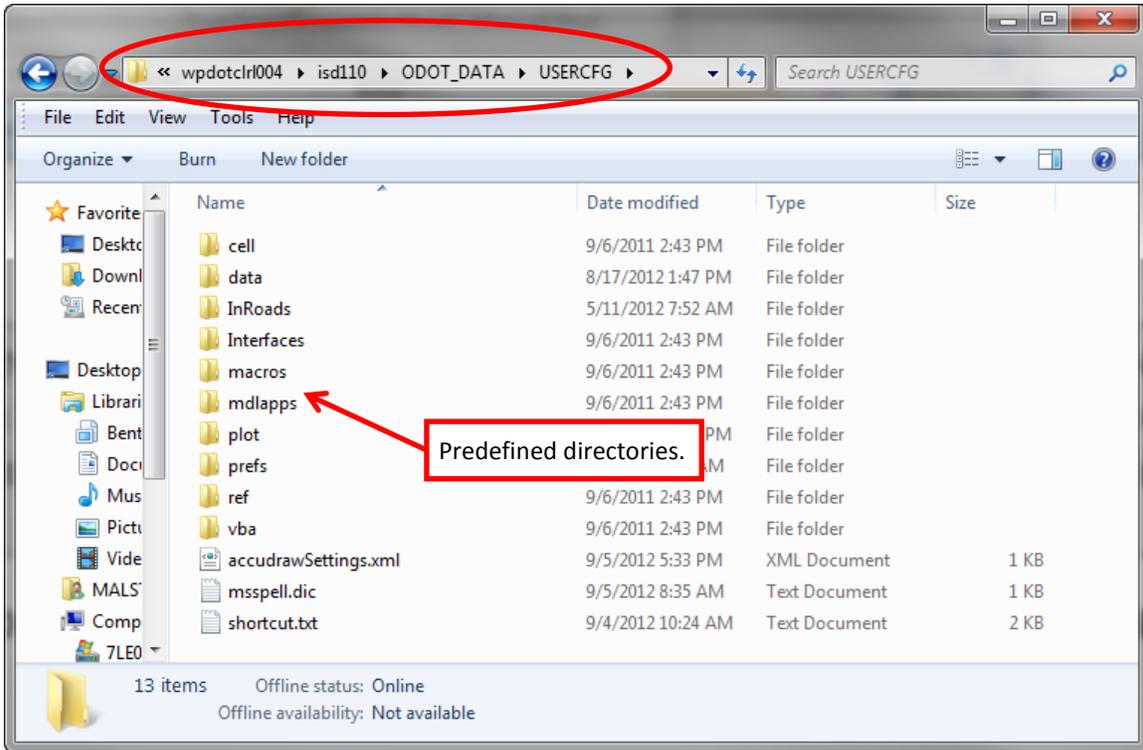
ODOT_Data Folder

ODOT employees that are set up correctly for MicroStation are set up with a folder called ODOT_DATA in their Personal Server Share. Folders beneath ODOT_DATA are shared so that other ODOT employees can read the files stored in them:

- PROJECTS – intended for project-related data that is not stored in PW_ODOT (ProjectWise)
- USERCFG – see specific information below

USERCFG Folder

Within the ODOT_DATA folder in your Engineering Personal Server Share (or F: drive), you will find the USERCFG folder. It contains files and folders used by MicroStation, InRoads and other engineering applications for your unique profile. This includes personal cell libraries, plot drivers, pen tables and user configuration files.



Warning: Do *not* delete the ODOT_DATA folder. If you do, MicroStation and InRoads will not work correctly.

In addition to your user-specific files, the USERCFG folder also contains predefined directories for you to save specific types of files. When using MicroStation or InRoads, the application will search those directories to locate required files. The predefined directories include:

- **cell:** Store personal cell libraries and those with licensing stamps
- **data:** Find AccuDraw shortcuts and Axiom INI and the pipe data spreadsheet template here.
- **InRoads:** Find ODOT InRoads preference files including the civil.xin and ODOTseed.itl here.
- **Interfaces:**
 - **Interfaces\Buttons:** Button settings for the mouse when using MicroStation stored here.
 - **Interfaces\Fkeys:** Create and save personal function key menus in this location.
 - **Interfaces\MicroStation\:** Store custom MicroStation tool boxes, tasks and workflows in a personal DGN library.

- **macros:** Store personal macros you create in this location
- **mdlapps:** Store user-specific MDL applications in this location.
- **plot:** Store MicroStation pen tables you create in this location.
- **prefs:** User-specific preferences and configuration variables and settings for toolbar locations are stored here.
 - Prefs\civil: Store InRoads user preference XML files and settings for toolbar locations in this location.
 - Prefs\DWGdata: Find settings for AutoCAD DWG files in this location.
- **ref:** Store your personal standard reference files in this location.
- **vba:** Store visual basic applications in this location.



Note: *If you are having trouble with MicroStation or another engineering application, the Engineering Application Support Team can access the USERCFG folder to troubleshoot your situation.*

Naming Files and Folders

It is important to consider the effect of using special characters when naming folders and files in the Windows file system. Different applications have particular limitations when they encounter a special character, some will pop up an error, another will produce incorrect results, and still another may refuse to function. Best practices for managing Windows data encourage you to be brief with folder and file names and to not exceed the working limit of 200 characters in the entire path. When you are abbreviating, avoid the use of special characters to represent longer groups of letters and do not use spaces. The following is a list of all characters that will not cause problems with your engineering applications:

- A through Z
- a through z
- 0 through 9
- underscore

There are 63 characters that are recommended to use when naming folders and files for use with engineering applications; no space, no hyphen or dash. The decimal point or period character should not be used in a Windows folder name and should only appear in a file name to separate the name of the file from the program extension.



Warning: *The characters !@#\$%&()-:;'"',. can all adversely affect the functioning of your engineering applications. Avoid their use in naming Windows folders and files, and keep names short.*

Engineering Workstation and C: Drive

You can store your project data in the **USR**, **Share** and **Work** folders located on the hard drive (C: drive) of your engineering workstation. Generally, you will not be able to write to other locations on your C: drive.

- **USR** — Use this folder to store your data. It is typically backed up. If you store a large amount of data in the USR folder, contact the Computer Support Desk to install the Connected back up software. You can only access this folder when logged on to the computer.
- **Share** — This folder allows you to share files with other ODOT users and for other users to place files on your hard drive. Anyone in ODOT can read, write and delete files from this location. It is not backed up, so do **not** use it to store your only copy of a file.
- **WORK** — This folder is only accessible to the user logged in to the computer. It is not backed up, and is not intended to store your only copy of a file.



Tip! *The desktop of your engineering workstation is not backed up! Do not store files on it. Instead, consider using other methods, such as desktop shortcuts, to quickly get to the files you create and edit.*

Desktop Shortcuts

Your desktop will display additional shortcuts and folders when you have MicroStation installed on your engineering workstation. These include shortcuts to MicroStation, ProjectWise, Serval and InRoads (if installed) and the Engineering folder.



Engineering Folder

Double click the **Engineering** folder to open it and gain quick access to help documents specific to the ODOT CAD environment and shortcuts for launching other engineering applications. Files, folders and shortcuts typically found in the Engineering folder include ODOT_DGN_seed_files, ODOT_User_Configuration, Offline_Workspace, TeamViewer and ODOT Help. Other application shortcuts, if installed, may include Create Project, Descartes, MathCAD 15 and MathCAD Prime 2.0.

InRoads

Double-click the **InRoads** shortcut to launch both MicroStation V8i and InRoads V8i in the ODOT Engineering workspace. To access additional tools provided with InRoads V8i (e.g., Roundabouts, Civil Geometry and Data Acquisition), you may launch InRoads from the shortcut or the **Start** menu.

MicroStation V8i (SELECT SERIES 3)

Double-click the **MicroStation V8i (SELECT SERIES 3)** shortcut to launch MicroStation V8i in the ODOT Engineering workspace and open the **File Open** dialog.

Serval

Double-click the **Serval** shortcut to launch a tool developed to simplify finding and sharing engineering content stored in F: drives or in computer C:\Share folders with others at ODOT. Using Serval, you only need to know the name of the person with whom you want to copy files to or from. Refer to the Appendix B for more detailed instructions on using the Serval application.

ProjectWise Explorer

Double-click the **ProjectWise Explorer** shortcut to launch the main user interface for ProjectWise, from which you can access the datasources that contain projects, folders, and documents. Integrated applications such as MicroStation, Word, and Excel will allow you to log into the PW_ODOT datasource from the File Open dialog of the integrated application.

Working Offline

Before working on a laptop offline from the ODOT network, follow these steps:

1. While still connected to the ODOT network, launch the **Offline_Workspace** shortcut from the Engineering folder on your desktop. This will copy your Engineering Workspace, along with your user customizations from your Engineering Personal Server Share, to the C: drive of your laptop.



Reminder: If you don't run the *Offline_Workspace*, you will be unable to run *MicroStation*. Instead, the following error message will appear in a black text

window: “ODOT Workspace not found — Refer to Support for Assistance”

When this warning appears, you will be unable to run MicroStation until you reconnect to the network. This error typically appears when you work offline without copying the local workspace.

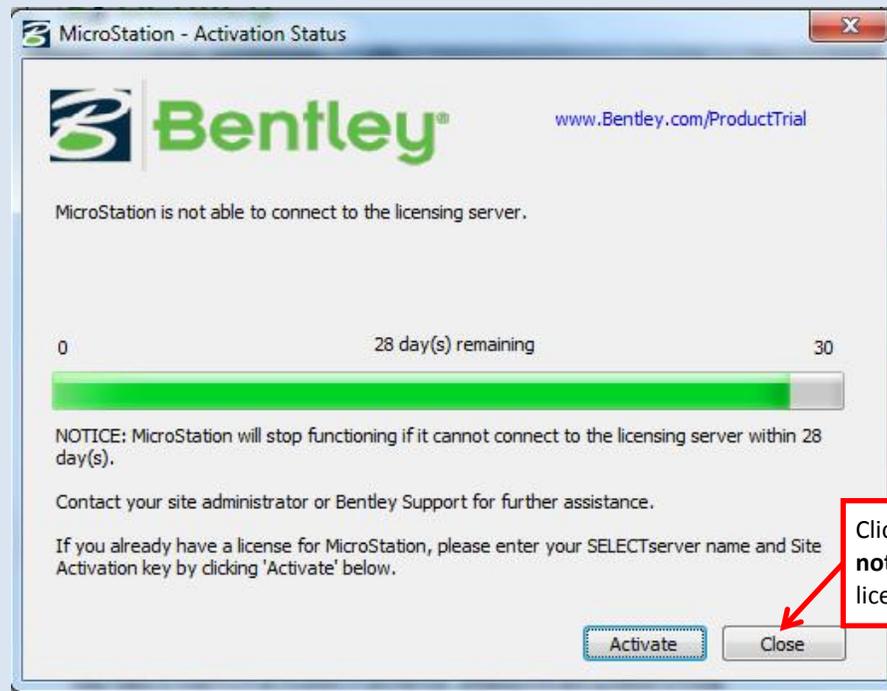


Note: The Engineering Workspace changes regularly and it’s important to have the latest customizations and standards available. After receiving a MicroStation Workspace Update email, run *Offline_Workspace* to copy the latest files to your computer.

2. Copy the CAD files you will need from your F: drive or wherever else they may be stored.
3. Launch MicroStation and InRoads (or any other Bentley software) you will be using while on the ODOT network. You cannot check out a license, but as long as you have launched the application within the last month, when connected to the ODOT network, a license will be available when you are off the network.



Note: The Activation Status dialog may open when you launch Bentley applications from the ODOT network. Click **Close** to close the dialog. Do **not** activate the license.



Obtaining Technical Support

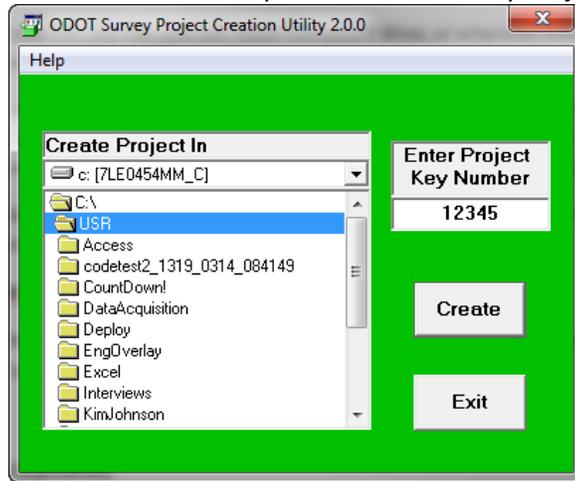
When you need technical assistance with MicroStation, contact the ODOT Computer Support Desk. They will connect you with an EAST member who may use the TeamViewer application to provide you with technical support. TeamViewer is similar to the Remote Assistance tool the ODOT Computer Support Desk uses when providing technical support. EAST members use TeamViewer to easily view both of your monitors and all of the InRoads dialog boxes. When needed, you will be instructed on how to launch this application.

Creating a Survey Project

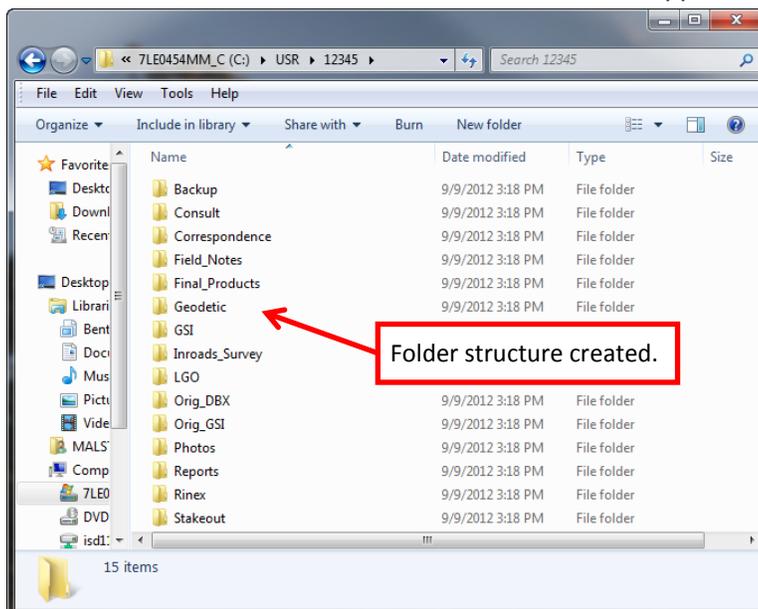
Surveyors using MicroStation and InRoads have an additional tool available from the Engineering Folder called **Create Project**. You can use this tool to create a standard folder structure with some standard default files that can be used to organize survey data. Geometronics defines and manages the files and folders that are set up.

To create a standard survey project folder structure:

1. Click the shortcut to open the ODOT Survey Project Creation Utility window.



2. Navigate to the folder to which you have “write” permissions.
3. **Enter Project Key Number** in the field on the right.
4. Click **Create** to create the folder.
5. Repeat steps 1 through 4 to create several folders without closing the tool.
6. When finished, click **Exit**. The folder structure created appears as follows:



The **Inroads_Survey** folder contains several key number named files (ALG, DGN, DTM, FWD, RWK and XIN). You can use the RWK file to launch InRoads and automatically open the corresponding files. The #####.XIN file contains the standard ODOT InRoads preferences which can be customized for a survey project.

MicroStation Basics

This chapter provides information about customizations that ODOT has made to MicroStation.

Launching MicroStation

There are several methods to open MicroStation files. Some methods launch directly into MicroStation and some will cause a ProjectWise Log in dialog to appear. The ProjectWise Log in dialog allows you to choose the location of your data and controls whether the next window is the **ProjectWise** File Open dialog or the **Windows** File Open dialog. When you log into a ProjectWise datasource to open or save data, you will see the integrated dialogs. The integrated dialogs have fields and icons that access the ProjectWise datasource, and search or filter based upon document properties. Only the **Windows** File Open dialog allows you to change the User Options and Interface. User Options and Interfaces are discussed in “Using the Windows File Open Dialog” section below.

To launch MicroStation **with** a ProjectWise Log in dialog:

- Double-click the **MicroStation** shortcut on the desktop
- Click **MicroStation** on the **Start** menu
- Click a **MicroStation task** that is pinned to your task bar
- Right-click on a DGN file found in the ProjectWise Explorer, and choose **Open** (technically, you had to log in to the ProjectWise Explorer)

To launch MicroStation **without** a ProjectWise Log in dialog:

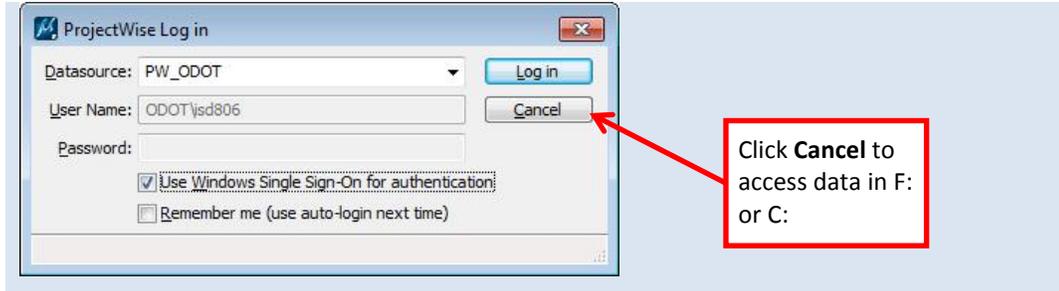
- Double-click on a DGN file in Windows Explorer if the file is associated with MicroStation
- Hover over **MicroStation** on the **Start** menu, to open a menu with the latest opened files and click a specific file to open it directly in MicroStation
- Hover over a **MicroStation task** that is pinned to your task bar, to open a menu with the latest opened files and click a specific file to open it directly in MicroStation



Caution! Fully exit MicroStation and relaunch to change from accessing data in a ProjectWise datasource to the Windows file system. Also, fully exit an open Windows file and relaunch MicroStation to log in to a ProjectWise datasource.

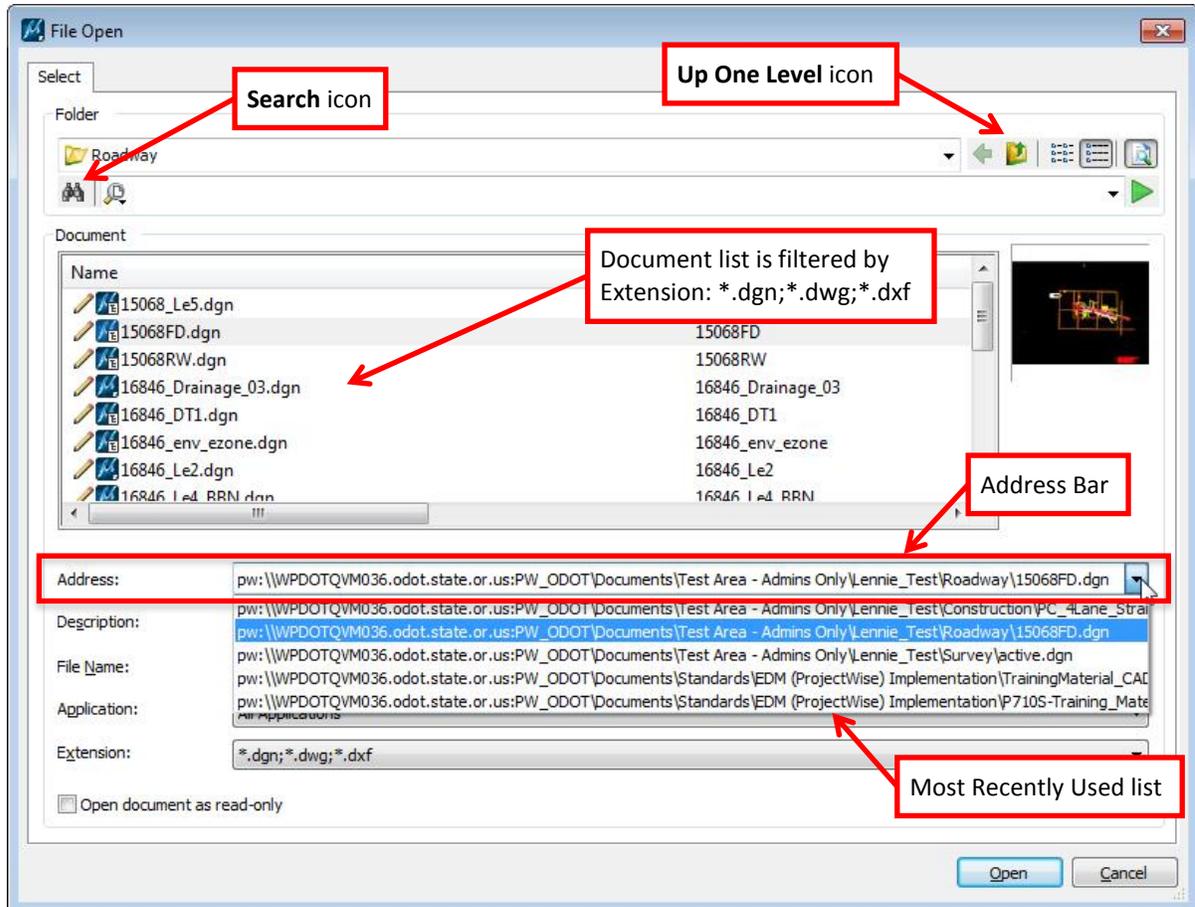


Tip! You may prefer to hold off checking “Remember me” when logging into a ProjectWise datasource until more than half your projects are stored in PW_ODOT. Make the choice of where to look for your data right after launching MicroStation. If the data is stored in the Windows file system (F: drive, crew share, or C: drive), choose **Cancel** to access the Windows File Open dialog; if the data is stored in PW_ODOT, then choose **Log in** to access a ProjectWise datasource.



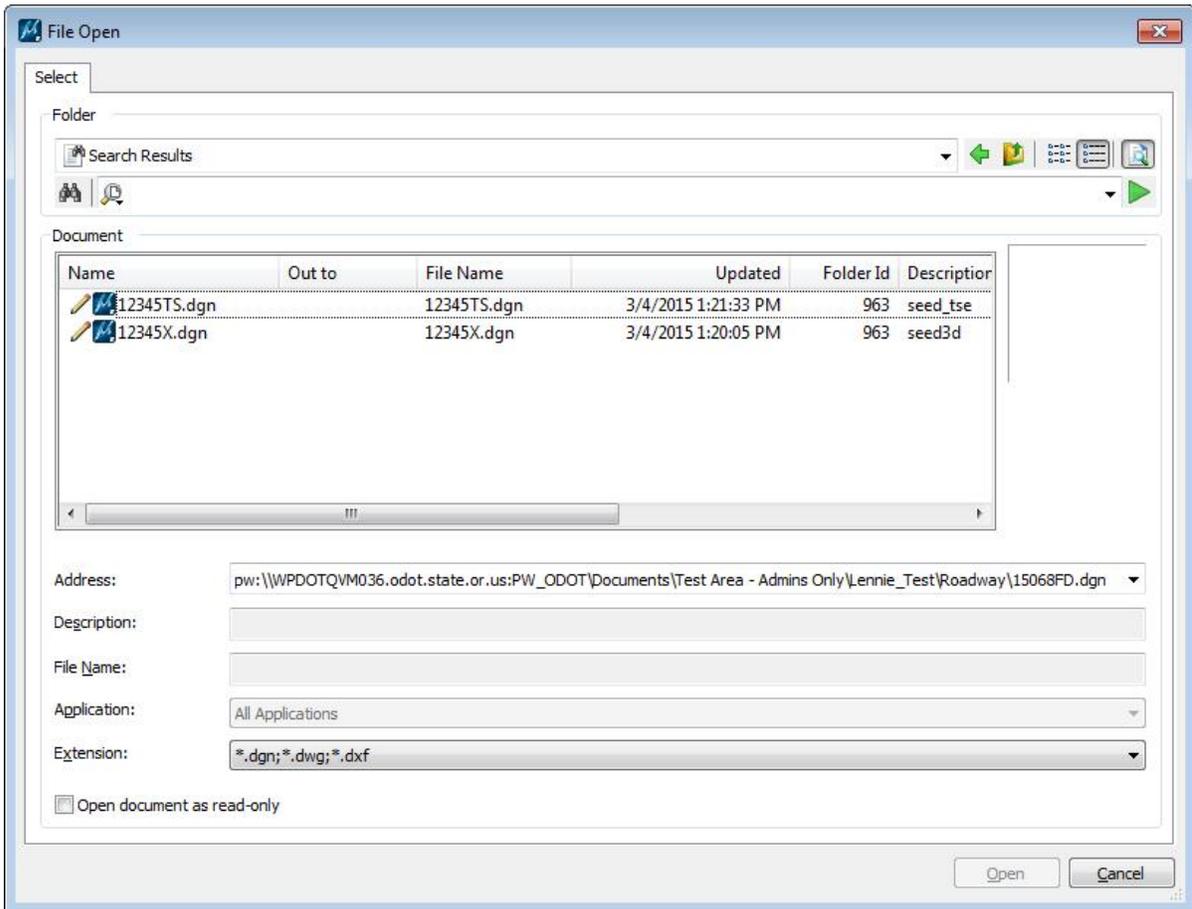
Using the ProjectWise File Open Dialog

The *integrated File Open* dialog allows you to locate and open existing folders and MicroStation files stored in a ProjectWise datasource.



The address bar in the integrated File Open dialog contains a Most Recently Used list. When expanded, the MRU list will display all documents (.txt, .docx, etc.) recently opened from ProjectWise, not just with MicroStation. The address field will be populated with the MicroStation DGN file that was most recently accessed by you that is stored in ProjectWise or may be blank if the most recently opened files were not DGNs.

A quick search can be performed or a saved global or personal search can be executed by clicking the **Search** icon. Search results are displayed in the document list.



The document list is always filtered by the Extension: field at the bottom of the integrated File Open dialog. The document list displays the same columns or properties as your selected view using View>Manage Views... in the ProjectWise Explorer. Columns may be sorted by clicking on the column headers in the document list.



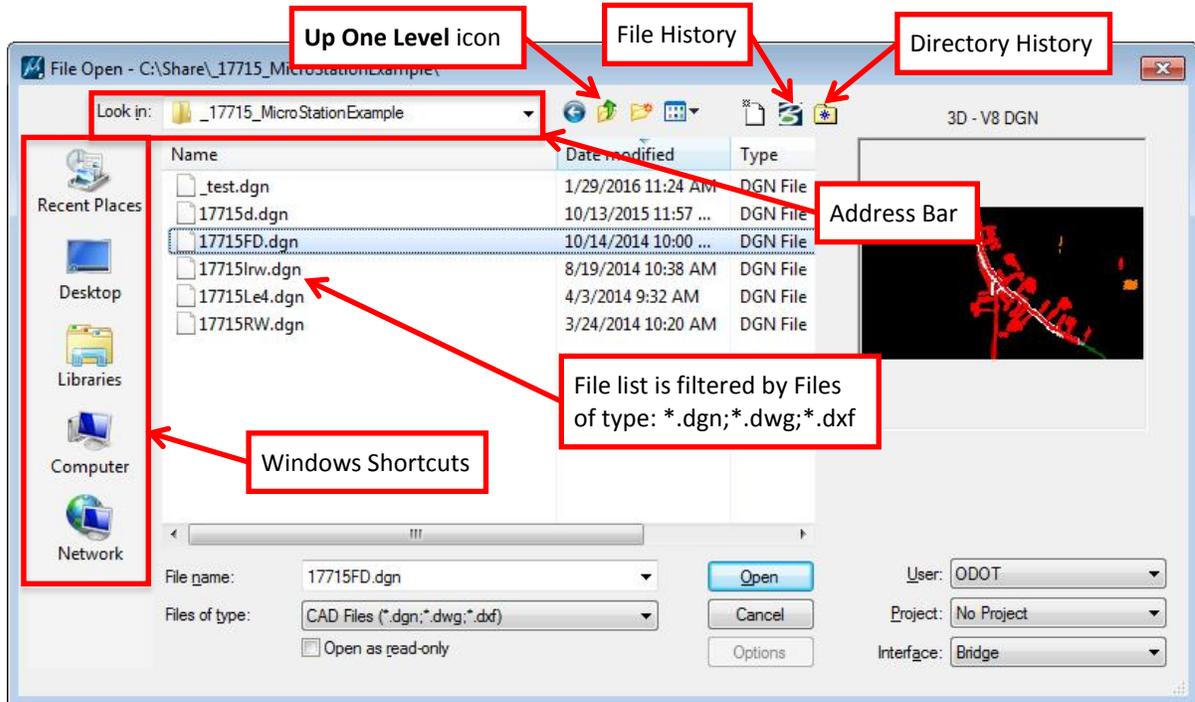
Note: You may open only one MicroStation design file at a time. The ProjectWise File Open dialog allows you to “Open document as read-only” by checking the box in the lower left corner.



Warning: When changing design file locations between a project stored in ProjectWise and a project stored on a Windows server, exit the MicroStation application and re-launch. Do not use File>Open or the file history from within the MicroStation application when the next file is stored in a different data source (ProjectWise versus Windows).

Using the Windows File Open Dialog

The **Windows File Open** dialog allows you to locate and open existing folders and MicroStation files stored on a server or your computer, create new folders or MicroStation files, or allows access to different configurations and customizations.

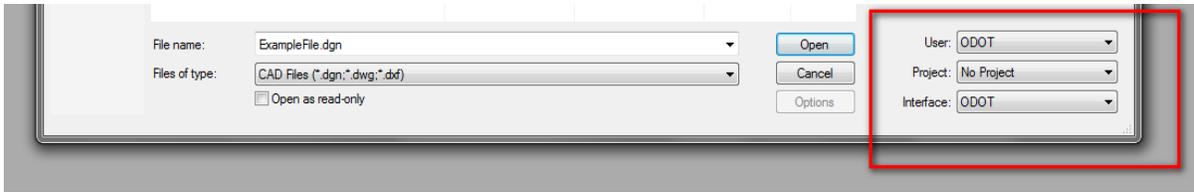


The address bar in the **Windows File Open** dialog may be expanded to show the entire directory tree. The File History icon shows a list of recently opened design files. The File name: field will be populated with the MicroStation DGN file that was most recently accessed by you that is stored in the Windows file system. Be careful – only open DGN files stored in ProjectWise from the *integrated* (ProjectWise) **File Open** dialog. When using the **Windows File Open** dialog, avoid selecting files on your C:\ drive from the Windows history.

Warning: Do not use the Windows File Open dialog or file history to select MicroStation design files stored in C:\pw_work – ever! You may only see the parent folder name of dms#### in the Address Bar. These files are local copies of files stored in the ProjectWise datasource. To work in those files, log in to the ProjectWise datasource and use the integrated File Open dialog.

User Options — Training and Example Files

On the Windows File Open dialog, you may access and open training files or examples from Bentley to improve your MicroStation skills. To access these files, you need to select a **User** in the lower right corner of the File Open dialog.



You can choose from several different User options as identified in the table below. For ODOT production drafting, you should always open with the User set to **ODOT**.

The Options area is not available on the *integrated* (ProjectWise) **File Open** dialog.

Table 1. MicroStation User Options

User	Source
Examples	Provided by Bentley and typically used in Bentley classes
ODOT	ODOT Production drafting interface
Student	Optional, Classroom training from CAD Productivity if attended training
Untitled	Delivered by Bentley
New	Delivered by Bentley, not for ODOT use

Project Options

For ODOT production work, you should select the **Project** option of **No Project**. If you have attended vendor training, you may have additional choices available to you.

Interface Options

The first time you launch MicroStation, it sets the **Interface** option to **ODOT**. If you change the interface on the Windows File Open dialog, the next time you launch MicroStation the last interface used will open. The available interface options are listed in the table below.

The Interface Options are not available on the ProjectWise File Open dialog. To change the interface, i.e. from ODOT to Survey, you must cancel out of the ProjectWise Log In to get to the Windows File Open dialog. Make the interface change and open a file in Windows to save the change of interface.

Table 2. MicroStation Interface Options

Interface	Select to ...
Bridge	Load Bridge tasks and workflows
Geo_Hyd_Env	Load Geo, Hydro and Enviro tasks and workflows

Interface	Select to ...
ODOT	Load all ODOT workflows
Roadway	Load Roadway tasks and workflows
Survey	Load Survey tasks and workflows
Traffic	Load Traffic tasks and workflows
New	Not used at ODOT, see User Customization chapter for more information

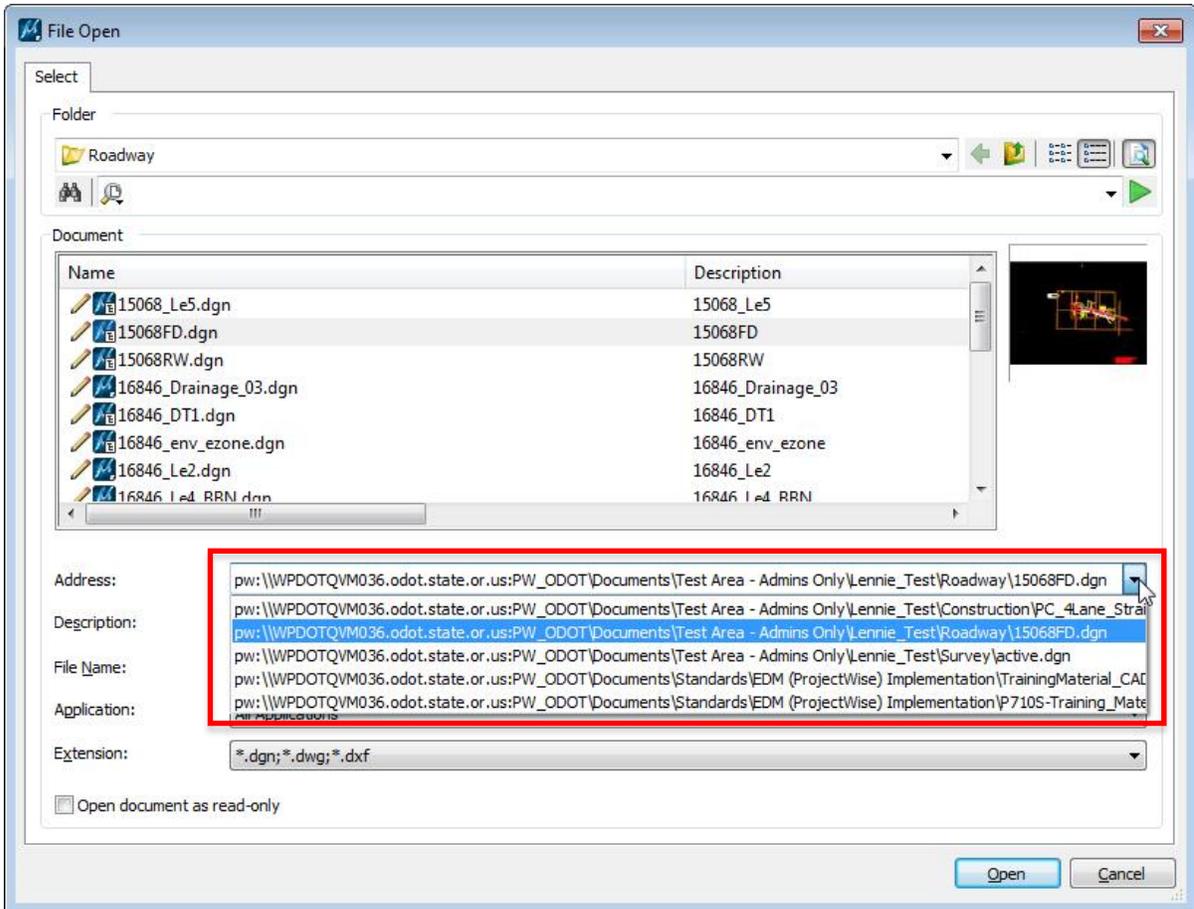


Tip! If you typically double-click MicroStation DGN files in Windows Explorer to open them, the file opens with the last interface selected. The only way to change the interface is to launch into the Windows File Open dialog from a MicroStation shortcut.

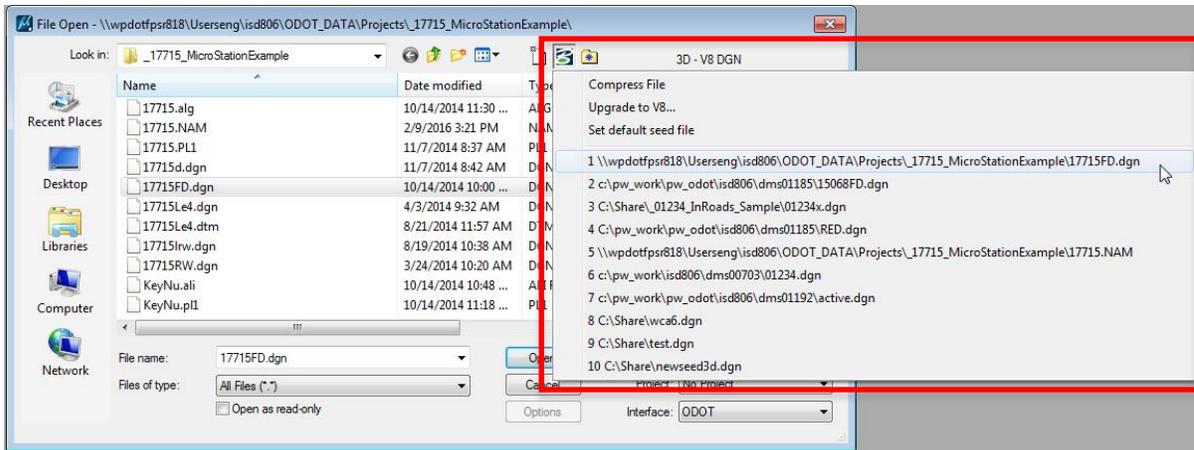
Viewing File History

To quickly view a list of recent file activity, you can:

- Use either the ProjectWise or Windows File Open dialog. Both dialogs open with the last MicroStation file that you opened in the Address or File name field. The ProjectWise File Open dialog has a Most Recently Used list of the five most recent of any type file under the address bar, while the Windows File Open dialog has a File History icon that displays the ten most recent MicroStation DGN files. If the Windows directory or file cannot be accessed, MicroStation will open to a default location on your computer’s hard drive.

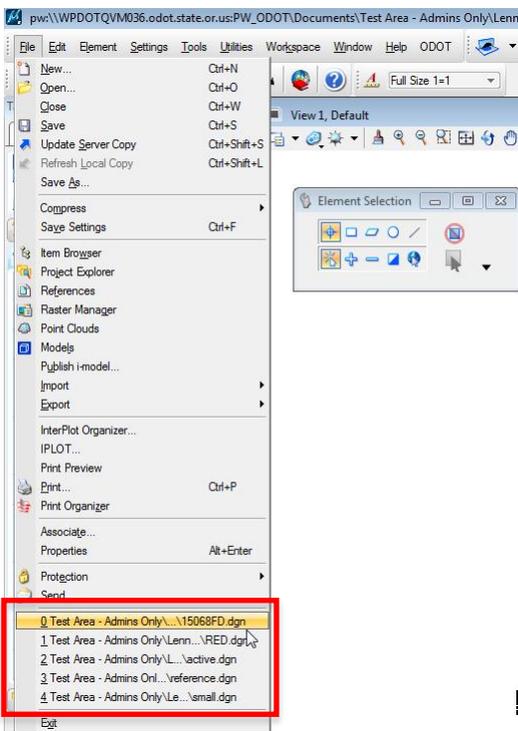


The ProjectWise (integrated) File Open – MRU List – 5 documents, any type

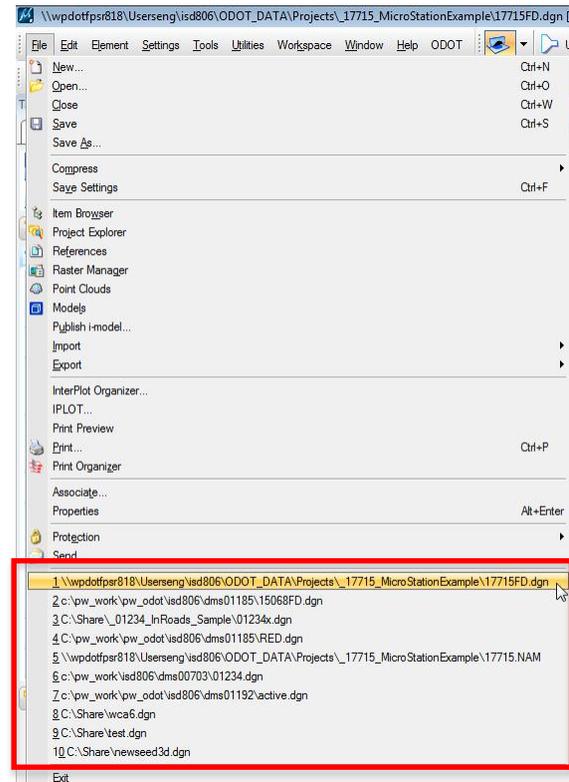


The Windows File Open File – History List – 10 DGN files

- Select **File** on the main MicroStation menu. If you are logged into ProjectWise, it will display the last 5 MicroStation design files stored in ProjectWise that were opened. If you have a file stored in the Windows file system open, it will display the last 10 files opened in MicroStation.



ProjectWise data – 5 DGN files



Windows data – 10 DGN files



Warning: Do not use the Windows file history to select MicroStation design files stored in C:\pw_work – ever! These files are local copies of files stored in the ProjectWise datasource. To work in those files, log in to the ProjectWise datasource and use the integrated File Open dialog.

- Right-click **MicroStation** on the **Task Bar** to view recent file activity of MicroStation design files stored in the Windows file system only.



Caution! *If a design file stored in the Windows file system is renamed or moved, you cannot open the file using the file history. Use the Windows File Open dialog to navigate to the file.*

Creating New MicroStation Files

No matter whether you are creating new files to be stored in ProjectWise or in the Windows file system in a crew share or your F:\ drive, you will need to select a seed file or template to be used in that creation. The seed files have particular properties set in their master model, a specific dimensionality (2D or 3D), and may have cache files pre-attached or have elements already drawn into the file as a starting point.

Seed Files

ODOT delivers several seed files in ODOT_Space\V8i that are used for different MicroStation products. A shortcut to the seed files in the workspace closest to your location is stored on your computer's desktop in the Engineering folder. The ODOT_DGN_seed_files shortcut is there to make the seed files more easily accessible when creating new MicroStation design files.

Table 3. Seed Files

Seed File Name	Purpose	Distinguishing Characteristics	Discipline Owner
Seed.cel	Create new cell library	Default model may be placed as cell. Line style scale set to Global. Annotation scale set to Full Size.	EAST
Seed_OM.dgn	Drainage Facility drawings	Based on seed2d.dgn. Includes Notes to Drafters and example features and elements to use.	GeoEnvironmental
seed_tse.dgn	Landscape title sheets for construction project plans	Includes border and elements to include in the drawing; titlesheet.cel is attached; cache_tse reference file is attached, annotation scale set in default model, Line Style Scale set to Annotation Scale.	Roadway
Seed_TWM.dgn	Temporary Water Management drawings	Based on seed2d.dgn. Includes example sheet with notes.	GeoEnvironmental
Seed2d.dgn	Standard 2D file	2D seed file; includes 10 levels that can be renamed, annotation scale set in default model, Line Style Scale set to Annotation Scale.	EAST
Seed3d.dgn	Default 3D file	3D seed file selected by default; includes 10 levels that can be renamed, annotation scale set in default model, Line Style Scale set to Annotation Scale.	EAST

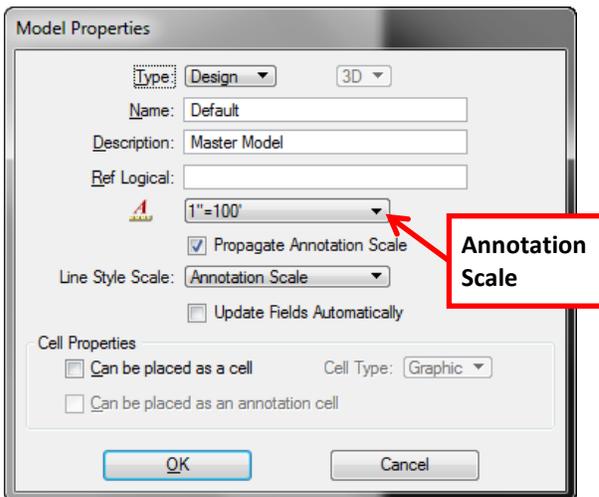
Seed File Name	Purpose	Distinguishing Characteristics	Discipline Owner
Seed811tse.dgn	Portrait title sheets for construction project plans	Includes border and elements to include in the drawing; titlesheet.cel is attached; cache_tse reference file is attached; contents of several cell libraries are written into the file	Roadway
SeedRW2d.dgn	Several different Right of Way products	Includes a variety of sheet and drawing models used for different products; instructions and elements are drawn in the various models	Cadastral
SeedV8.nam	Two stacks of title blocks, 1"=200' and 1"=100' for use as reference or cell	2D, Default model can be placed as a cell, Line style scale set to Global. Annotation scale set to Full Size.	Roadway



Tip! If you have some standard features you repeatedly incorporate in files, contact an EAST member on how to set those features in your own custom seed file. Remember, that if the standard seed files are updated, you will want to apply those changes to your custom seed file.

ODOT Models and Properties

The default model properties in the **seed2d.dgn** and **seed3d.dgn** files are shown below. The annotation scale is set to **1"=100'**. Set the annotation scale in the models you create for cells, text and line styles to display correctly.



Tip! Most ODOT cells have been reduced in size to work with annotation scale. If you open an older file (one created prior to 2012), annotation scale is not set in any of the models. When you place cells from the ODOT cell library, they will come in very small. If you set the annotation scale that is correct for the model, the cells will scale to the intended size.

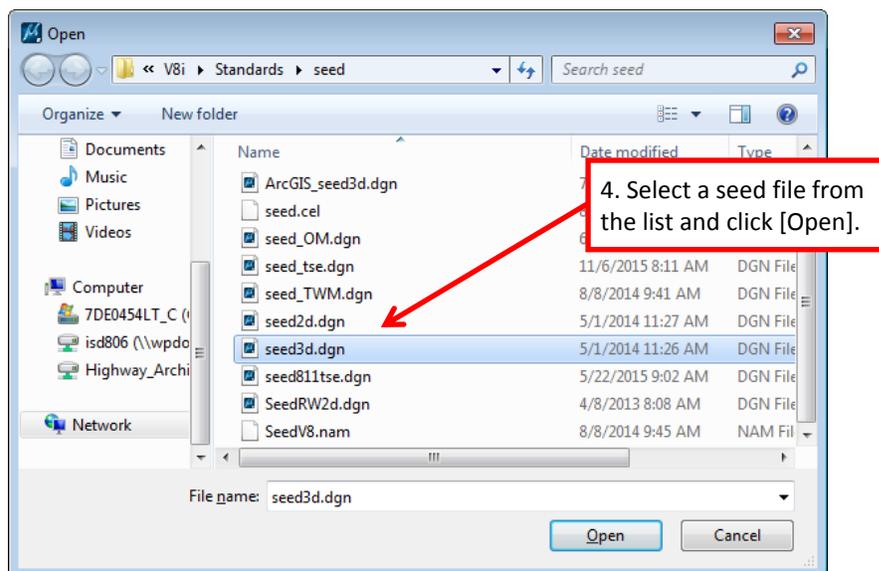
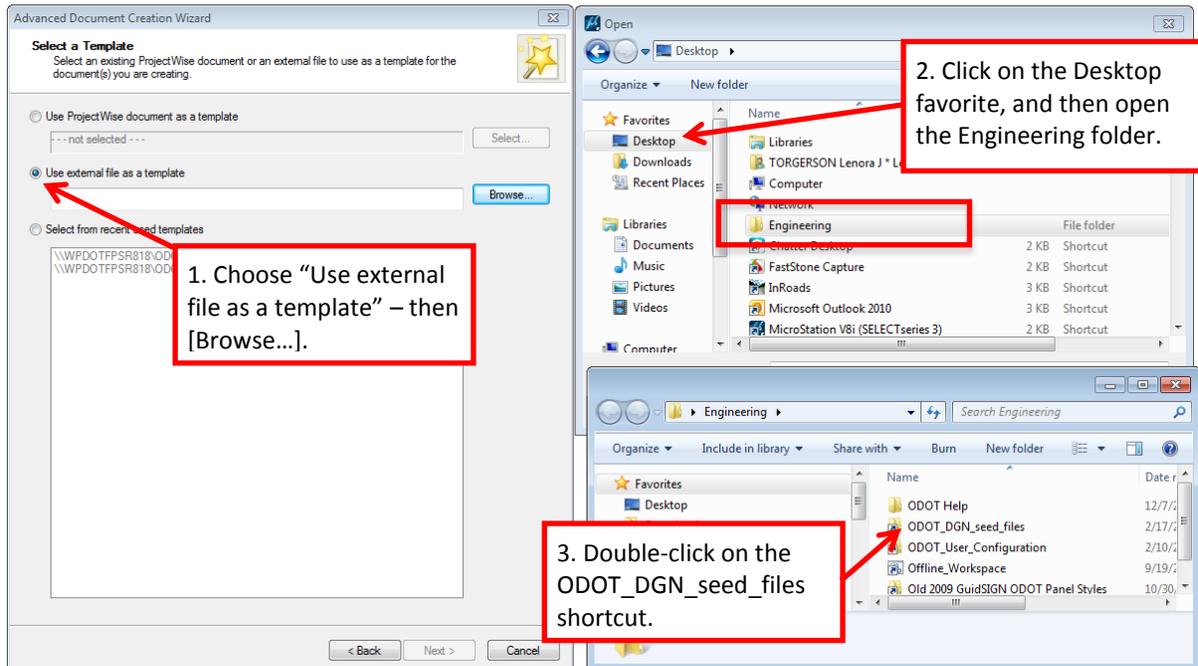
Using the ProjectWise Document Creation Wizards

When **File>New** or the **New File** icon is selected, and the active MicroStation design file is stored in a ProjectWise datasource, a **New** dialog appears allowing you to select a “Document Creation Wizard”, either the Advanced Wizard or No Wizard.

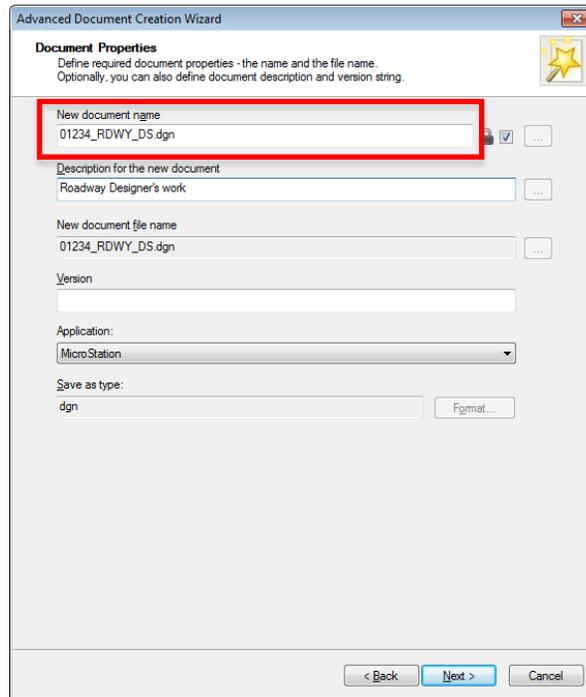
The Advanced Wizard

When you select the Advanced Wizard, a multi-step dialog opens that allows you to select the target folder of the new file, select a template (choose a seed file), and fill out document attributes and properties, such as the new document name.

The preferred method for selecting a template is to use the ODOT_DGN_seed_files shortcut in the Engineering folder on your dekstop.



At the “Document Properties” step, name the document with the file extension (.dgn).

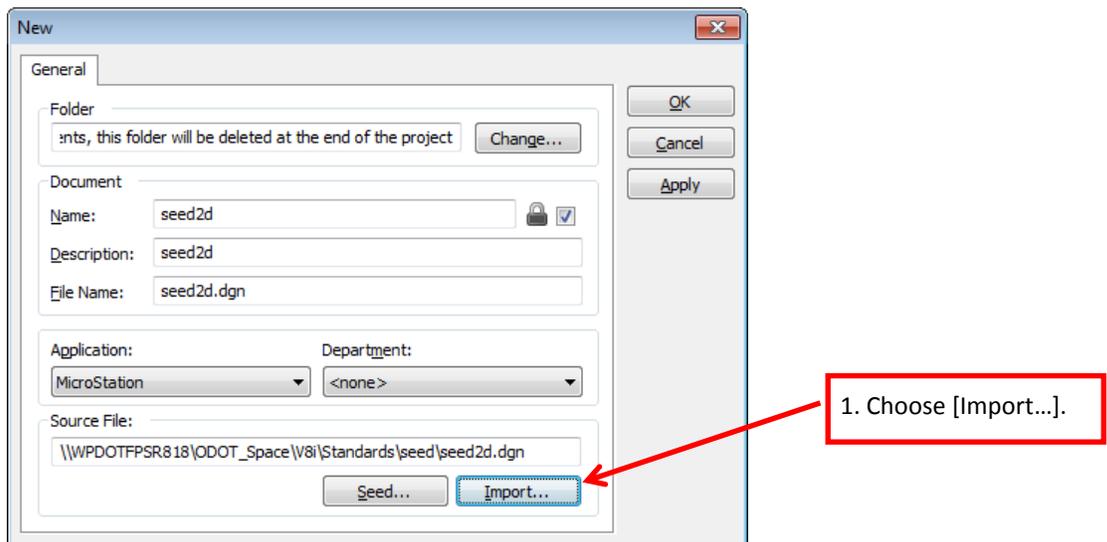


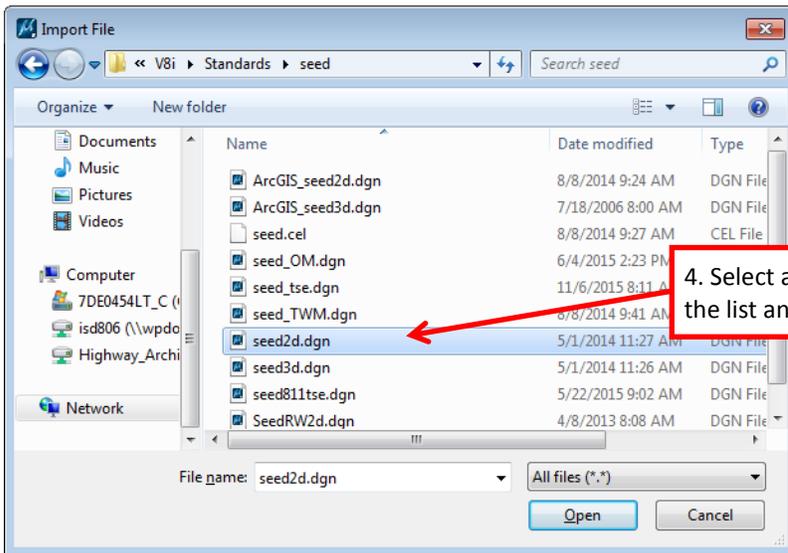
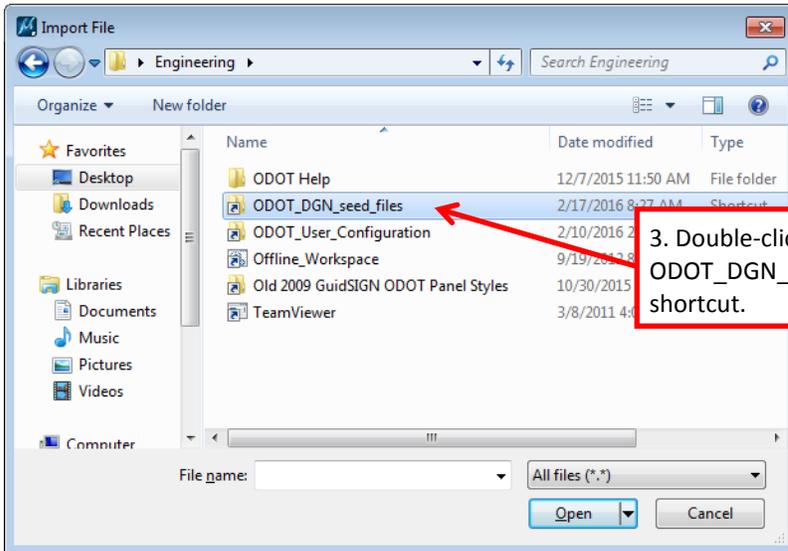
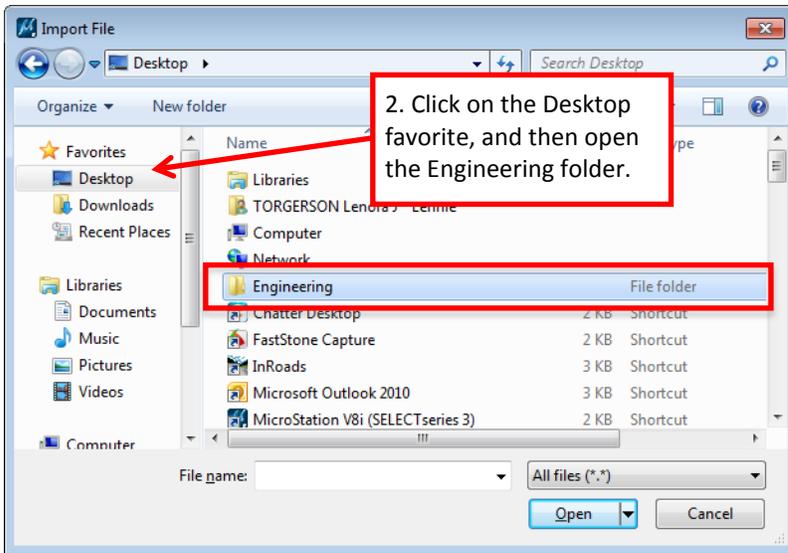
After you click **Finish** on the Advanced Document Creation Wizard, the new file will be created in ProjectWise with the attributes and properties that you set. A MicroStation **Check In** dialog will open for you to make a choice about freeing or checking in the current design file; once that is done, the new file will be opened.

No Wizard

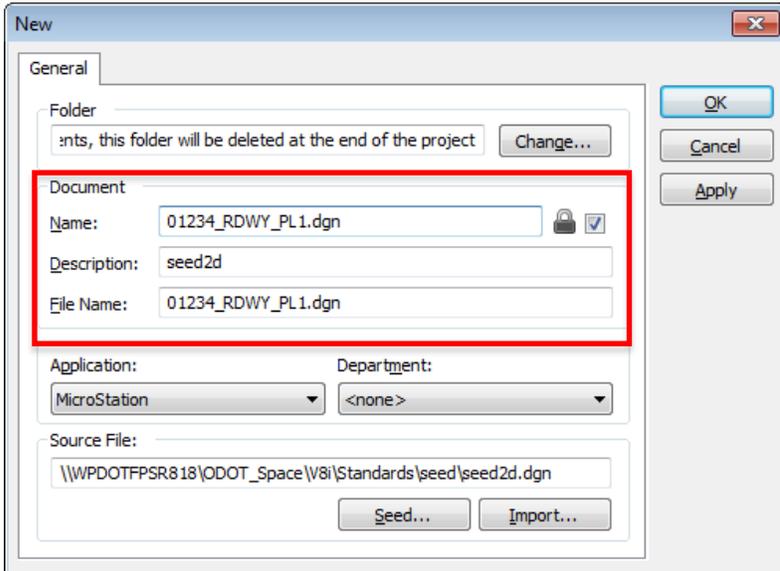
The No Wizard option produces a single dialog that allows you to change the target folder and select a Source File (seed) using an **Import...** button. This option does not allow attributes to be entered.

The preferred method for selecting a Source File is to use the ODOT_DGN_seed_files shortcut in the Engineering folder on your desktop.





Before clicking **Apply** or **OK**, it is important to name your document. Make certain that you include the file name extension in the document name so that the document and file name are the same.

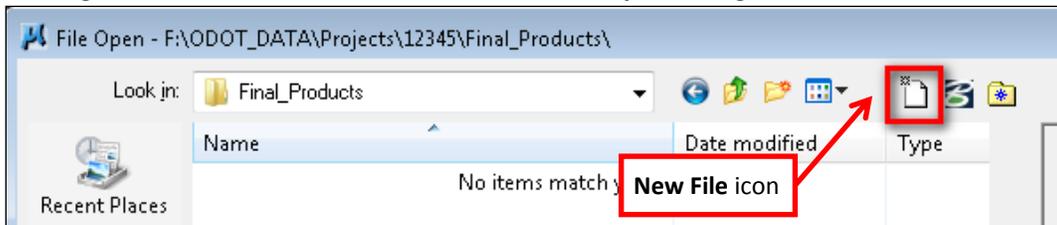


After you click **Apply** or **OK** on the **New** dialog, the new file will be created in ProjectWise. A MicroStation **Check In** dialog will open for you to make a choice about freeing or checking in the current design file; once that is done, the new file will be opened.

Using the Windows File System

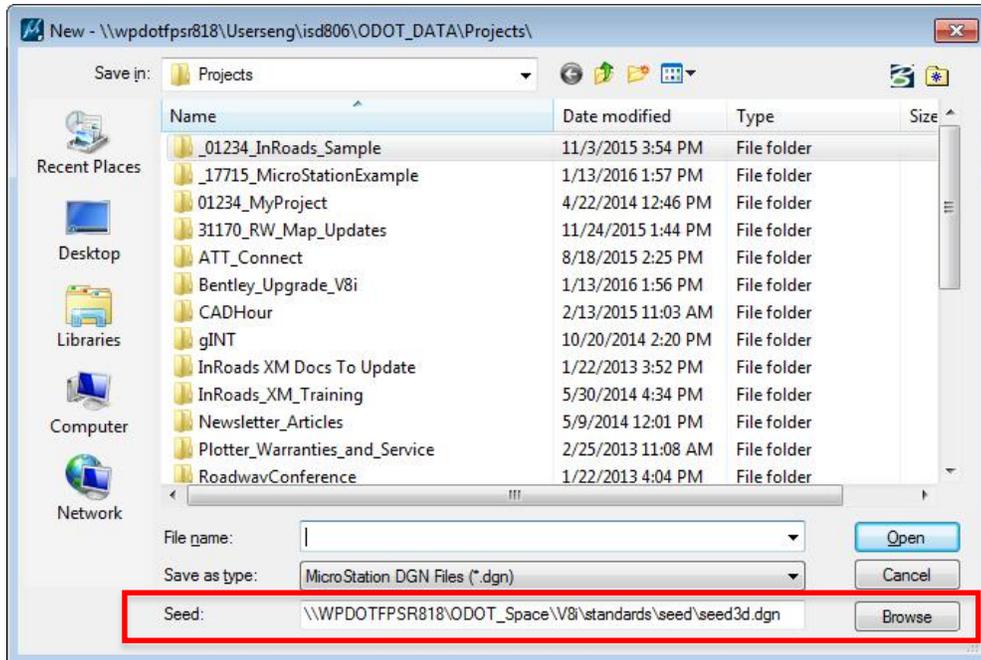
Launching the MicroStation application to open files stored in the Windows file system (this means you have cancelled out of the ProjectWise Log in dialog) allows you two methods for creating new files:

- Clicking on the **New File** icon on the **Windows File Open** dialog, or

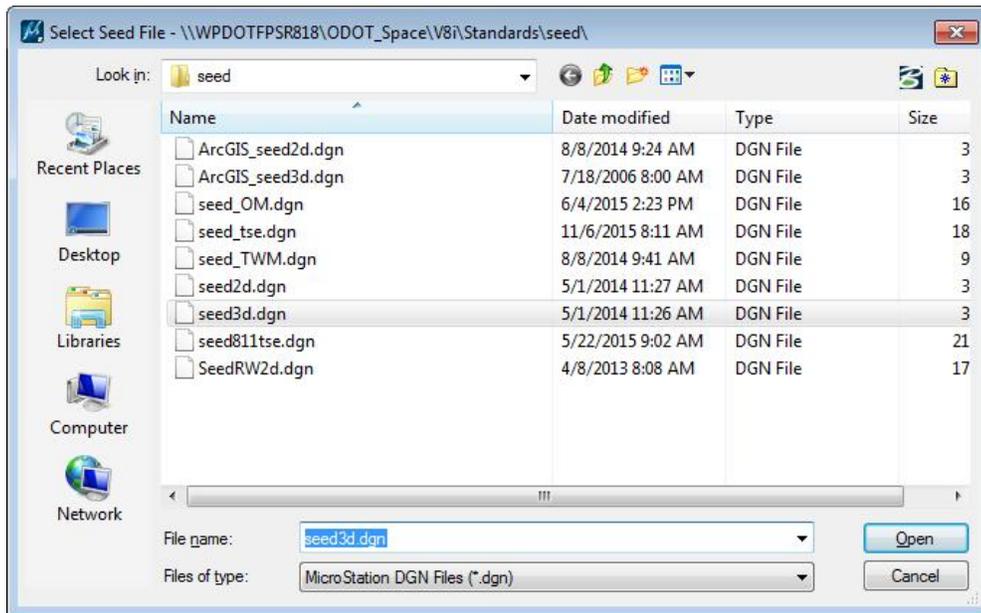


- Selecting **File > New** on the MicroStation menu.

Both methods for creating a new file in the Windows file system will cause a **New** dialog to open, which lists the current seed file at the bottom. The ODOT default preferences set the initial seed file to seed3d.dgn.



To change the seed file, click the **Browse...** button and a **Select Seed File** dialog will open. Select a seed file from the list and click **Open**.



With the correct seed file listed on the **New** dialog, name the new file and click **Open**.



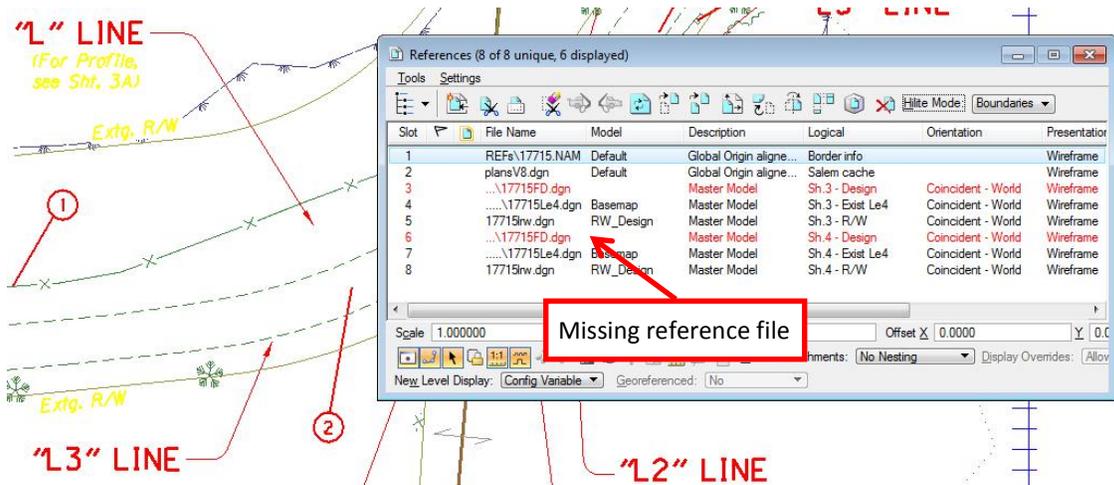
Caution! Do **not** copy existing files, rename them and delete elements out of the file to create new files. Copies of existing files may contain non-visible elements, non-graphical data, and even corruptions.



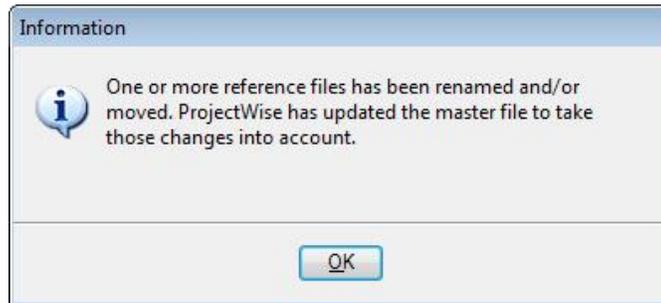
Tip! The seed files delivered in ODOT_Space\V8i are configured to support ODOT standard business processes; creating new files from an ODOT seed file ensures that you have the latest updates.

Reference File Attachments and Reference Sets

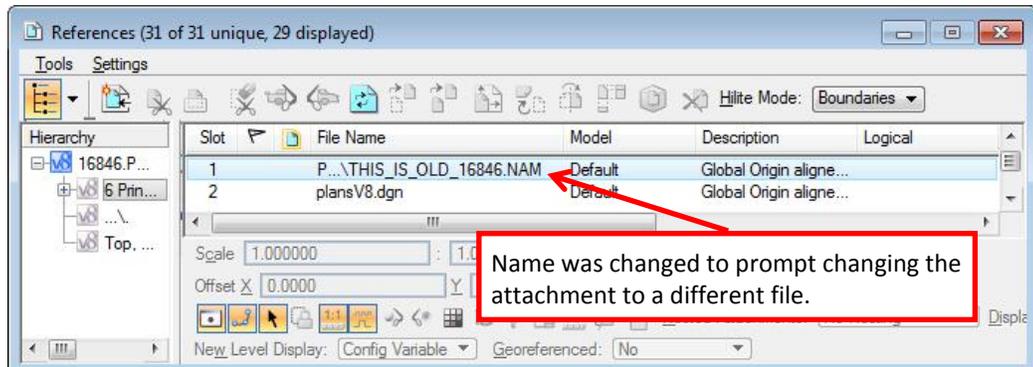
Reference attachments can be made in the **Windows file system** to view other models that are also stored in the Windows file system. It is fairly easy to break a reference attachment by renaming or moving the referenced file. In Windows, when the reference attachment cannot be found, the data is not displayed and the attachment information appears in the **Reference** dialog with red text.



ProjectWise documents have globally unique identifiers (GUIDs), which are used in addition to folder and document names that make it difficult to lose reference attachments in a ProjectWise datasource. In ProjectWise the relationship between a master document and its attachments is known as a set. If a referenced ProjectWise document's name or location is changed, when the parent design file is opened, MicroStation updates to the new name or location and informs you of the update. Because of the GUID, it is difficult to lose a reference in a ProjectWise datasource.

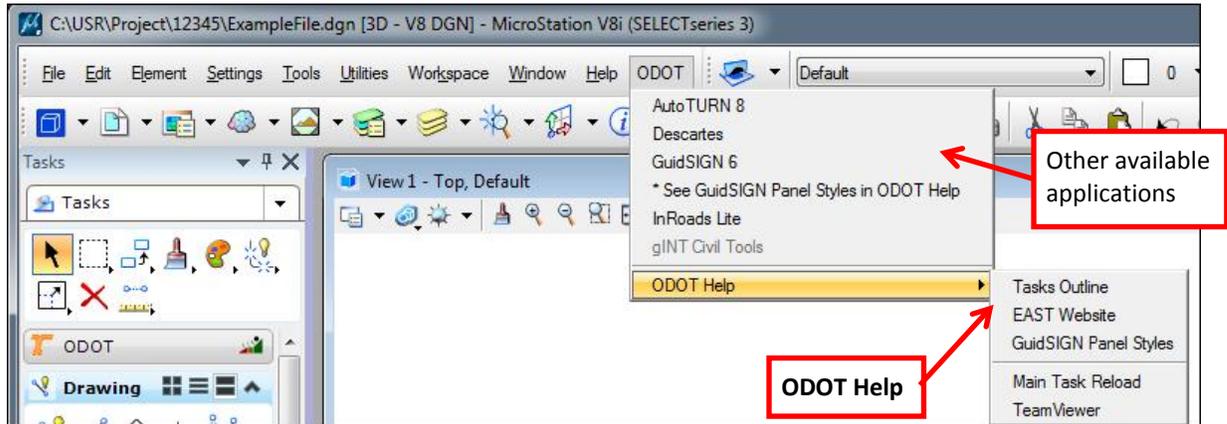


After clicking **OK** to dismiss the **Information** dialog, you should open the **References** dialog to determine the reason for the change.



Loading Additional Applications

On the main menu is the **ODOT** menu. When you select **ODOT**, a drop-down menu lists other application you can install or access on your workstation’s hard drive. You may also access different **ODOT Help** options from the ODOT menu.



Other software applications you can install and access include:

- AutoTURN 8, Descartes, GuidSIGN 6, InRoads Lite (a convenient version of InRoads but with reduced capability), and gINT Civil Tools. Additional software must be installed by a FSU technician before it will appear on this list.
- Axiom Office Importer. This server-based application is available to some MicroStation users. The software has not been purchased for all ODOT locations, so it is not always available.

Getting Help with MicroStation

You may obtain help with MicroStation from multiple sources:

- Select **Help** on the main menu to open the Bentley-provided help sources.
- Select **ODOT > ODOT Help** and select from the various resources on the drop-down menu. These include:
 - Tasks Outline
 - EAST Website (link to site)
 - Main Task Reload
 - TeamViewer

Tasks Outline provides an overview of the ODOT Tasks and Workflows. Use this tool to gain familiarity with and search for the locations of tasks and workflows.

Main Task Reload may be used to re-open the main Tasks if you accidentally close it by clicking the **X** next to the **Pin** icon.

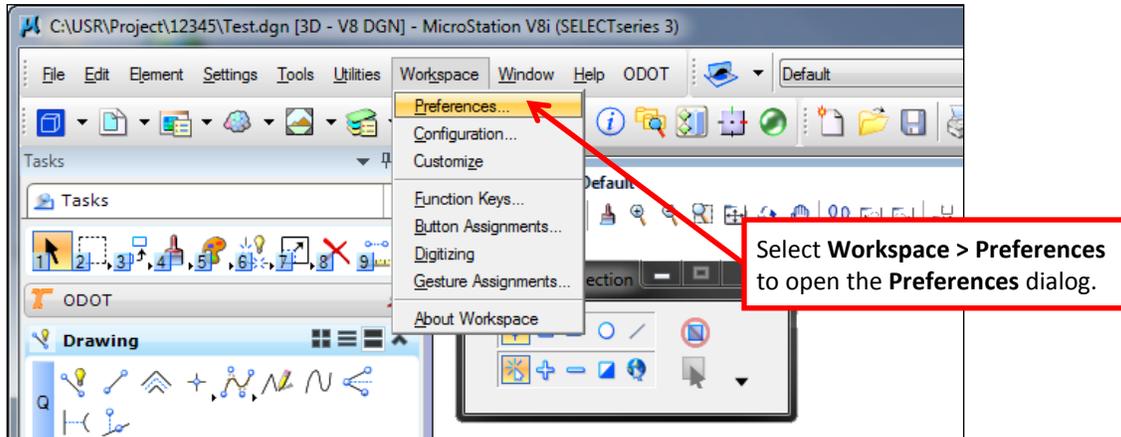
TeamViewer is the tool that allows EAST analysts to remotely assist you with technical issues associated with MicroStation.

Setting User Preferences

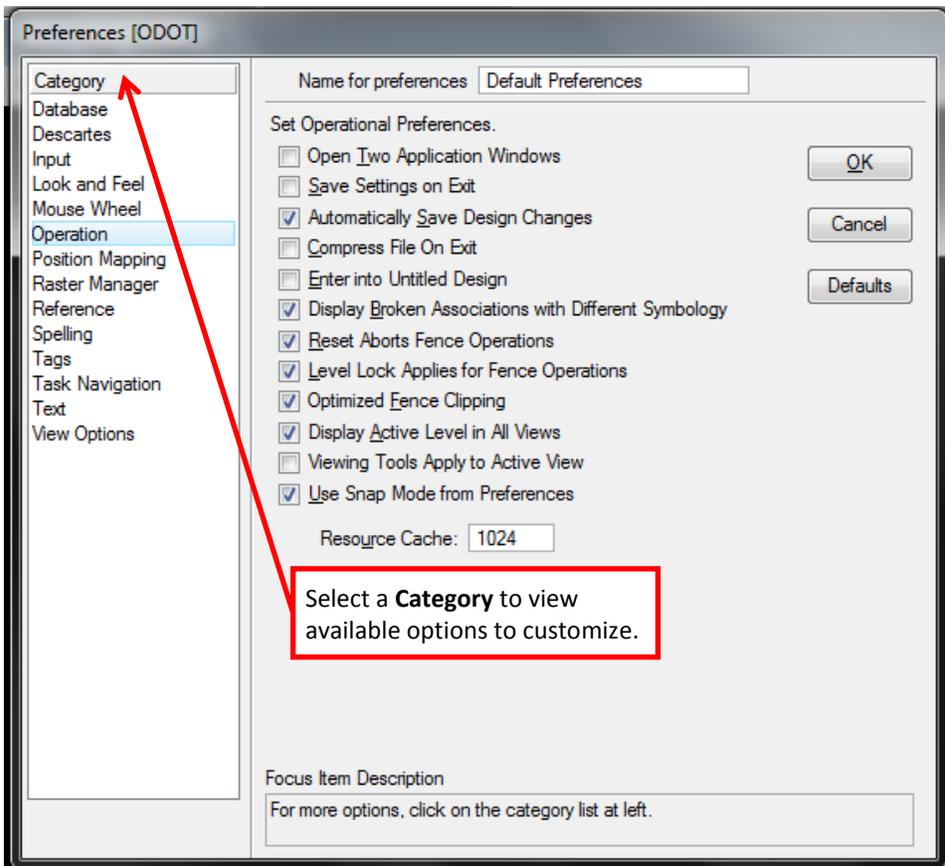
You can customize the user preferences within MicroStation to meet your specific needs based on the how you use MicroStation.

You can set preferences for the database, Descartes, input, look and feel, operation, position mapping, raster manager, reference, spelling, tags, task navigation, text and view options.

To make changes to the MicroStation preferences, select **Workspace > Preferences** on the main menu.



This will open the Preferences dialog.



Select a category in the list on the left to view the options you can set for the selected preference. In general, the Default Preferences are the same as the defaults provided by Bentley.

Preference categories that you may want to modify include the following:

- **Operation Category:**
 - **Open Two Application Windows:** Select if you have dual monitors, you may want to open two different windows that you can adjust to each monitor. Alternatively, you may prefer to run with just one window but drag the MicroStation window over both monitors.
- **Text Category:**
 - You can modify the size of the font displayed in the Text Editor by setting the **Text Editor Font Size**.
- **View Options Category:**
 - **Line Weights...:** By default, the user preference for line weights is set to 1.5:1. Some ODOT employees prefer to set this to 1:1 or 2:1. Click **Line Weights** to open the dialog and set the line weight.
 - **Design Model Background Color:** If you typically change the background color of the files you work in, you can set it as a user preference instead of modifying each file you work in.
 - **Element Hilite Color:** You can set the element hilite color and selection set color to override the Design File settings.

Accessing Extra Tools – Custom

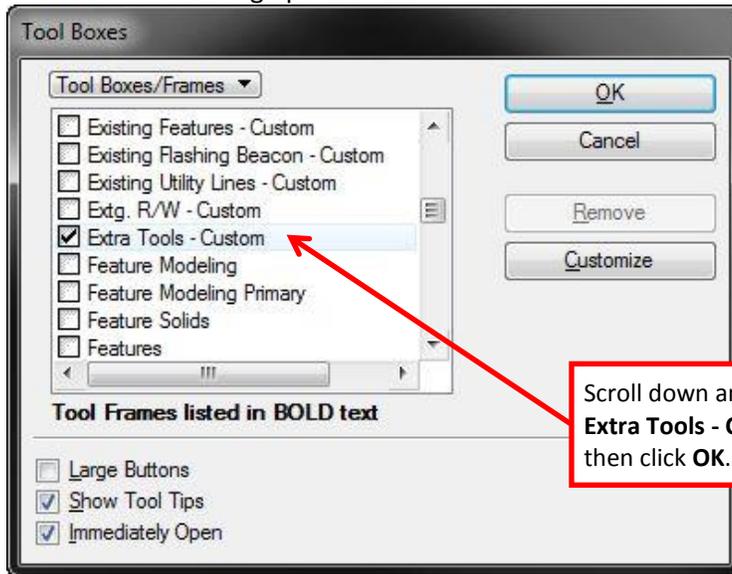
A toolbox called **Extra Tools – Custom** has been docked in the ODOT User Preference Files (UPF) for ODOT users.

If the Extra Tools – Custom toolbox is not available, you can display it and dock it for your use:

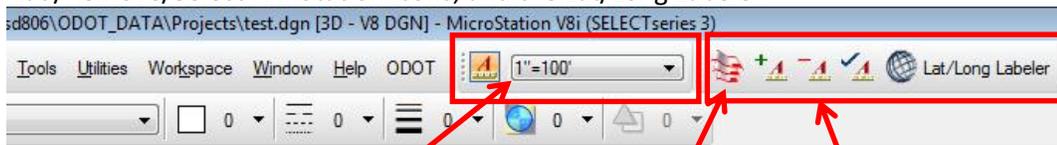
1. Select **Tools > Tool Boxes** from the main menu.



The Tool Boxes dialog opens.



2. Scroll down and check the **Extra Tools – Custom** box and click **OK**. The extra tools appear on the tool bar. These include the Drawing Scale toolbar, the Print Organizer icon, the Add/Remove/Select Annotation icons, and the Lat/Long Labeler.



Drawing Scale toolbar

Click to launch Print Organizer.

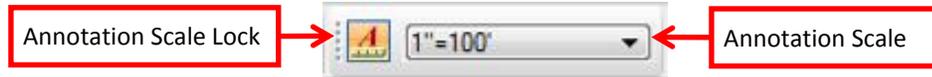
Add/Remove/Select Annotation buttons.

- Click the **Print Organizer** icon to open Print Organizer.
- Use the **Add/Remove Annotation (+A and –A)** buttons to add or remove annotation scale attribute. Find additional details in Appendix A or the InRoads User Guide - Workflows.
- Use the **Select Annotation (✓A)** button to select previously placed annotation.



Caution! Use these with a selection set or the results may impact your annotation in unexpected ways.

- The **Lat/Long Labeler** icon invokes the Label Geographic Coordinates dialog for annotating latitude and longitude.
- The **Drawing Scale** toolbar contains the **Annotation Scale Lock** and the **Annotation Scale**.



To select an annotation scale for the active model, click the **Annotation Scale** to choose one from the drop-down list. Prior to placing any text, annotation cells or line styles, ensure that the **Annotation Scale Lock** is on.

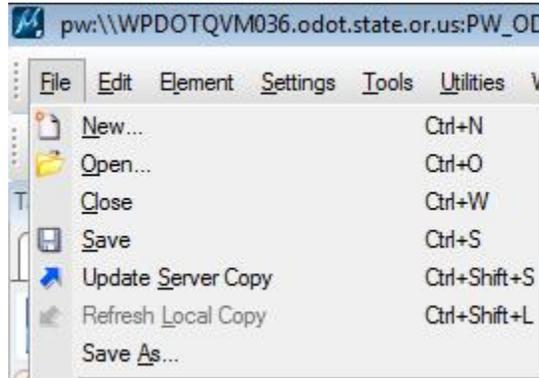
These two settings are model specific. If you have multiple models in a file, the settings can vary from model to model allowing you to have different scales and lock settings for each model.



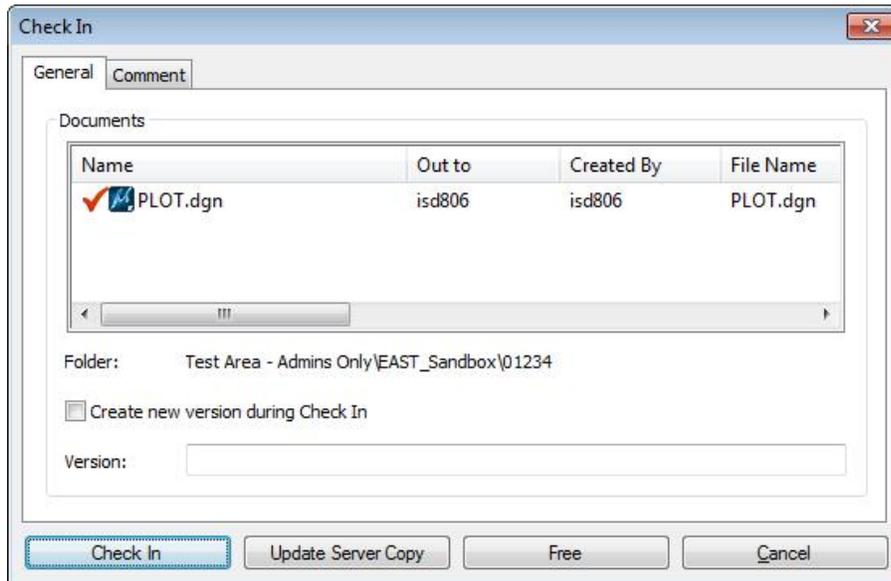
Tip! You can turn off the display of unneeded tool icons on a toolbar by right-clicking on any tool.

Closing, Exiting, and Saving Files Stored in a ProjectWise Datasource

When working in MicroStation DGN files that are stored in a ProjectWise datasource, any time you execute a command from the upper section of the File menu, you will invoke dialogs that are integrated with ProjectWise. The upper section of the File menu deals with opening, closing, and creating files.



When another file is opened or created, the current file must be closed and the integrated **Check In** dialog opens to have you choose what is to be done with the current file: Check In, Update Server Copy, or Free. It is not recommended to select Cancel on this dialog. Cancel does not stop the command from completing; it just puts off the ProjectWise decision until later.



Tip! Expect the **Check In** dialog to appear when changing which file is open from a ProjectWise datasource. It is typical to choose either **Check In** or **Free**.



Caution! Fully exit MicroStation and relaunch to change from accessing data in a ProjectWise datasource to the Windows file system. Also, fully exit an open Windows file and relaunch MicroStation to log in to a ProjectWise datasource.

Saving Files to Other Formats

You can use the File Save As dialog to save MicroStation files in DWG and DXF file formats, MicroStation version 7 format, and to save a MicroStation version 7 file as version 8.

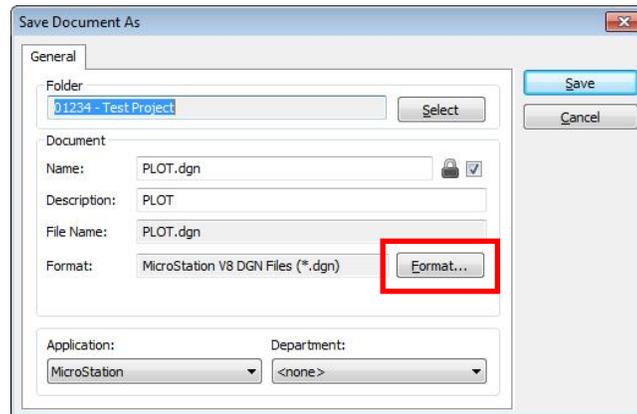
You can also use the File Save As dialog to modify the elements in the file to different line styles, fonts, levels, weights and colors.



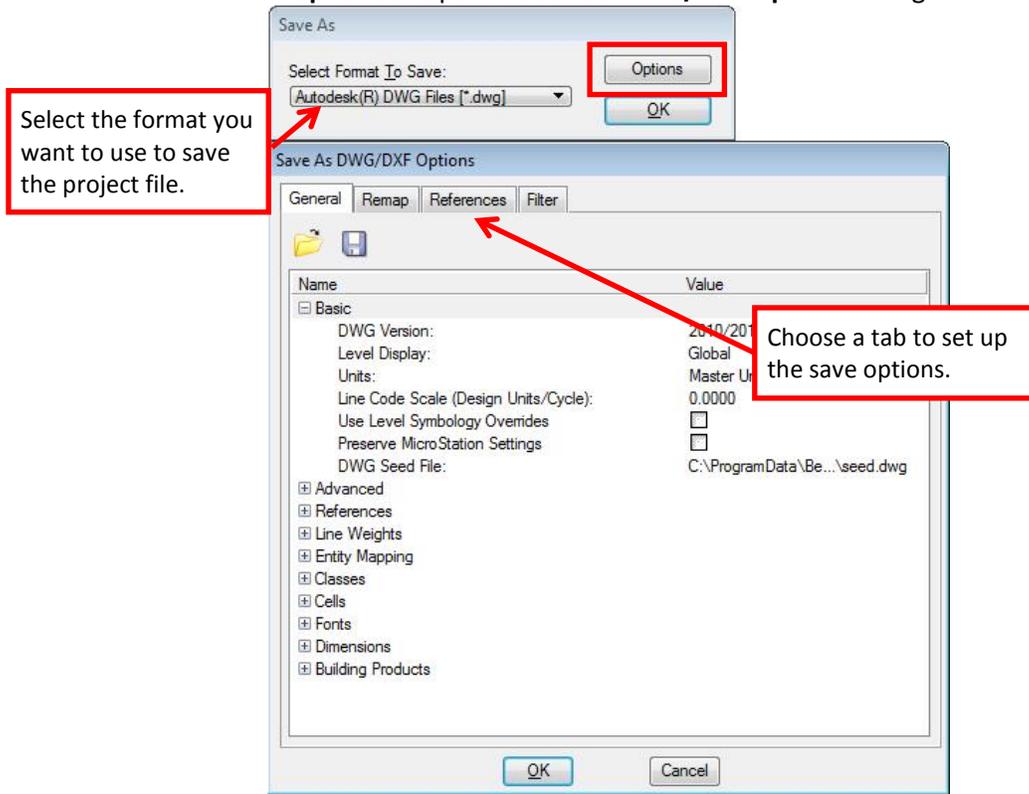
Note: When the MicroStation DGN file that you are working in is stored in a ProjectWise datasource, the Save As command produces an Information dialog after the process has completed informing you that if the file had references, the format of the references is not changed by this procedure. It goes on to explain that the new parent is not the master of a reference set until you scan references. Be cautious saving to DWG format in a ProjectWise datasource. Each reference file is required to be saved to the DWG format individually and then the final step is to run Scan References and Link Sets from within the ProjectWise Explorer to create the set relationship with the master DWG file.

No Wizard - To save files to other formats in the ProjectWise datasource:

1. Select **File > Save As** on the main menu and choose No Wizard in the **Select a Wizard** dialog.
2. Click the **Format...** button on the **Save Document As** dialog.



- From the **Select Format to Save** drop-down menu, select the format for the file that you want to save. Click **Options** to open the **Save a DWG/DXF Options** dialog.



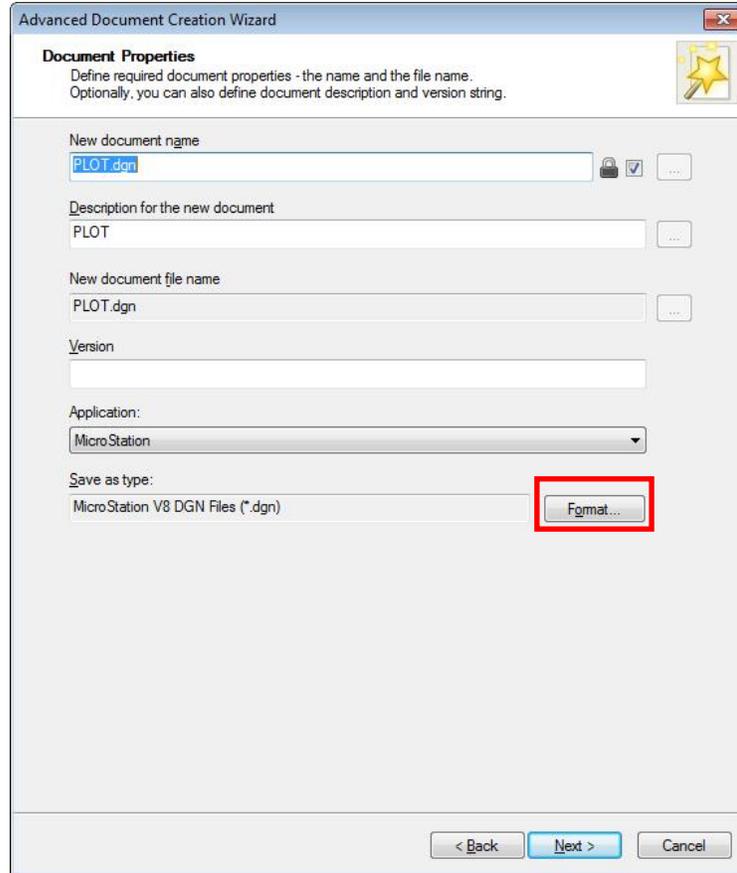
- After clicking **OK** on the **Save As** dialog to accept the format, click **Save** on the **Save Document As** dialog to complete the process.



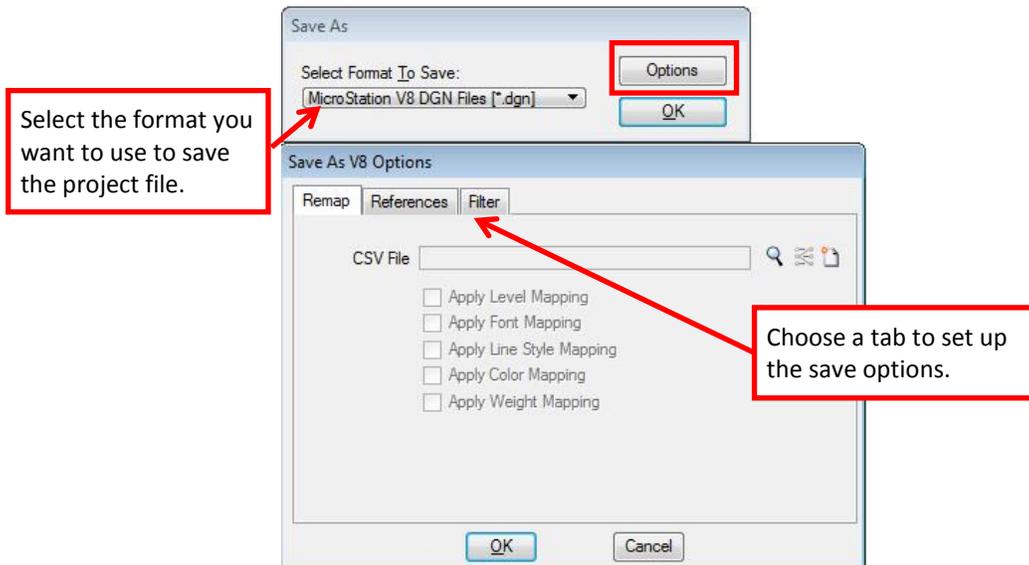
Tip! If saving to DWG format, you may as well uncheck “Convert Reference Files” on the **References** tab of the **Save As DWG/DXF Options** dialog. Converted reference files will not be created in the ProjectWise datasource. See the Note at the beginning of this topic.

Advanced Wizard - To save files to other formats in the ProjectWise datasource:

- Select **File > Save As** on the main menu and choose Advanced Wizard in the **Select a Wizard** dialog.
- Click the **Format...** button on the **Document Properties** step of the Advanced Document Creation Wizard.



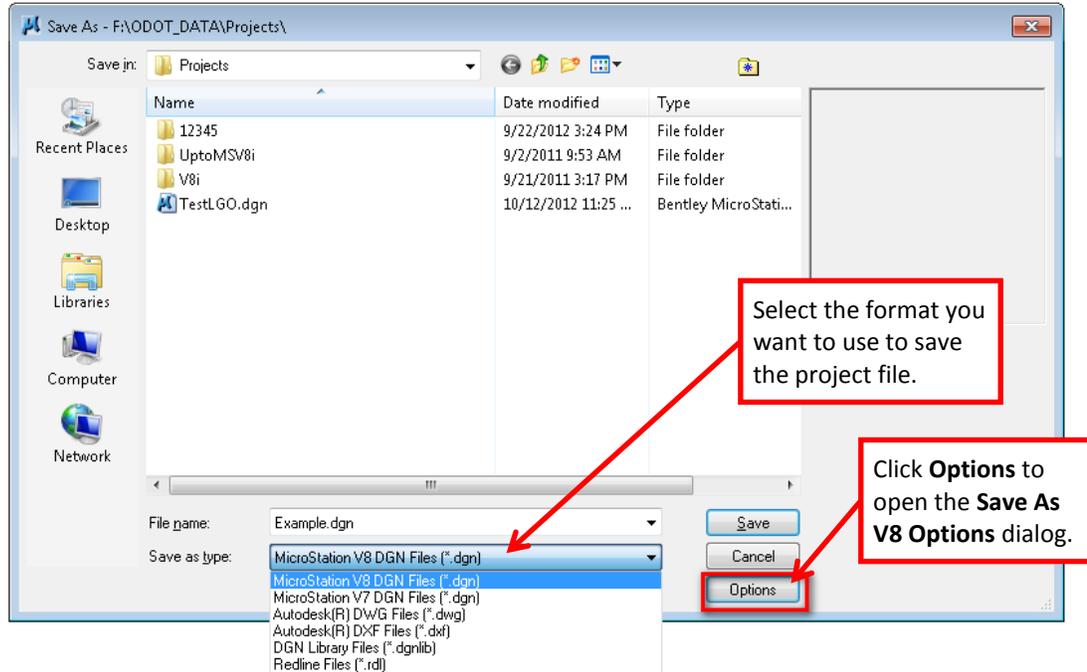
- From the **Select Format to Save** drop-down menu on the Save As dialog, select the format for the file that you want to save. Click **Options** to open the **Save as V8 Options** dialog.



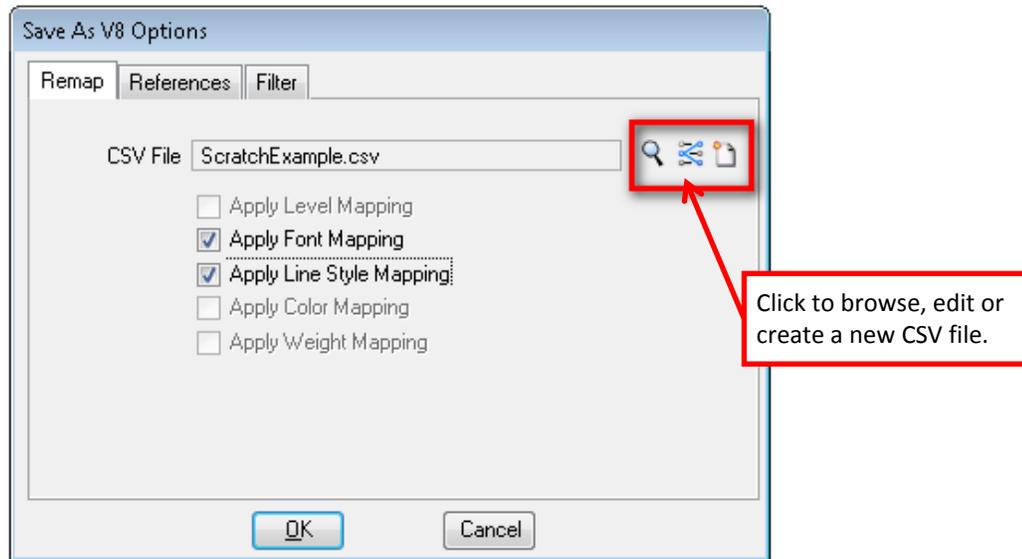
- After clicking **OK** on the **Save As** dialog to accept the format, click **Save** on the **Save Document As** dialog to complete the process.

To save files in other formats in the Windows file system:

1. Select **File > Save As** on the main menu. The **Save As** dialog opens.
2. From the **Save as type** drop-down menu, select the format for the file that you want to save.



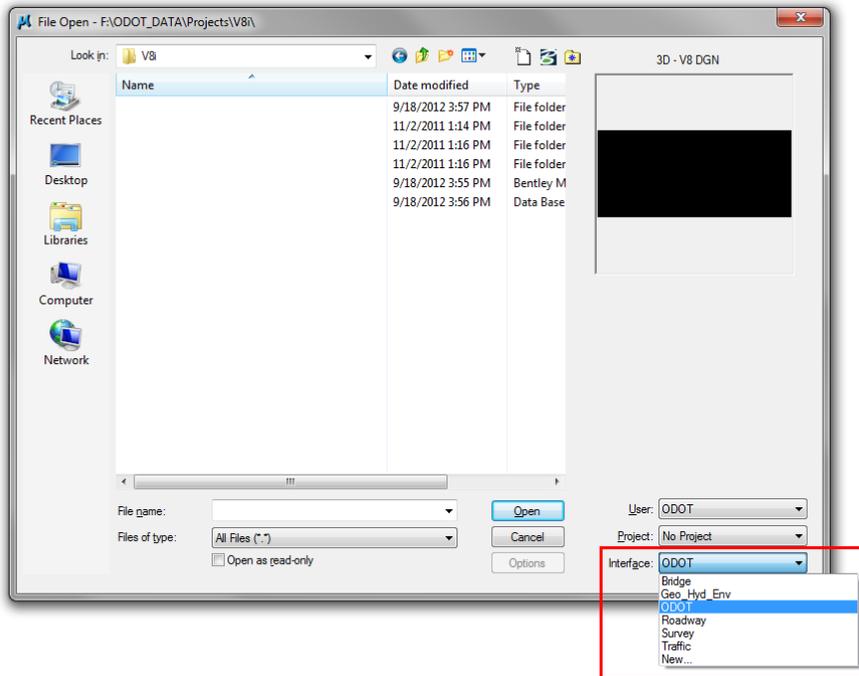
3. Click **Options** to open the **Save As Options** dialog.



4. Use the icons to the left of the **CSV File** name to browse to, edit or create a new CSV file
5. On the **Remap** tab, check the **Apply** options needed for the file translation.
6. Review the **References** and **Filter** tabs and modify as needed.
7. Click **OK** to apply the options and close the **Save As Options** dialog
8. Click **Save** on the **Save As** dialog to save the file.

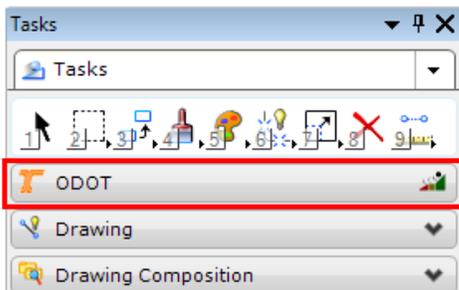
ODOT Tasks and Workflows

Workflows are specific tasks that you can perform with MicroStation. When you launch MicroStation from a desktop icon or the **Start** menu, the **File Open** dialog opens. On the **File Open** dialog, you may select the desired interface that will automatically load tasks and workflows for you to use.

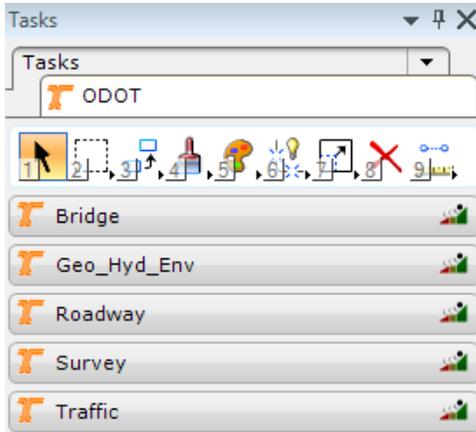


Note: The first time you launch MicroStation, it sets the **Interface** option to **ODOT**. If you change the interface, then the next time you launch MicroStation the last interface used will open.

If you choose **ODOT** as the interface, MicroStation automatically loads all ODOT workflows and the ODOT task (with an orange flying T icon) appears in the **Tasks** dialog.



From the ODOT workflow, you may view the ODOT discipline-specific workflows.



To view the ODOT discipline-specific workflows, click ODOT on the Tasks dialog.

To view the custom tasks and workflows within each discipline, click the discipline on the Tasks dialog.

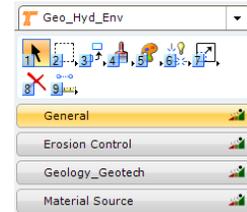
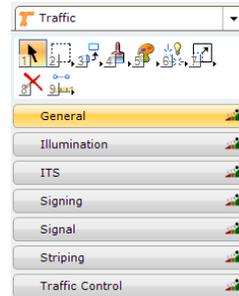
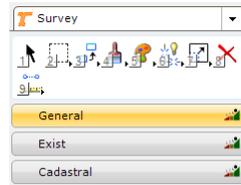
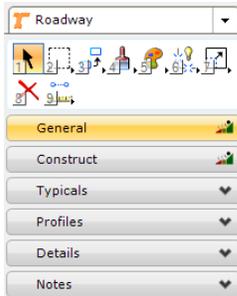
For easy access to the workflows while working in MicroStation, you may dock them as dialog tabs on the MicroStation window.



Note: If you choose one of the other Interface options (Bridge, Geo_Hyd_Env, Roadway, Survey or Traffic) on the File Open dialog, only the tasks and workflows associated with the selected interface will appear on the Tasks dialog.

General Workflow

The General workflow contains most of the tools and tasks common to all disciplines and can be found as a workflow on most discipline-specific task dialogs.



Within the General workflow you will find some common tools and sheet elements, including:

- Sheet Borders
- Title Blocks
- Status Stamps
- Scale Bars
- General Arrows (which has different types of arrows including a **North Arrow**)
- Vicinity Map Tools (route shields, name text, and project linestring)
- Fill/Hatch
- General Misc. (with items like **Check Mark**, **Bracket** and **Revision Triangle**)
- Tools – include the following:

Modify Elevation

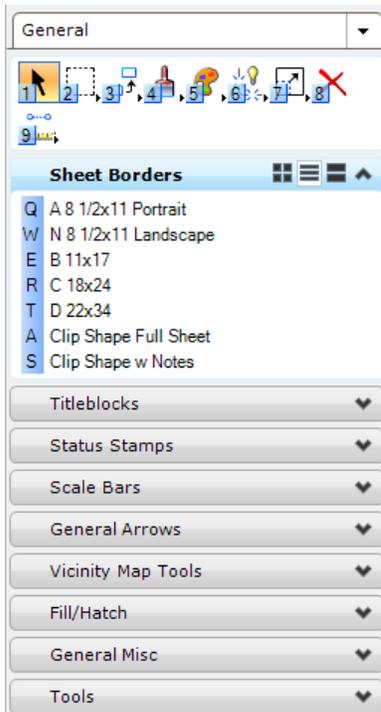
Fixrange

Change Direction

Verify

Verify Repair

Sheet Borders



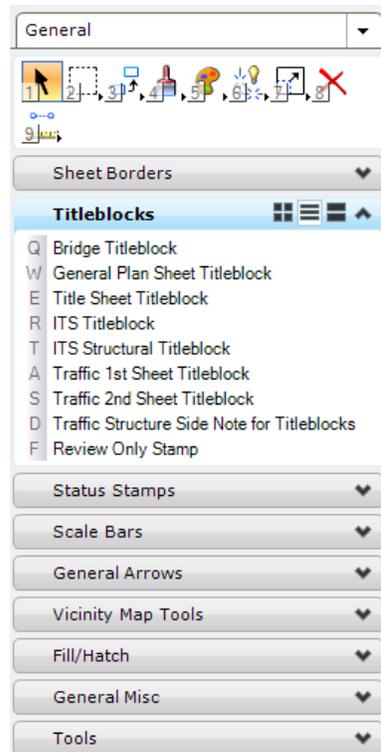
Under **Sheet Borders**, you will find five standard sheet sizes used by ODOT. You can create and place sheet borders using this tool.

To create and place a sheet border:

1. Click on the desired sheet border size to activate the tool. An appropriately sized border is now displayed on your cursor ready to be placed in the file.
2. Left click (data point) to create and place a border.
3. If you require more borders of the same size, continue to left click (data point) in the desired locations to create and place the desired borders.

The sheet borders are cells that you may copy and move as needed.

Title Blocks



After you place a sheet border, you can place title blocks within the sheet. Under **Titleblocks**, you will find a list of available title blocks for most needs, along with other elements commonly associated with title blocks such as **Sheet Number** and **Project Title**.

To create and place title blocks:

1. Click on the desired title block to activate the tool.
2. Left click (data point) in the sheet border where you want to place the title block.
3. If you require more title blocks, continue to left click (data point) in the desired locations to create and place the desired title blocks.

Using Tasks and Workflow Tabs

You can dock workflows as a dialog tab on either the left or right margin of the MicroStation window. By default, the MicroStation dialog tab appears on the left margin. Therefore, the ODOT dialog tab is typically docked on the right margin.



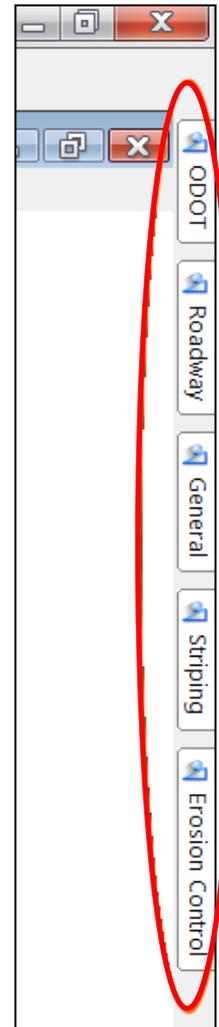
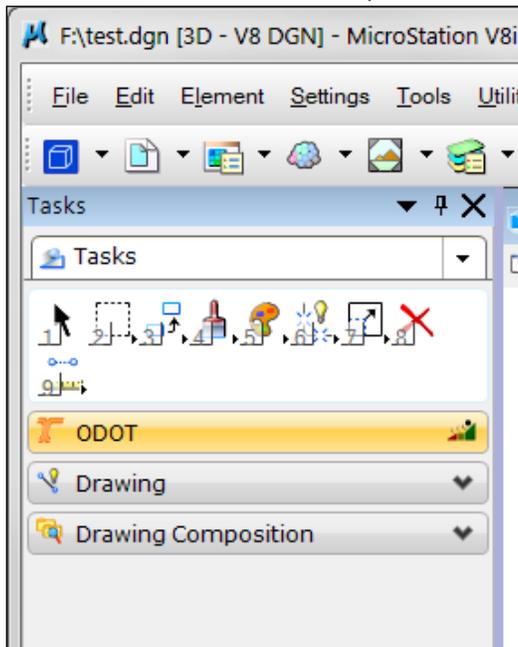
Tip! The workflow dialog tabs appear in the order that you dock them on the MicroStation window. Therefore, plan ahead if you want them docked in a particular order.

In addition, your MicroStation dialog positions and docked workflows are stored on your F: drive; they will appear the same no matter what ODOT computer you use.

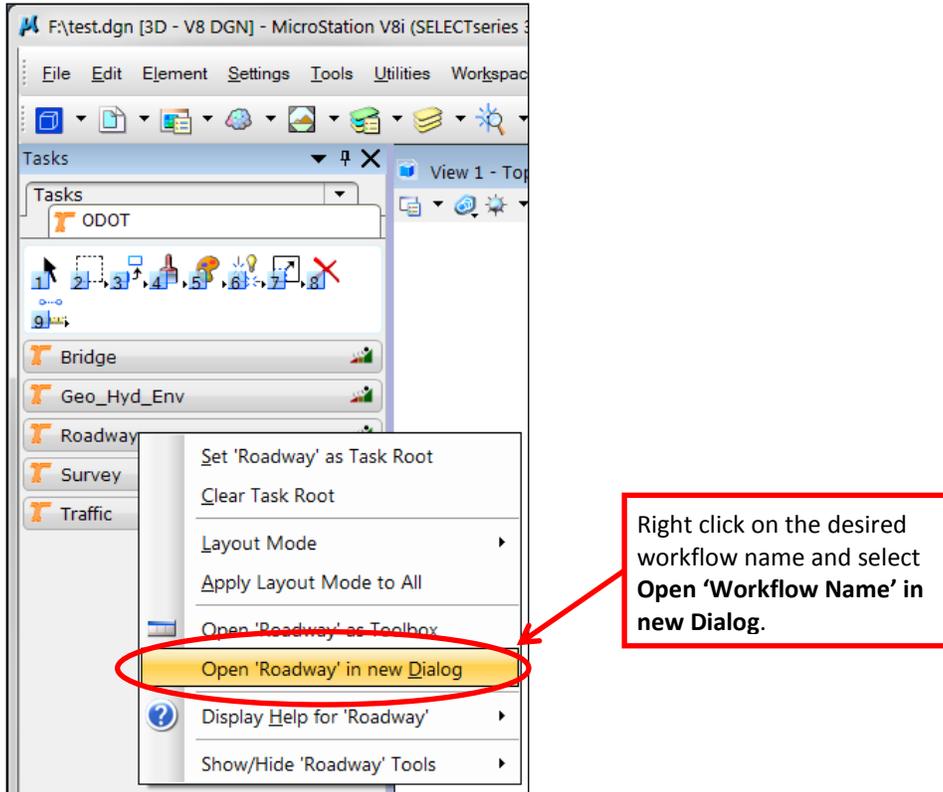
With the workflow dialog tabs, the active task remains expanded in each tab until another task is selected. This reduces the amount of “drilling” into menus.

To dock or set up a workflow tab:

1. Review the **Tasks** list to identify available workflows.

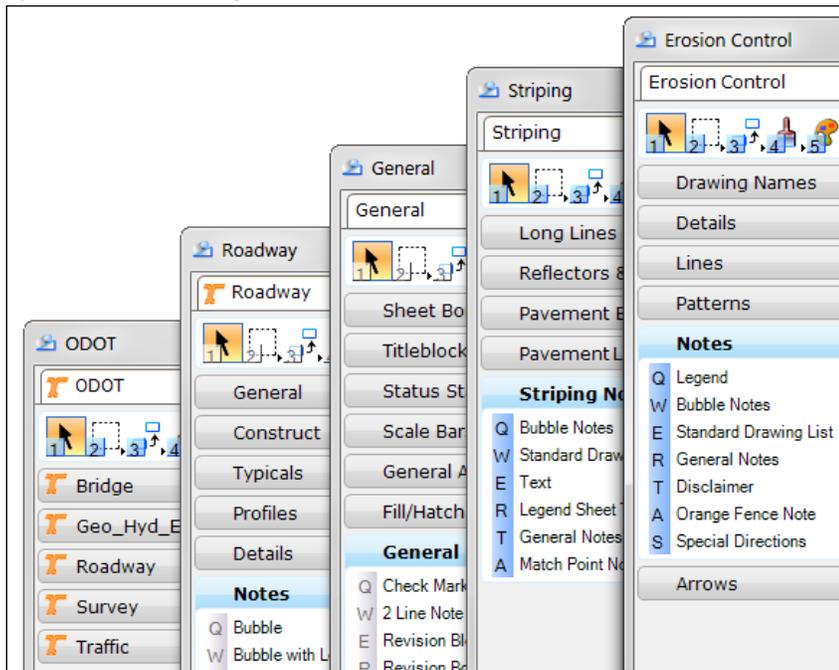


- Right click on the desired workflow and select **Open 'Workflow Name' in new Dialog**.



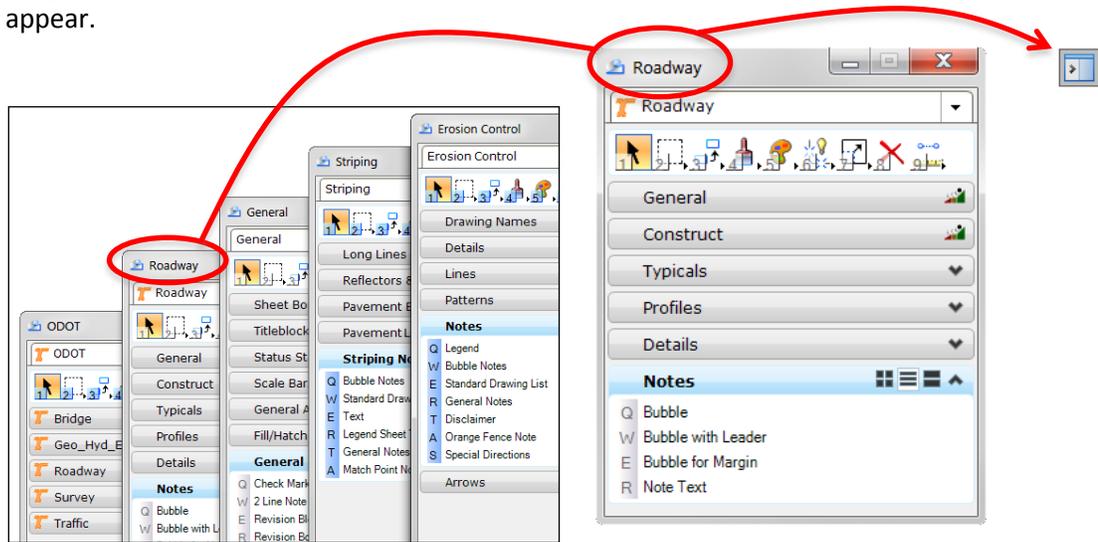
The workflow opens as a new dialog.

- Navigate to the tasks for each of the workflows that you want to dock and repeat step 2 to open them as dialogs.

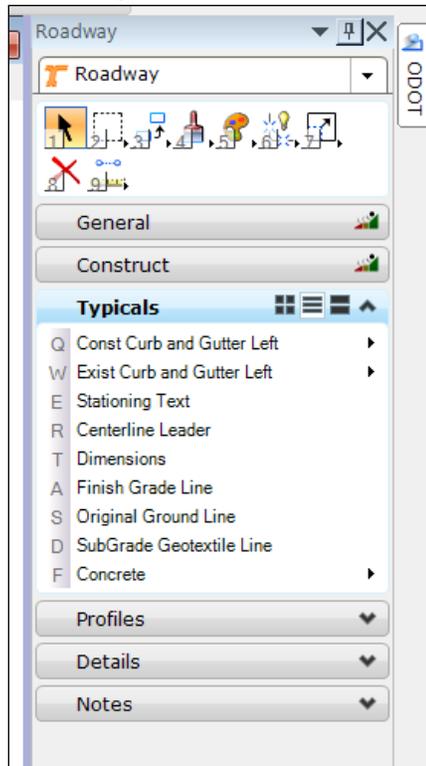


Note: Most discipline-specific tasks include the General workflow.

4. Drag each workflow dialog by the title onto the docking icon, in the order you want them to appear.

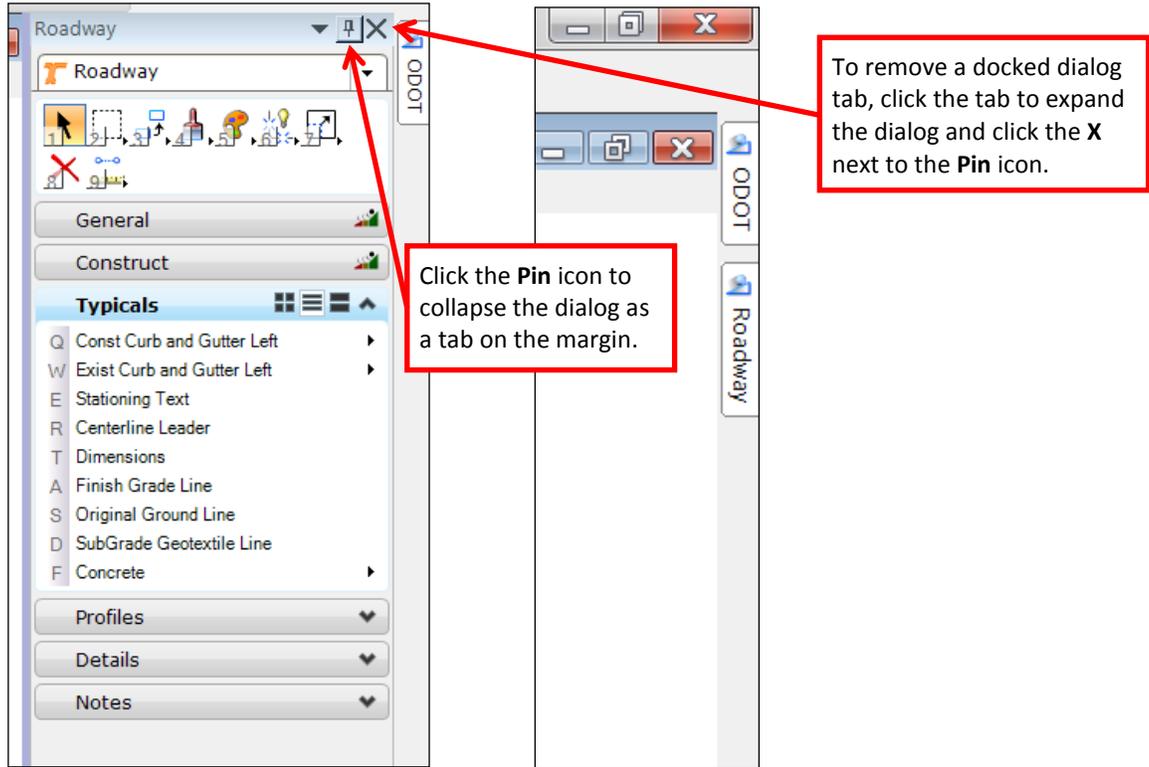


The dialog is docked to the window margin.



Reminder: The dialogs dock on the margin of the MicroStation window in the order you place them. Also, don't drag the dialog titled **Tasks** to the docking icon.

5. **To hide/collapse a docked workflow dialog**, click the **Pin** icon. The docked workflow dialog appears as a tab on the margin.



6. Continue to dock workflow dialogs, as desired.
7. **To remove a docked workflow dialog tab**, click the tab to expand the workflow dialog and click the **X** next to the **Pin** icon.



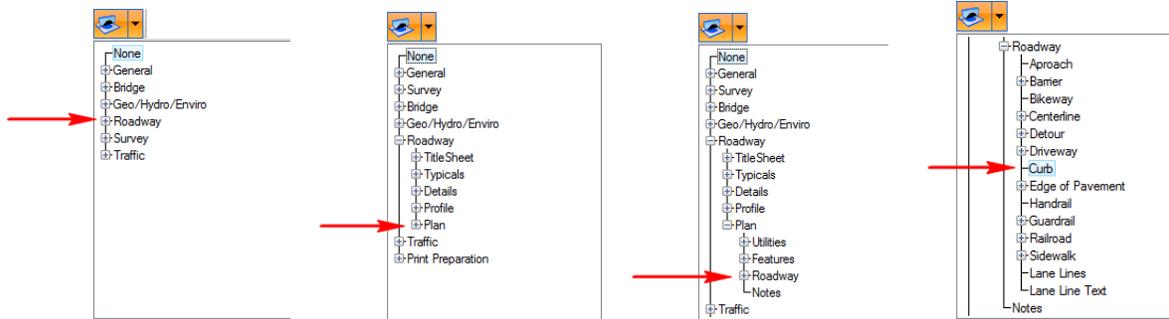
Note: If you close the task dialog, you can select the menu **ODOT > ODOT Help > Main Task Reload** to re-open the menu. Other tasks can be re-opened with the keyin “tasktoolbox open” and name of the task or toolbox. For example “tasktoolbox open roadway.”

Element Templates

Element templates define properties of elements. The primary purpose of these templates is to increase consistency in adhering to CAD standards.

A template can store multiple element properties. General properties such as level, color, line style and line weight can be set in a template as well as text styles, text style overrides and cell properties.

You can activate an element template by selecting it from the Active Element Template drop-down list. Each category will expand by clicking on the little plus symbol. Find the element template needed then select it by left clicking on it. This will set the active attributes.



The active attributes automatically change to reflect the selected template.

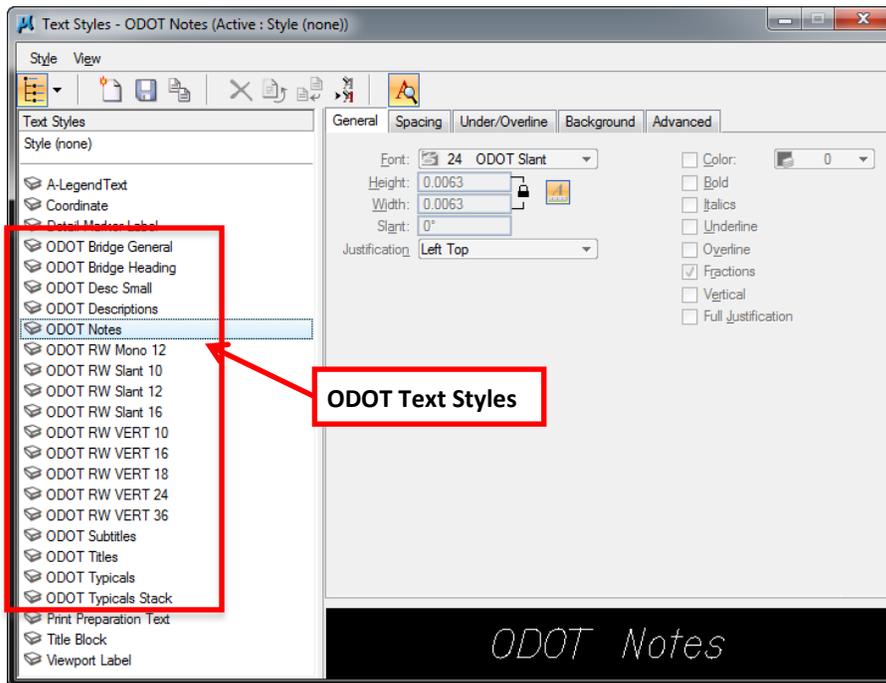


You may also select a tool from the ODOT tasks and workflows to activate element templates. These tools have been set up to point to the templates wherever possible.

Text Styles

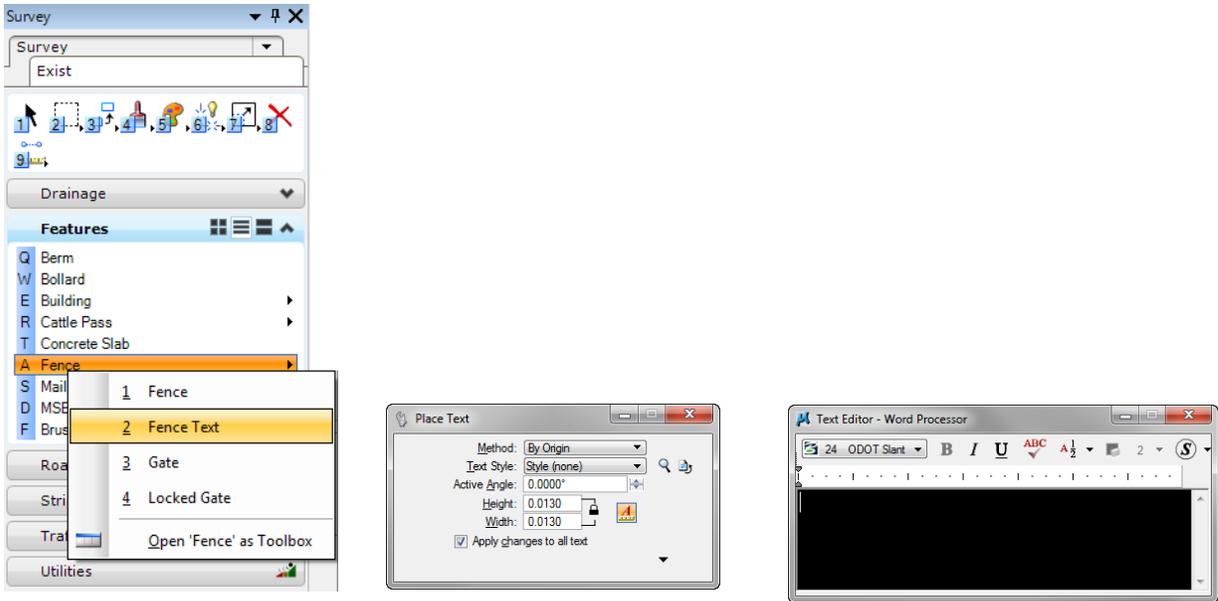
Text styles assist in setting up the annotation scale and to standardize the text used in CAD products.

ODOT has two bridge styles, eight right of way (RW) styles, and six general styles to cover all other disciplines and products. All the ODOT text style names begin with “ODOT” for easy identification.



Note: There are also six Bentley provided text styles that are necessary for some Bentley products to perform properly. You may ignore these.

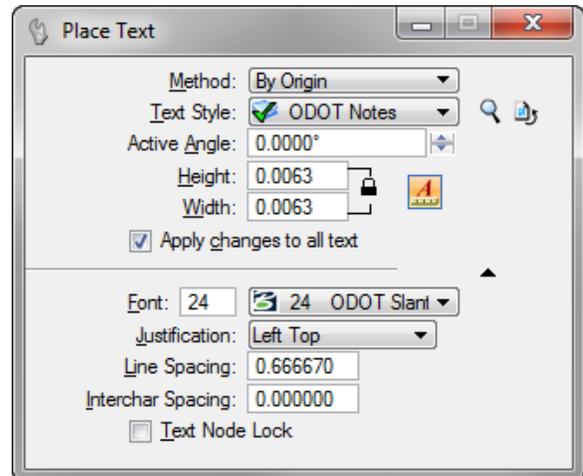
You may activate the styles from the **Text Styles** dialog, but the more common way to select a text style is with the tools provided in the ODOT tasks and workflows. Tools that place text, will call a text style as well as the **Place Text** and **Text Editor – Word Processor** dialog boxes as illustrated below.



Even though the tools in the ODOT tasks and workflows call up text styles, you can override any attribute of the text style.

For example, you select a tool that calls up the text style **ODOT Notes**. The size and font are acceptable, but the **Justification** is set to **Left Top**, and you need **Center Center**.

To change this, expand the **Place Text** dialog and select the desired style from the **Justification** drop down menu.

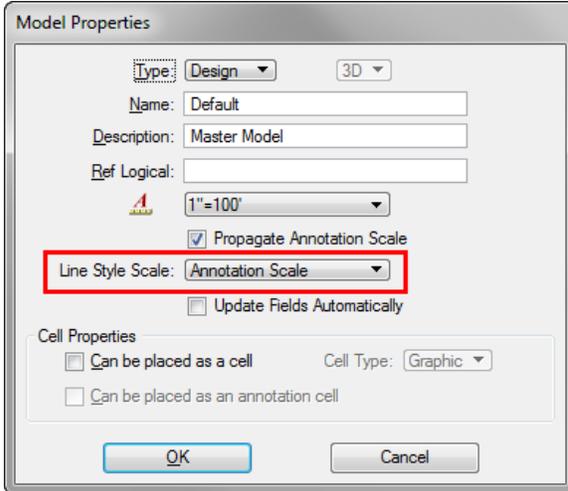


Note: Because of the Annotation Scale, the font height and width will not be the same as in MicroStation V8 2004. The text styles dynamically change based on the scale set in the model in which the text is being displayed. This means that the numbers for height and width will be small compared to previous methods, but the text should display and print at the appropriate size.

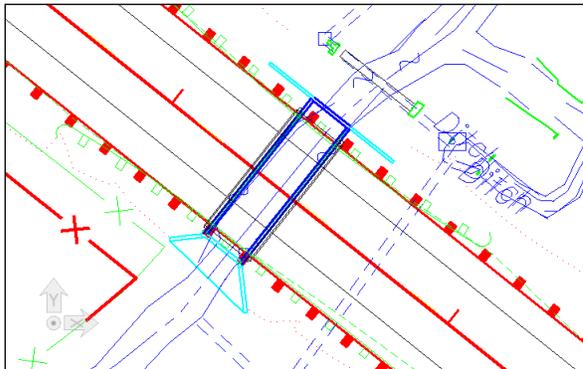
Note: In previous versions of MicroStation, the line spacing was a distance, so to create a space between lines of text that was half the height of the text, you divided the font height by two and entered that value (e.g., font height 7.5, line spacing 3.75). In MicroStation V8i, line spacing is a ratio. To set the line spacing to half the text height, you enter 0.5 in the line spacing field regardless of the font height.

Line Styles

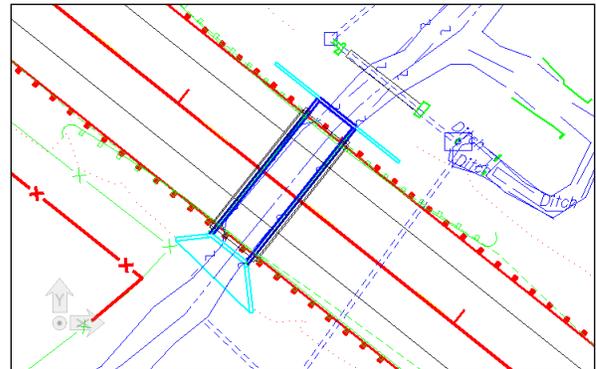
Line styles follow the rules of the Annotation Scale. As long as the **Line Style Scale** field on the **Model Properties** dialog is set to **Annotation Scale**, custom line styles will dynamically change to accommodate any annotation scale applied to your model.



For example, previously when you had a project like a small box culvert and you wanted to print it at a scale of 1" = 50', rather than the more standard 1" = 100', the custom line styles would often show up very large. Lines like fences and utilities had such a large line style that they detracted from the drawing. Now, if you set your model properties to 1" = 50', the custom line styles automatically scale down. The image below demonstrated this with the fence, ditches, guardrail and other custom line styles.



1" = 100'



1" = 50'

ByLevel Symbology

ByLevel symbology enables you to change standards by changing the level symbology, causing any element template or tool associated with that level's ByLevel symbology to reflect the new standard without further action by you.

Several of the element attributes may be set to ByLevel. This includes color, line style and line weight. This allows the level to be set for those attributes rather than individually setting them in an element template or each individual element. This assists with consistency in ODOT CAD standards and allows element templates to use the already defined ByLevel symbology, reducing potential errors. Whenever possible, ODOT has set the ByLevel symbology in the level DGN library as the primary method to reflect ODOT CAD standards.

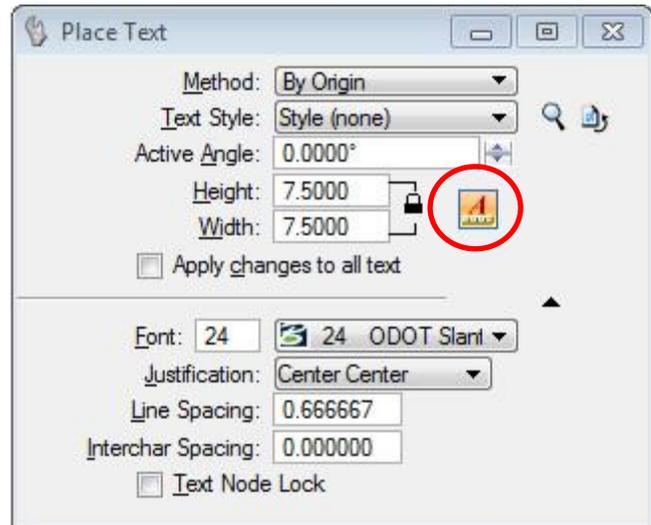
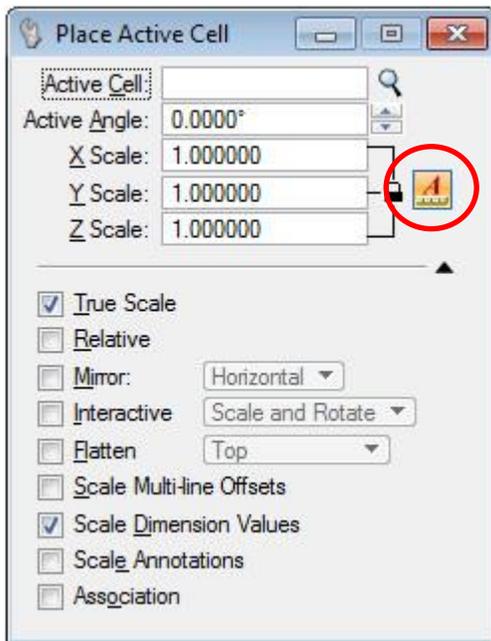
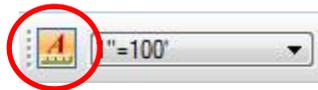
The actual symbology is set in the level library, but it can be easily overridden with any of the tools used to set element symbology.

Annotation Scale

Annotation Scale allows elements like text, cells and line styles to automatically resize based on the desired print size.

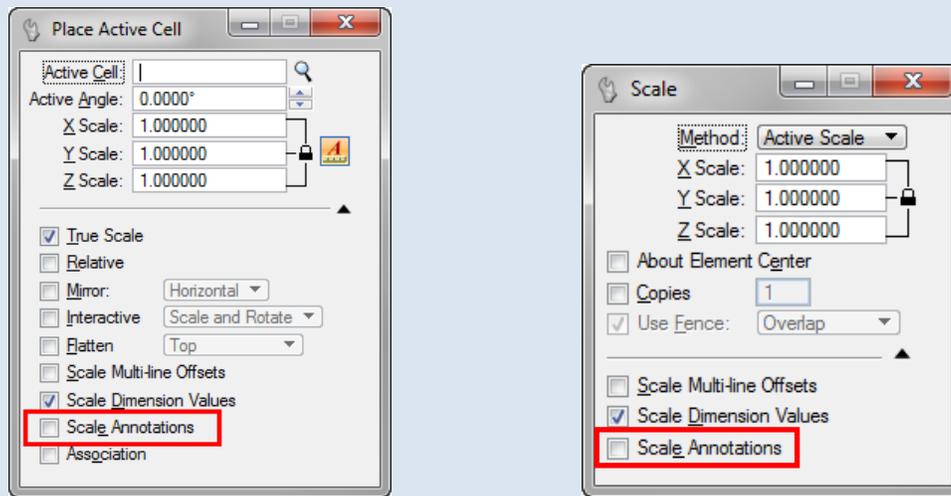
You can turn the Annotation Scale Lock on and off from many locations within MicroStation V8i, including:

- The **Drawing Scale** toolbar
- The **Place Active Cell** dialog
- The **Place Text** dialog





Note: The Scale Annotations check box appears on the **Place Active Cell** dialog and the **Scale** dialog. By default, these check boxes should be unchecked. These settings are design file specific. Be sure to “**Save Settings**” after you make the changes.



The purpose of these check boxes is to use the active scale as a multiplier for annotation scale elements. For example if you want to place a cell at twice its normal size, but still want it to respond to annotation scale, you could turn these check boxes on and set the X, Y and Z scale values to 2. This would result in a cell being placed at twice its normal size, but still becoming smaller or larger with any changes to annotation scale. If the check box is not checked, the annotation cell being placed ignores the active scale and uses only the annotation scale.

Annotation scale works differently with cells and text than it does with line styles. You must place cells and text with the annotation scale lock on in order to respond to the selected annotation scale. If it is off when you place a cell or text, the element may appear too small. Also if the annotation scale lock is off when you place a cell or text, the cell or text cannot be resized by changing the annotation scale in the model properties.

In contrast, line styles respond to annotation scale whether the lock is on or off.



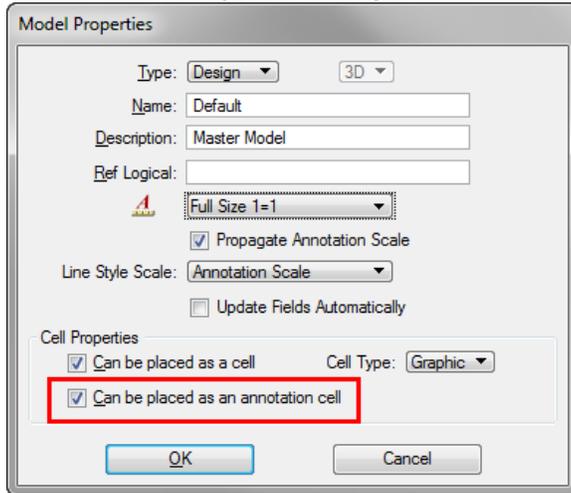
Note: When moving from older MicroStation files that did not utilize annotation scale, you must update cells to the newer cells with the **Can be placed as annotation cell** checked and that have been resized. You must either replace text with text generated from one of the new text styles, or resize the text and add the annotation scale to it. (See below.) Again, by contrast, line styles automatically update when the file is opened.

Annotation Cells

Annotation cells obey the rules of the annotation scale. That is, when you place a cell with the annotation scale lock on, the current annotation scale scales the cell.

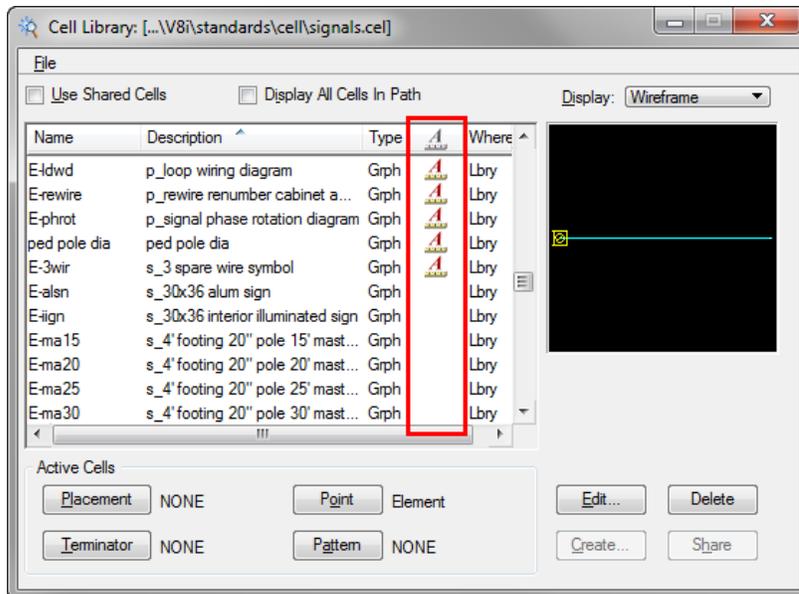
To convert standard ODOT cells into annotation cells:

1. On the **Model Properties** dialog, check the **Can be placed as annotation cell** check box.



2. Scale cells down by a factor of the scale at which they are designed to be printed. For example if a cell was normally placed at an active scale of 1 on a 1"=100' plan sheet, you need to scale it down by a factor of 1200. All the annotation cells in the ODOT standard cell libraries have been scaled down.

You can determine which cells are annotation cells on the **Cell Library** dialog. The annotation symbol appears under the Annotation column for a cell that you can place as an annotation cell. If no annotation symbol appears, then the cell **cannot** be placed as an annotation cell.



Not every cell needs to be an annotation cell. Some cells need to be placed at their correct actual measured size no matter at what scale the plan sheet will be printed. For example, a signal pole with a 55-foot mast arm needs to measure 55 feet no matter at what scale the drawing is printed; therefore, you should place the cell as an actual scale not an annotation scale.

To prevent cells from being placed incorrectly as annotation cells, uncheck the **Can be placed as an annotation cell** box on the **Model Properties** dialog.

Levels

The standard ODOT levels have been modified to reduce the total number of levels and remove redundant levels.

Levels read from a level library. As elements are placed in a file, the level those elements are placed on is written to the active file. This means that each level used in a file is written directly to that file. If elements are placed on a level that does not exist in a level library, there is no impact to the elements and levels already written to the DGN file.

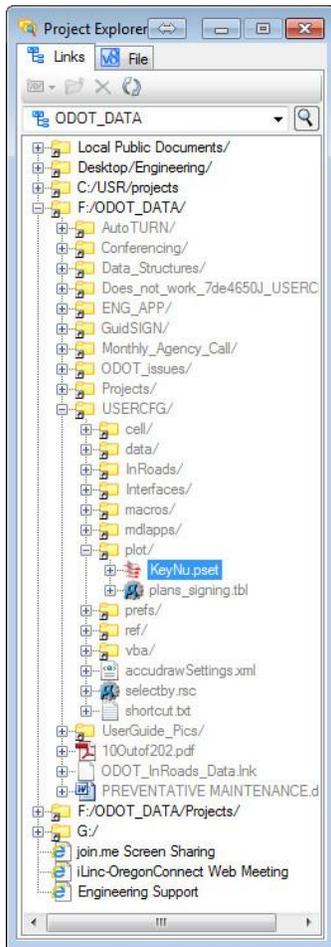
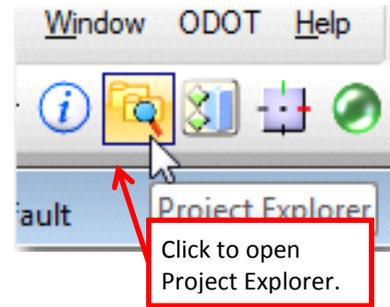
If files are referenced in and the references contain levels that no longer exist in a level library, the results are similar. As long as that level existed in the reference, the elements will display properly and the level they are on can be manipulated the same as any other level in a reference file.

If you copy elements out of a reference file into a new file that does not contain the needed level, then the elements will be placed at the default level. To move those elements in the reference to other levels, you can follow the process shown in the section above titled “To save files in other formats in the *Windows* file system” and apply level mapping on the Remap tab for the Options.

Project Explorer

Project Explorer allows you to manage Windows project data within MicroStation. Using it, you may open file locations in the Windows file system and launch other applications. The Project Explorer icon is on the main toolbar.

You can use the drag and drop method to attach models or saved views as references and to load files into the Print Organizer for creating print definitions. When open, you can size Project Explorer to float over a view window in MicroStation.



A link set named ODOT_DATA has been created that provides you with quick access to common locations in the Windows file system for storing data and your user configuration.

For example, you can open Print Organizer and load the seed plan set file (F:\ODOT_DATA\USERCFG\plot\KeyNu.pset) at the same time.

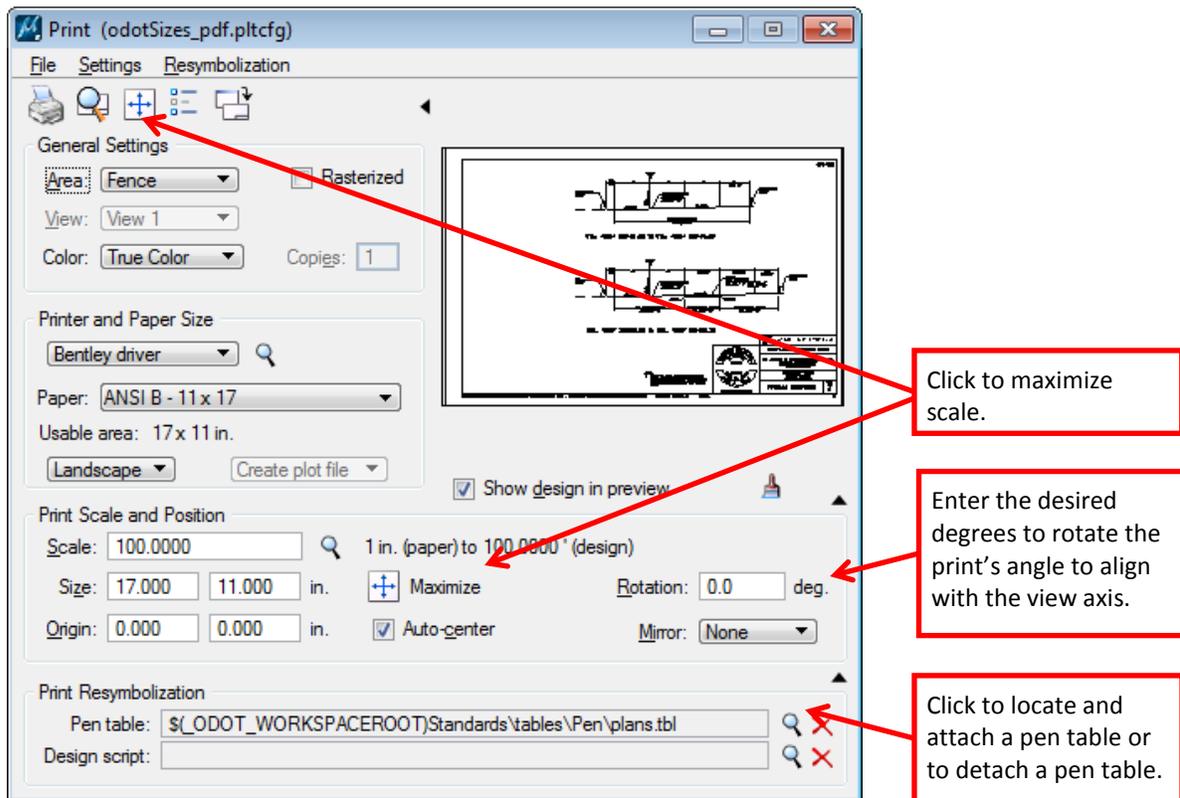


Note: Click the + signs to expand the folder hierarchy. Double-click a folder to open it in Windows Explorer.

Print Function

To print a view or fence area, select **File > Print** from the main menu bar to open the **Print** dialog.

From the **Print** dialog, you may set up the properties of the print by selecting the printer or loading a printer driver configuration file. To apply Print Styles, select **Settings > Print Styles**. This will load pen tables and set paper sizes and scale. You may individually set all print settings, including rotation, on the **Print** dialog. As you make adjustments, the preview of the drawing adjusts accordingly. Once the preview appears as you desire, click the **Printer** icon in the upper left corner to send or create the print.



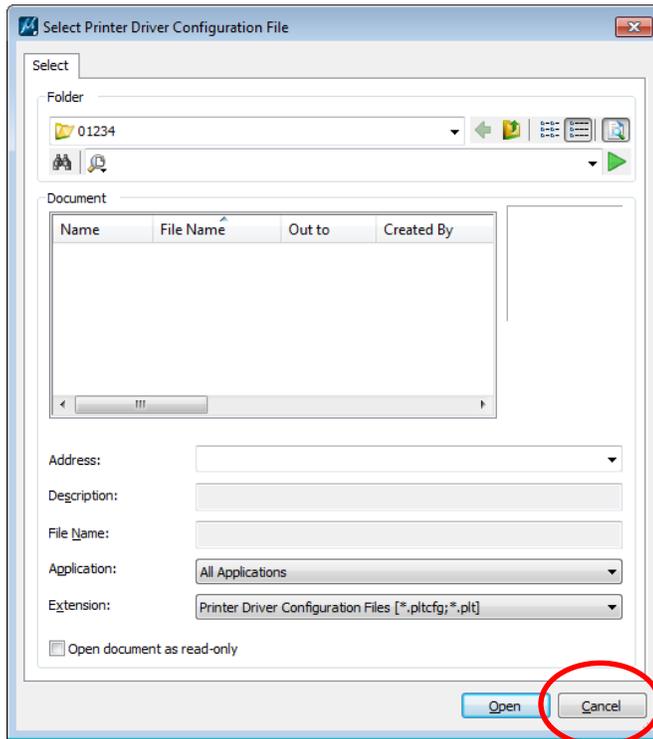
Note: If you do not set a fence prior to opening the **Print** dialog, the ODOT Defaults print style (the one that always runs) will create a fenced area around the first border cell that was placed in the active model. To print the View, change the **Area** to **View**.

You can use Print Organizer to create and save multiple print definitions and print styles for applying print property values like pen tables, paper size and scale.

Using the ProjectWise Integrated Select ... File Dialogs

When **File>Select Bentley Driver, Resymbolization>Attach Pen Table**, or the magnifying glass icons for selecting the **Printer Driver Configuration File** or the **Pen Table** are chosen, and the active MicroStation design file is stored in a ProjectWise datasource, an integrated **Select ... File** dialog appears. The *.tbl and *.pltcfg files are stored in ODOT_space in the Windows file system, and

cannot be loaded using the integrated dialog. Click **Cancel** to open the **Windows Select ... File** dialog.



The **Windows Select ... File** dialog will automatically open to the correct location for either printer driver configuration files or pen tables.

Print Driver Configuration Files (PLTCFG)

Printer driver (PLTCFG) files are configured to provide standard output sizes and file formats and are located in the ODOT workspaces. On the **Print** dialog, click the magnifying glass icon to load a Bentley driver. Cancel out of the **integrated Select Printer Driver Configuration File** dialog. On the **Windows Select Printer Driver Configuration File** dialog, select a driver or navigate into the Bentley_Supplied folder for other driver types **not** configured for standard ODOT use.

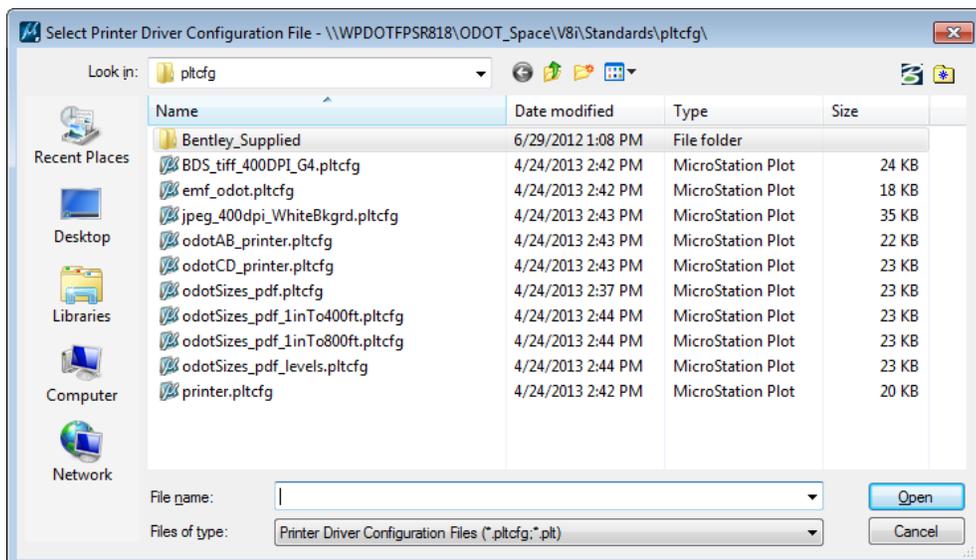


Table 4. Printer Driver Configuration Files

Printer Driver Configuration File	Function
BDS_tiff_400DPI_G4.pltcfg	Creates TIFF files in G4 format with 400 DPI for uploading into the Bridge Data System (BDS).
emf_odot.pltcfg	Use as alternative to “Create metafile” printer option to create encapsulated meta files that match line weights of images produced for ODOT manuals using MicroStation V8 2004.
jpeg_400dpi_WhiteBkgrd.pltcfg	Use to create .jpg format images with 400 DPI and white background.
odotAB_printer.pltcfg	Based on ODOT configured printer.pltcfg for line weights with only two paper sizes available, ANSI A (8.5x11) or ANSI B (11x17).
odotCD_printer.pltcfg	Based on ODOT configured printer.pltcfg for line weights with only two paper sizes available, ARCH C (18x24) or ANSI D (22x34).
odotsizes_PDF.pltcfg	PDF printer driver with ODOT line weights and only nine different paper sizes including the maximum 200”x200”.
odotsizes_PDF_1inTo400ft.pltcfg	PDF printer driver with fine line weights for clear zooming in on text with scales between 1”=300’ and 1”=400’.
odotsizes_PDF_1inTo800ft.pltcfg	PDF printer driver with very fine line weights for clear zooming in on text with scales between 1”=500’ and 1”=800’.
odotsizes_PDF_levels.pltcfg	PDF printer driver based on odotsizes_PDF.pltcfg and with EnableOptionalContent=On and Print OptionalContent=As Created for creating PDFs with the ability to adjust displayed levels in a viewer, without affecting the print.
printer.pltcfg	Default printer driver configured for ODOT line weights.

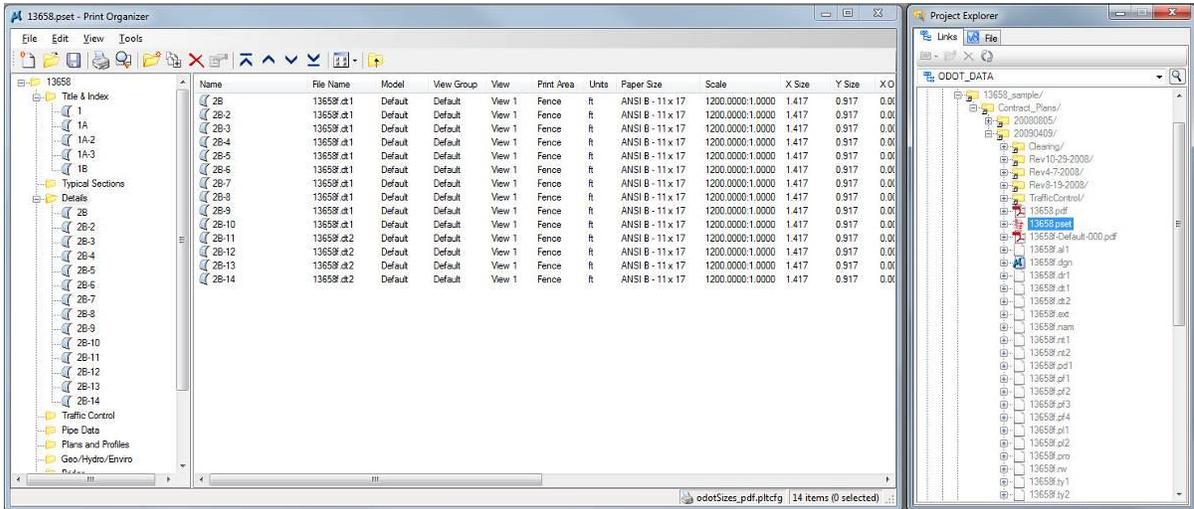
Print Definition Files (PSET)

MicroStation Print can create and use a single print definition stored in a print set (PSET) file. If you are working in MicroStation DGN file that is stored in a ProjectWise datasource, when you execute a command to open or save a print definition file, you will invoke dialogs that are integrated with ProjectWise. See previous sections on “Using the ProjectWise Document Creation Wizards” and “Closing, Exiting, and Saving Files Stored in a ProjectWise Datasource” for more information.

Print Organizer creates and uses print set (PSET) files as a container to store print definitions. Print definitions are arranged in a hierarchical structure and may be placed into folder groups.

A seed print set file has been created for use in assembling contract plans. KeyNu.pset is located in your F:\ODOT_DATA\USERCFG\plot folder and may be copied into your Windows project folders or imported into your project in a ProjectWise datasource.

KeyNu.pset contains named folders that are in order of the sections that are found in plan sets. After creating print definitions, select **File > Save As ...** on the **Print Organizer** dialog and save the print set file using the 5-digit project Key Number in the name.



Print Styles

Print Styles are available from a DGNLIB in the workspace. Some print styles set a PLTCFG, attach a pen table, and set paper size and scale. Some print styles will create fences for a print definition upon locating specific border cells that have been placed in files.

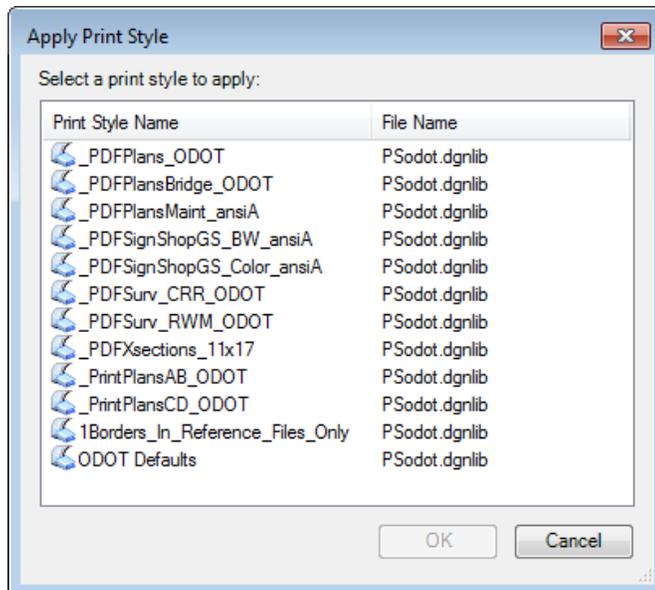


Table 5. Print Styles

Print Style	Function
ODOT Defaults	Creates fence locations around cells named Border_*, found in any model in the added file. Limit searched models by dragging and dropping specific models or saved views from Project Explorer.
1Borders_In_Reference_Files_Only	Use when creating print definitions to create fence locations around border cells found only in any model in files referenced into the added file.
_PDF*_ODOT	Use in Print dialog or Print Organizer to apply a pen table and odotSizes_pdf.pltcfg for PDF creation with paper size 11x17 for Plans, 18x24 for Survey, and 22x34 for Bridge. Use of a PDF print style is preferred.
_PDF*_ansiA	“PlansMaint” - use for Maintenance-type projects with 8.5x11 sheet borders. “SignShopGS_BW” and “SignShopGS_Color” – locate GuidSIGN cells named GSSHT and maximize to ANSI A paper size (11x8.5).
_PDFXsections_11x17	Use in Print Organizer to create print definitions from InRoads cross section set borders.
PrintPlansAB_ODOT	Use in Print dialog or Print Organizer to apply plans.tbl and odotAB_printer.pltcfg for small format printing.
PrintPlansCD_ODOT	Use in Print dialog or Print Organizer to apply plans.tbl and odotCD_printer.pltcfg for large format printing. Default system printer must be set to a large-format plotter.

Pen Tables

Pen tables may be attached to remap characteristics like color and weight. A number of pen tables have been created for producing ODOT Contract Plans and other ODOT products.

Table 6. Pen Tables

Name	Purpose
plans.tbl	Used for contract plans. Turns everything black and gray shades existing features, except utilities. Does not print construction class. Outline color of closed elements in active model with fill color=255 (background) is changed to background. Substitutes filename location text for actual file location if ODOT border cell is used.

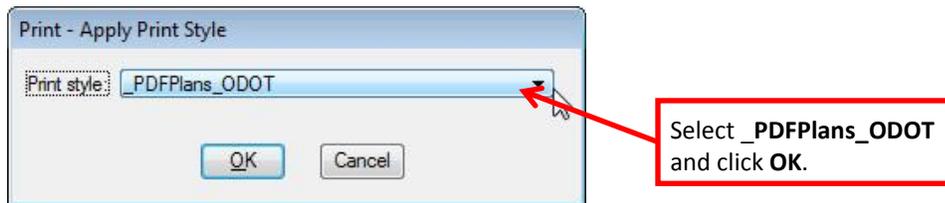
Name	Purpose
ITS_plans.tbl	Similar to plans.tbl, except that it also gray shades existing utilities. Does not print construction class.
br_plans.tbl	Similar to plans.tbl. Bridge users may prefer it to increase line weights of proposed features. Does not print construction class. Outline color of closed elements in active model with fill color=255 (background) is changed to background.
rw.tbl	Used by Right of Way to turn everything black, gray shade existing features, and fill monuments. Does not print construction class. Outline color of closed elements in active model with fill color=255 (background) is changed to background. Uses pen table section priority to control printing of shapes for recorded sale, fee, permanent and temporary easement.
SignShopGS_BW.tbl	Does not plot construction class elements. Does not plot level GSColorFill. Turns all elements and element fills to black. Does not print construction class.
SignShopGS_color.tbl	Does not plot construction class elements. Does not plot level GSBWFill. Turns only elements and text in sheet report to black. Prints GSCOLORFILL level in color. Does not print construction class.
Surv_CRR_BW.tbl	Used for plots that file survey control, recovery and retracement maps in counties that don't allow gray shading. Does not print construction class. Outline color of closed elements in active model with fill color=255 (background) is changed to background.
Surv_CRR_GS.tbl	Used for plots that file survey control, recovery and retracement maps, and gray shades existing topography. Does not print construction class. Outline color of closed elements in active model with fill color=255 (background) is changed to background.
Surv_RWM_BW.tbl	Used to file right of way monumentation maps in counties that don't allow gray shading. Does not print construction class. Outline color of closed elements in active model with fill color=255 (background) is changed to background.
Surv_RWM_GS.tbl	Used for right of way monumentation maps and gray shades existing topography. Does not print construction class. Outline color of closed elements in active model with fill color=255 (background) is changed to background.

Name	Purpose
HeavyColor.tbl	All elements with line weights from 0 to 7 will plot two line weights heavier.
Yellowtoblack.tbl	All elements with color 4 (yellow) will plot black. Substitutes filename location text for actual file location if ODOT border cell is used.

Creating a PDF

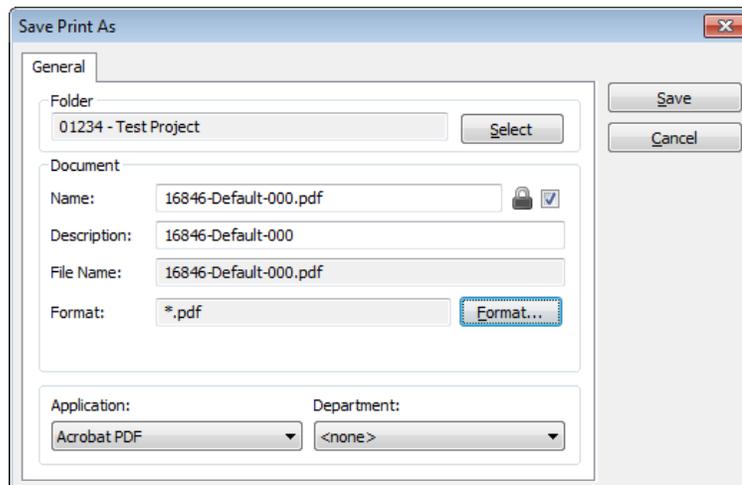
To create a PDF file from a single plan sheet:

1. Open any design file that contains a plan sheet border.
2. Place a fence around the plan sheet border.
3. Select **File > Print** from the main menu. The **Print** dialog opens.
4. Choose one of the following methods to print (A – uses print style, B – uses manual set up):
 - A. Select **Settings > Apply Print Style** on the **Print** dialog main menu to open the **Print – Apply Print Style** dialog, select **_PDFPlans_ODOT** from the drop-down menu and click **OK**.



The Print Style applies the PDF driver and the pen table, sets the paper size to 11x17, and maximizes the border to the paper. Click **Print**.

- If you are working in MicroStation DGN file that is stored in a ProjectWise datasource, the **Select a Wizard** dialog will open. Select a wizard to save the PDF in the ProjectWise datasource.

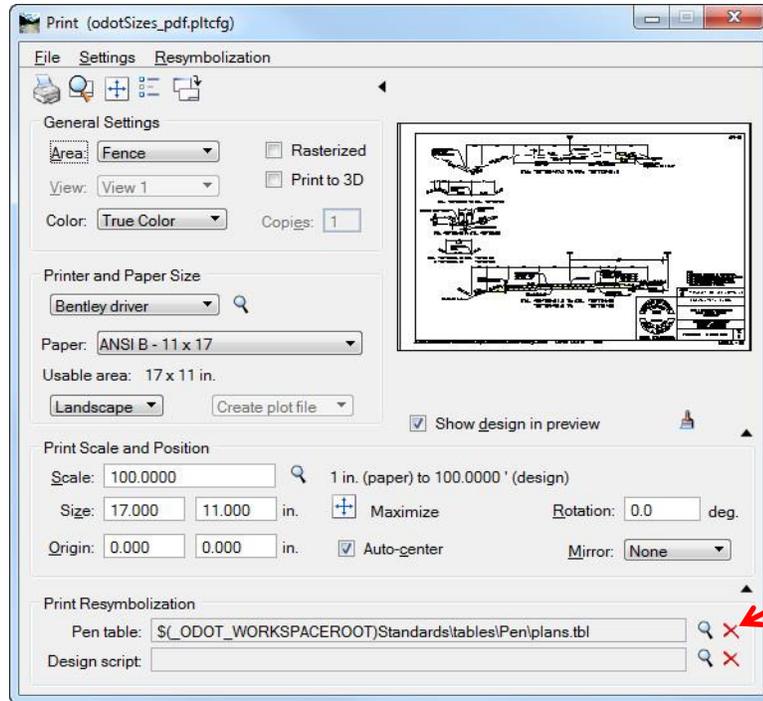


The resulting PDF will be saved in ProjectWise and the local copy will be opened in the PDF viewer.

Select **Cancel** on the **Select a Wizard** dialog to save the PDF in the Windows file system. You will need to navigate to your Windows directories.

- If you are working in a MicroStation DGN file that is stored in a Windows directory, the Windows **Save Print As** dialog opens. Enter a new name and click **Save**.

- B. Select **File > Select Bentley Driver** (odotSizes_pdf.pltcfg) on the **Print** dialog main menu or select **Bentley driver** from the **Printer and Paper Size** drop-down menu. Verify **Paper** is set to **11x17** and **Scale** is set to **100.0000**. Attach the **plans.tbl** pen table. Click **Print**. The **Save Print As** dialog opens. Enter a new name and click **Save**.



Locate and attach, or detach a pen table.



Reminder: The *.tbl and *.pltcfg files are stored in ODOT_space in the Windows file system, and cannot be loaded using the integrated dialog. Click **Cancel** to open the **Windows Select ... File** dialog when manually loading printer driver configuration files or pen tables.

Using Print Organizer to Create Print Definitions

You can use Print Organizer to create and manage prints — both paper and digital. Print Organizer uses everything from the pen tables and printer driver configuration files to paper sizes and scales to automatically create print definitions for plan sheets. Much of the setup is performed automatically by choosing the desired Print Style during print definition creation.

The available print styles either search for specific border cells, or rectangular shapes on a specific level, in the files you add into Print Organizer. Print definitions are created in the same order that the cells and shapes were placed into the model originally. It is the order of placement, not the location, that governs the order in which the print definitions are created.



Note: You may use the **Bring to Front** command to change the order of placement of elements in a model. The **Bring to Front** command causes the element to become the last element placed in the file.



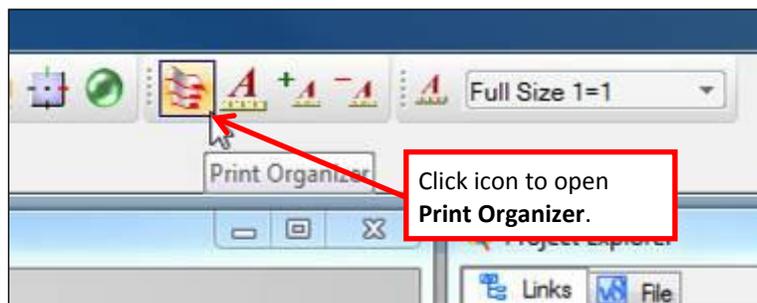
Note: You do not have to select the **ODOT Defaults** print style as it always runs. If you want to change your search for borders to only look inside referenced files for border cells, on the **Create Print Definitions** dialog select the **1Borders_In_Reference_Files_Only** print style and apply a PDF or paper print style later, inside **Print Organizer**, by selecting **Tools > Apply Print Style**.

Print Organizer can be used to create a print set stored in a flat structure from a new, empty print set (PSET), or print definitions can be created inside a contract plans folder structure by using a print set seed file named KeyNu.pset. KeyNu.pset is only stored in the Windows file system in your F:\ODOT_DATA\USERCFG\plot folder, making the two methods of creating print definitions shown below, with ProjectWise data or with Windows data, similar. You will need to **Cancel** out of the integrated **Open Print Set File** dialog when working in ProjectWise, in order to load KeyNu.pset from your F:\ drive. A shortcut named **ODOT_User_Configuration** has been placed in the **Engineering** folder on your **Desktop** to provide easy access to KeyNu.pset.

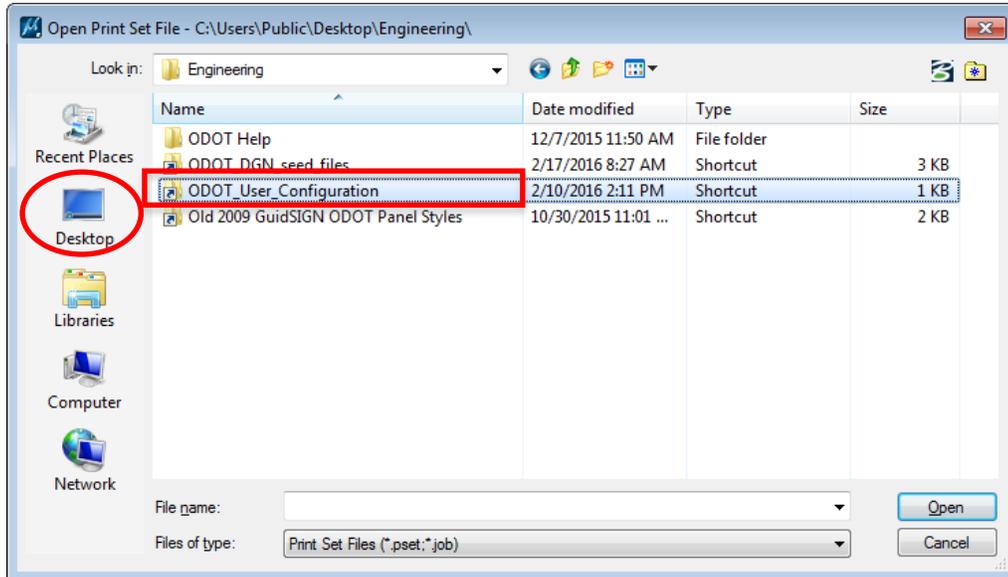
Two methods are shown below. The first, with ProjectWise, will use KeyNu.pset. The second will illustrate creating print definitions from Windows data in a flat folder structure.

Creating Print Definitions from Data Stored in ProjectWise

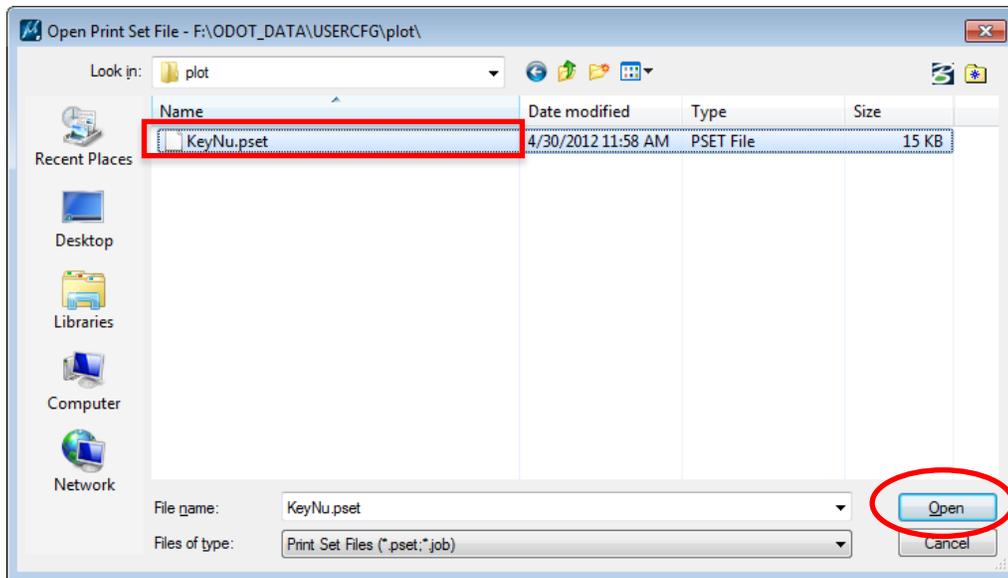
1. When working in a MicroStation DGN file that is stored in a ProjectWise datasource, Click the **Print Organizer** icon or **File>Print Organizer...** to open the **Print Organizer** dialog.



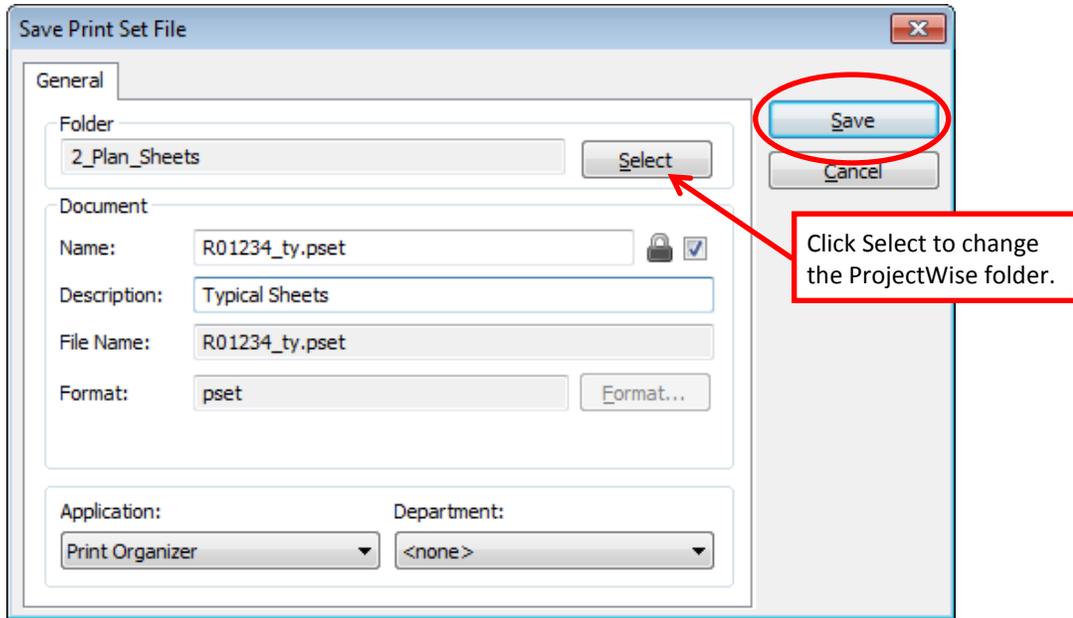
2. Load the print set seed file KeyNu.pset by selecting **File>Open** in Print Organizer. **Cancel** out of the *integrated Open Print Set File* dialog to open the **Windows Open Print Set File** dialog. Click the **Desktop** shortcut on the left side, and double-click to open the **Engineering** folder. Double-click on the **ODOT_User_Configuration** shortcut to get to the **F:\ODOT_DATA\USERCFG** folder.



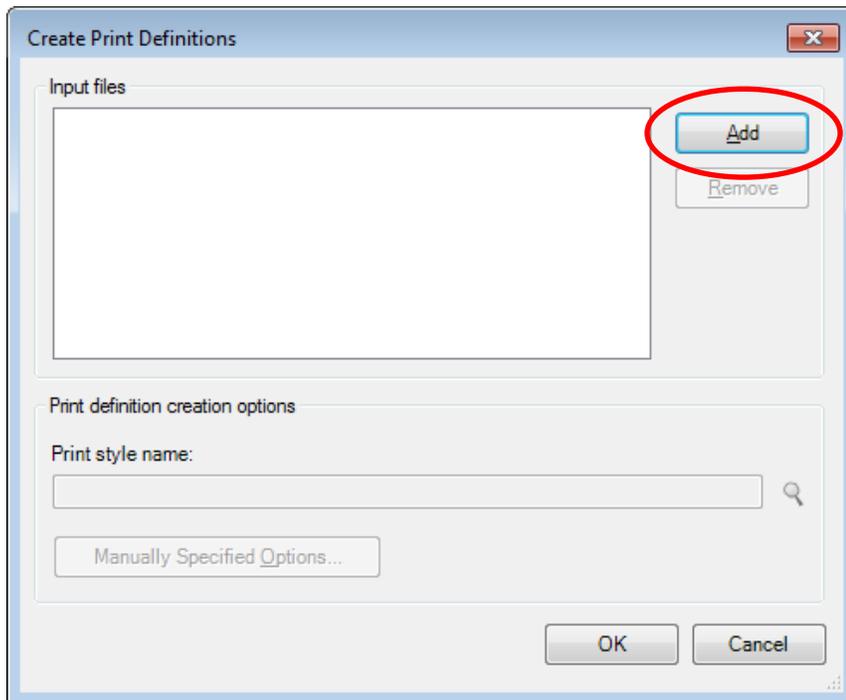
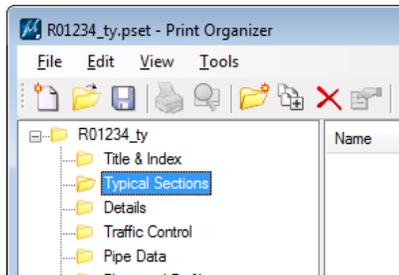
3. Open the **plot** folder, select KeyNu.pset and click **Open** to load the empty folder structure for a contract plans print set.



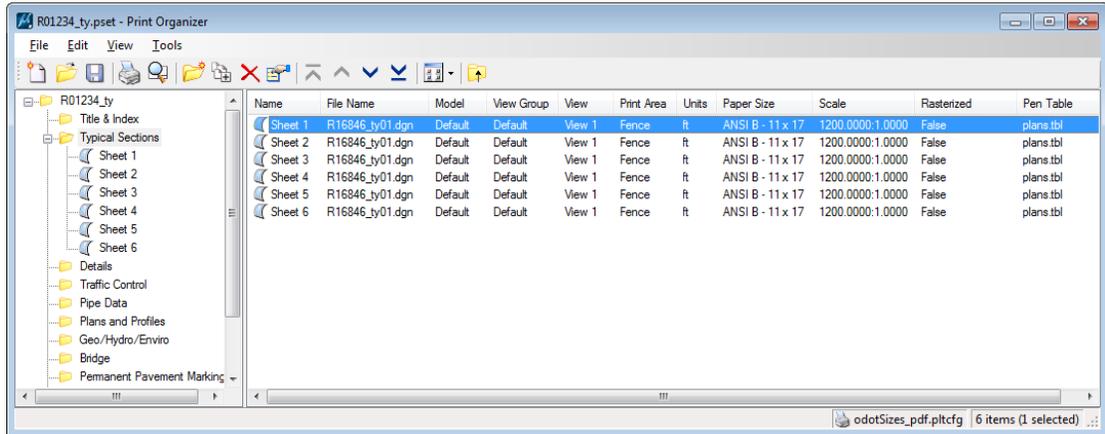
4. Use **File>Save As**, select **No Wizard**, and click **OK** to open the **Save Print Set File** dialog. **Save** the empty folder structure to the appropriate folder in ProjectWise, using the key number in the name.



5. Select a sub-folder in the left window of the Print Organizer and choose **File>Add Files to Set...** to open the **Create Print Definitions** dialog, then click the **Add** button.



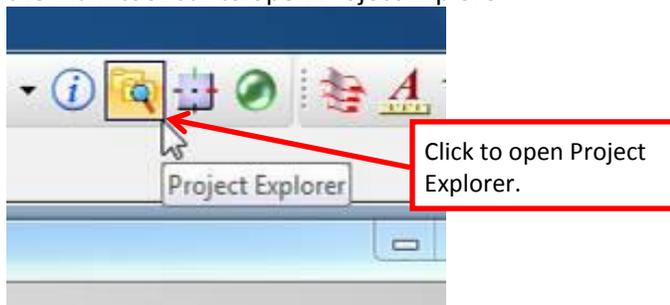
- The print definitions will be displayed in the Print Organizer. Choose **File>Save** to save the print definitions and when you close the Print Organizer, **Check In** the PSET file.



Print preview, sheet order, and renaming print definitions is covered below, in the next method of creating print definitions from data stored in the Windows file system.

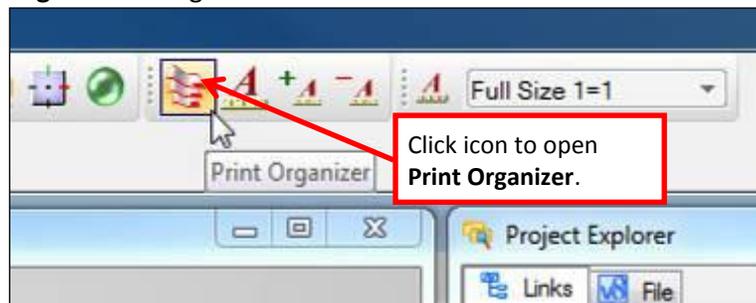
Creating Print Definitions in the Windows File System (using the Project Explorer)

- Open any design file in the Windows file system and then click the **Project Explorer** icon on the main tool bar to open Project Explorer.



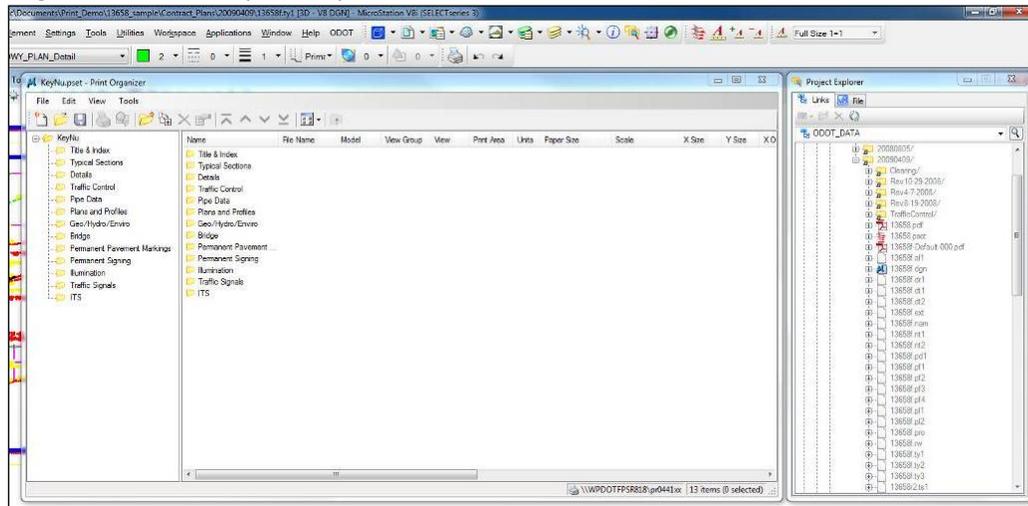
The **Project Explorer** dialog opens.

- Click the **Print Organizer** icon on the Extra Tools – Custom tool bar to open the **Print Organizer** dialog.

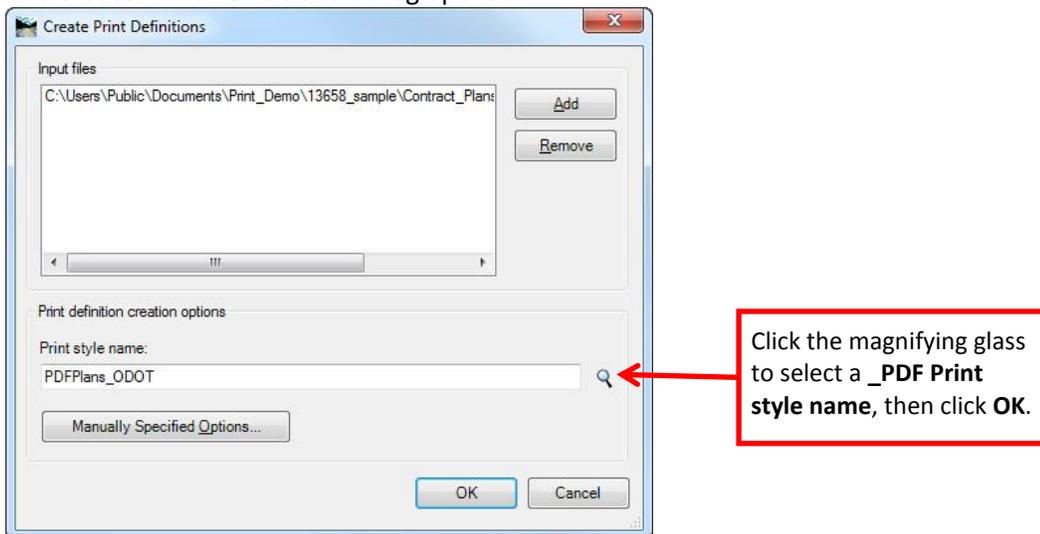


- From the F:\ODOT_DATA\USERCFG\plot folder in Project Explorer, select the **KeyNu.pset**, then drag and drop it into Print Organizer.
- In Project Explorer, navigate to your files that contain plan sheets, select the plan sheets, then drag and drop them into the appropriate folder in the left window pane within Print

Organizer. For example, drop files named *.dt* into the Details folder.

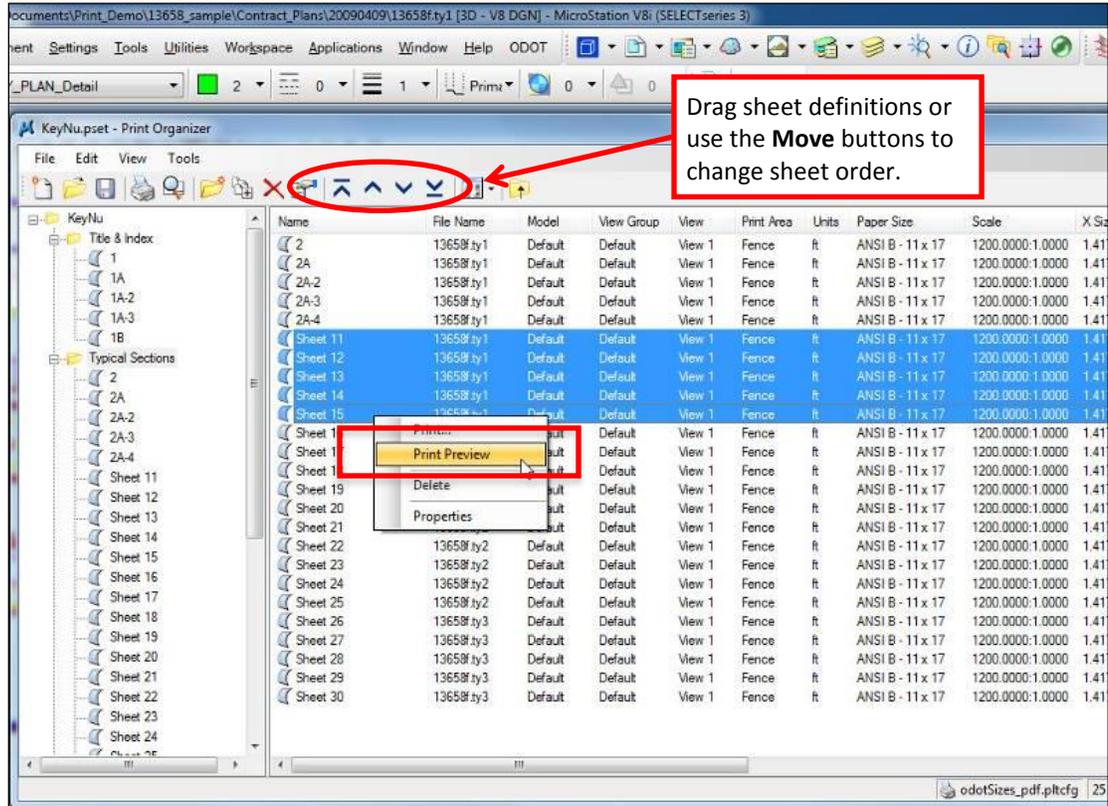


The **Create Print Definitions** dialog opens.

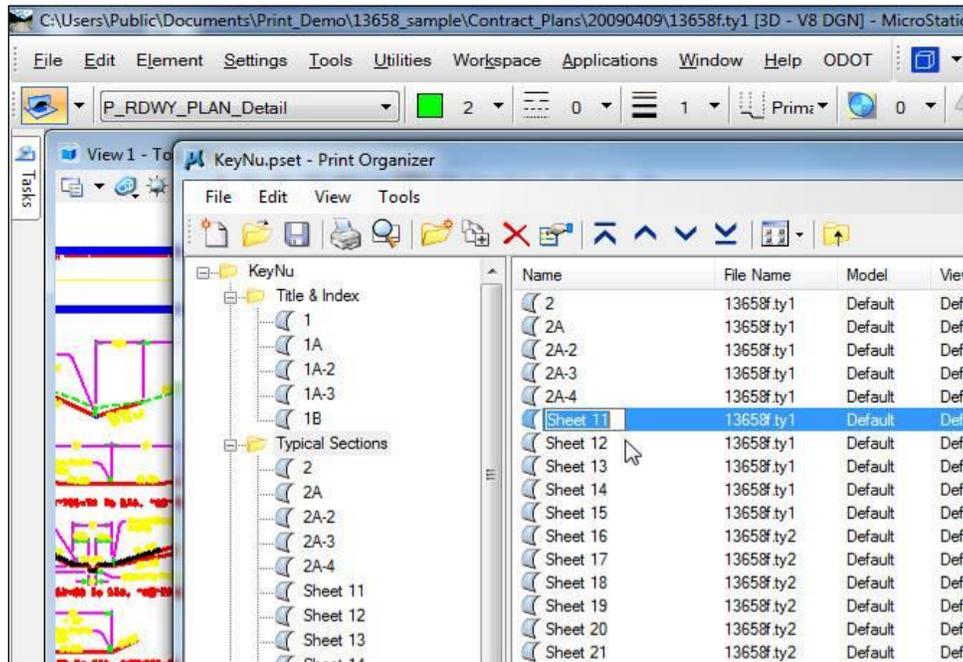


5. On the **Create Print Definitions** dialog, click the magnifying glass icon and select a **_PDF Print style name** and click **OK** to apply the print definition to the set of files.
6. Drag the next set of files from Project Explorer into the corresponding Print Organizer folder on the left side and repeat step 5 to select and apply a print style to the set of files. Repeat until you have loaded all of the desired files that you want to include in your print set.

7. **To preview the sheets in each Print Organizer folder**, right click the sheet name in the right pane and select **Print Preview** from the drop-down menu.

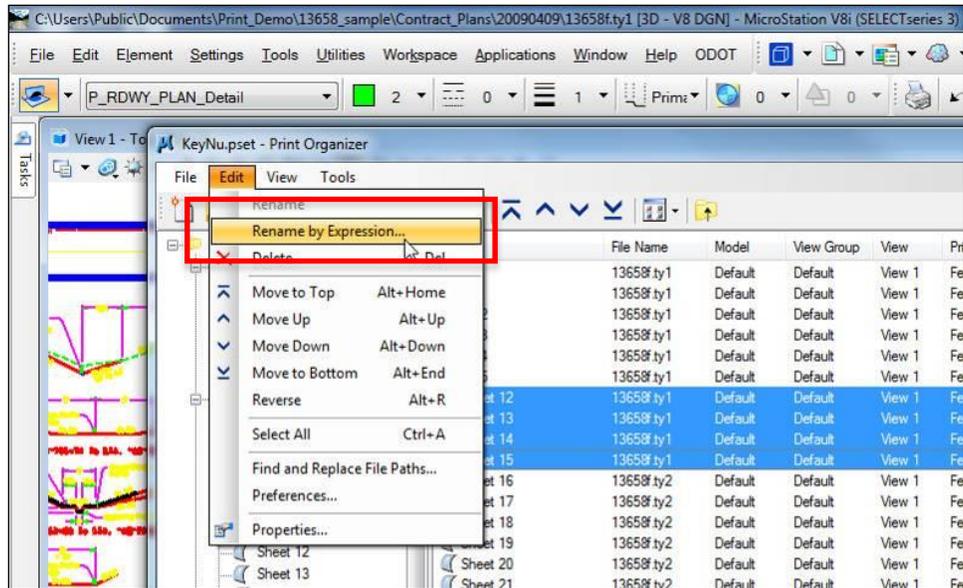


8. **To change the sheet order in Print Organizer**, select the sheet(s) to move in the right pane, then drag and drop or use the **Move** buttons to move the sheet(s), even into a different folder.
9. **To change a single print definition name to match sheet names or numbers**, right click on a single print definition in the right pane and select **Rename** from the drop-down menu, or slowly double click on a single selection to highlight the print definition name for replacement.

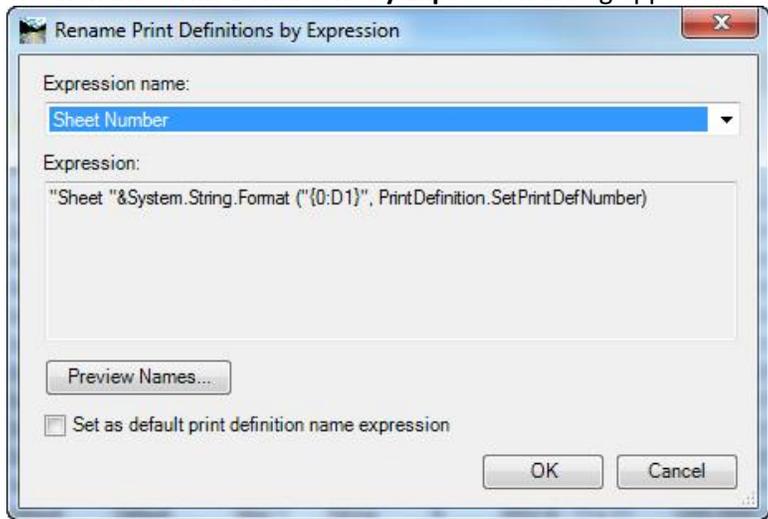


Note: We specify the default print definition names by combining the word "Sheet" with the print definition number (PrintDefNumber). PrintDefNumber is counted from the topmost position beneath the root folder in the Print Organizer. This results in names like Sheet 1, Sheet 2, Sheet 3 and so forth.

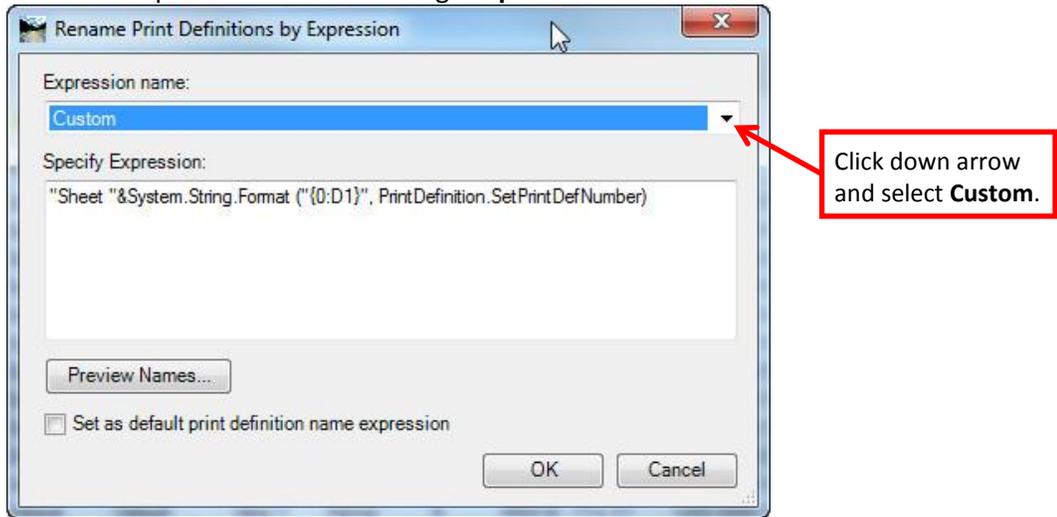
10. To rename multiple and sequential print definitions where a numeric sequence can be used to rename a group of sheets, make a selection set and choose Edit > Rename by Expression ... from the Print Organizer main menu.



The **Rename Print Definitions by Expression** dialog appears.

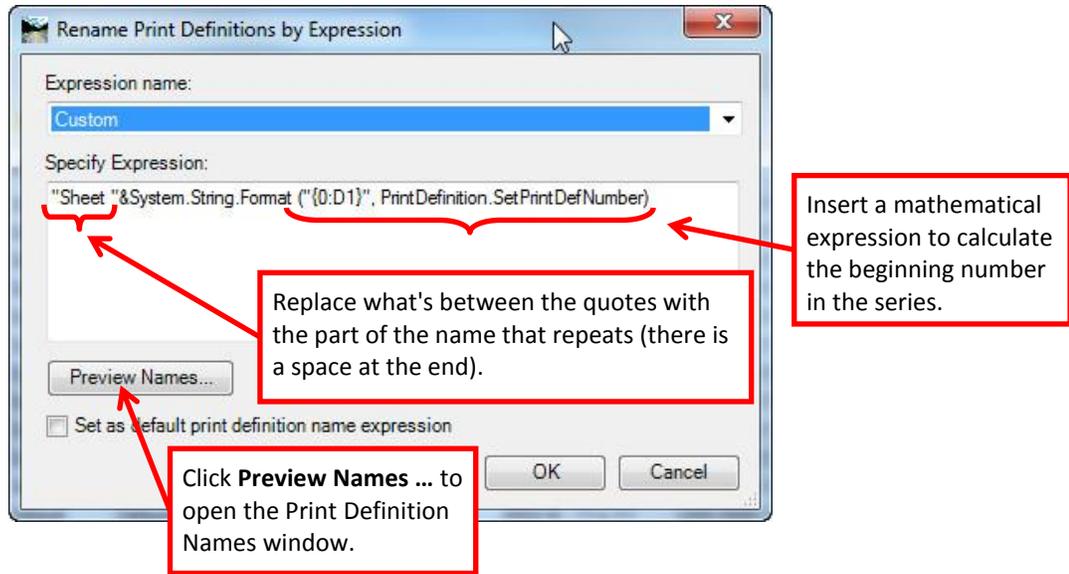


11. Click the drop down arrow and change **Expression name** to **Custom**.



This activates the **Specify Expression** field to allow editing. The text inside the quotation marks is always used for each name.

12. Edit the **Expression name** as follows:
- Replace what's between the quote marks with the part of the name that repeats. Be sure to leave a space at the end, just before the closing quote mark.
 - Insert a mathematical expression to calculate the beginning number in the series.
 - Click **Preview Names** to open the Print Definition Names window and verify the print definitions are correctly numbered.
 - Click **OK** to rename the print definitions.

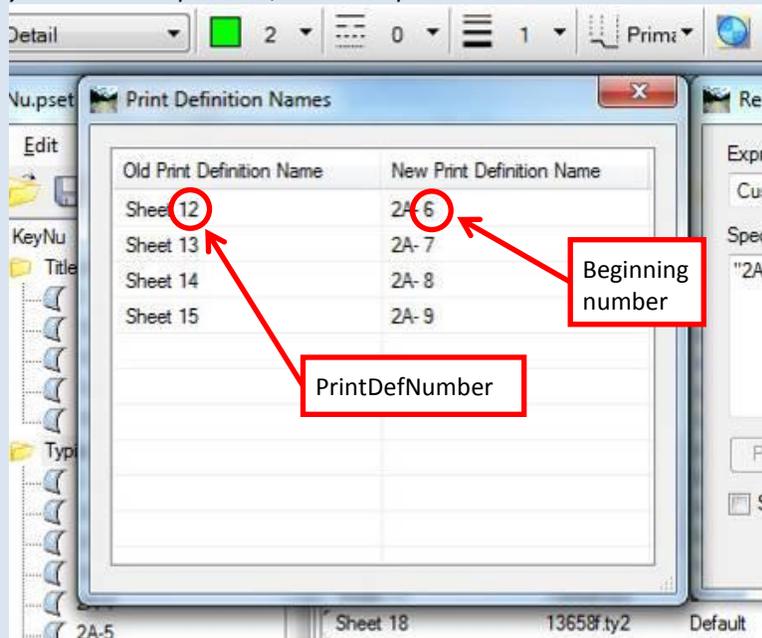


Note: To specify the mathematical expression to calculate the beginning number in a Print Definitions series, use the following formula:

$$\text{Number to subtract} = \text{PrintDefNumber} - \text{Beginning Number}$$

For the example shown below:

1. Replace **"Sheet "&System.String.Format ("{0:D1}", PrintDefinition.SetPrintDefNumber)** with **"2A- "&System.String.Format ("{0:D1}", PrintDefinition.SetPrintDefNumber-6)**
2. Click **Preview Names ...** to confirm the formula works. If you don't like the names you see in the preview, close the preview and click **Cancel**.

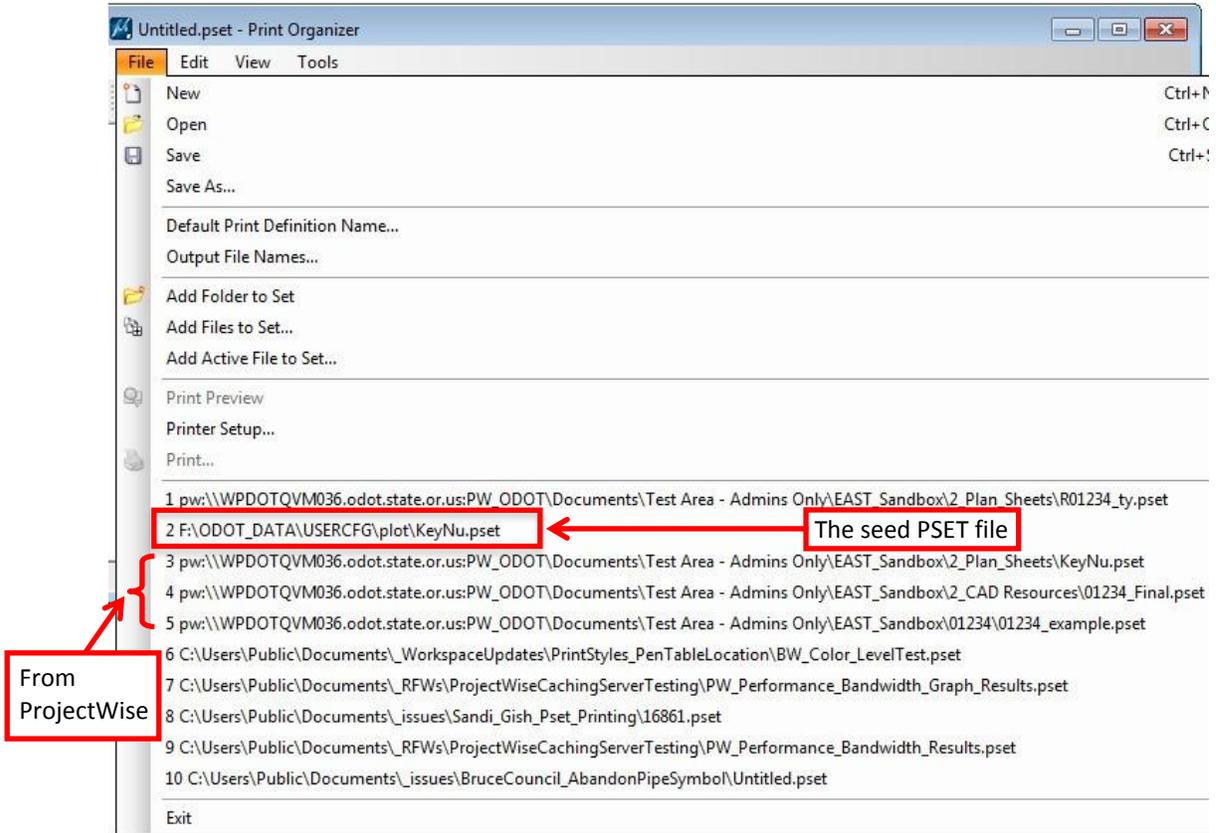


3. Click **OK** to save the print definition expression.

13. After creating, ordering and renaming print definitions, save the print set: Select **File > Save As...** on the Print Organizer main menu and navigate to your project folders and change the name of the seed KeyNu.pset to the project key number or name. This name will be used when creating a single PDF print job. It is important to save prior to printing or creating PDFs.

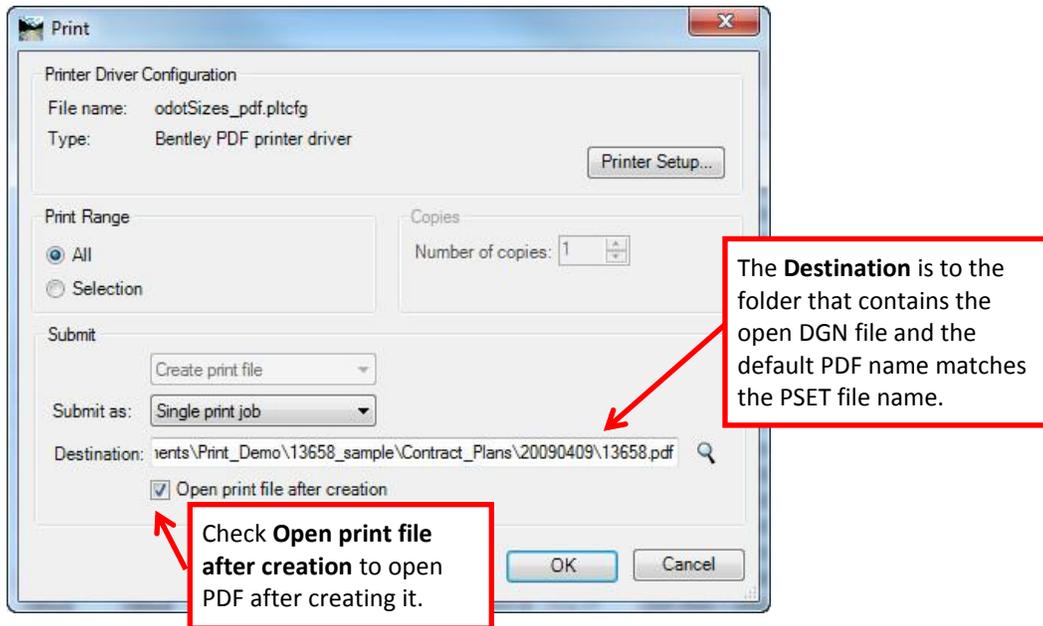
Printing with Print Organizer

Print Organizer has its own File History, allowing you to quickly open a print set for a project stored in a different datasource or folder or allowing you to create a new print set from the seed KeyNu.pset file.

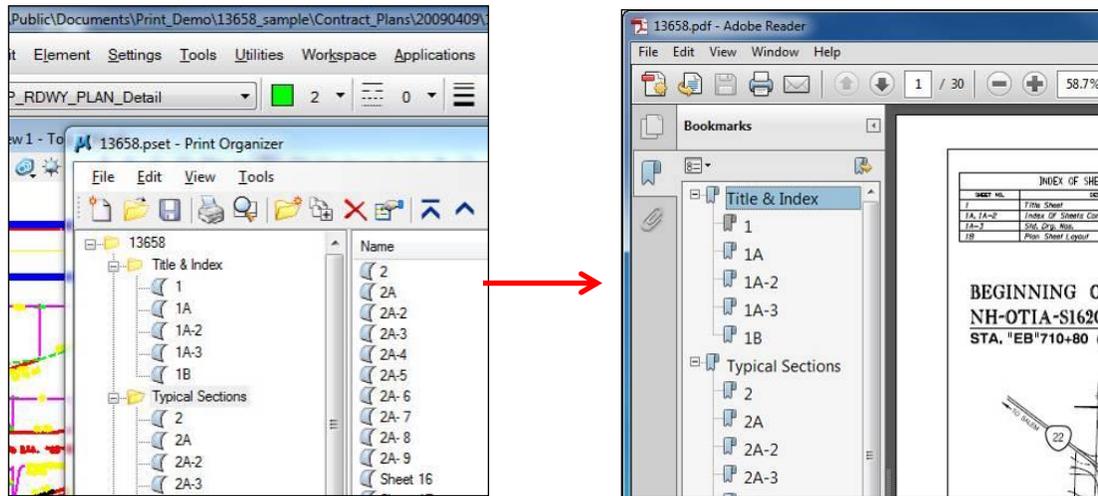


With Print Organizer open and a PSET file loaded,

1. Select **File > Print...** on the Print Organizer main menu or right click on a sheet and select **Print...** from the drop-down menu to open the **Print** dialog.



2. For the **Print Range**, select **All**.
3. In the **Submit as** field, select **Single print job**.
4. Click **OK** to create one PDF file with all sheets.



Note: Only populated folders in the Print Organizer create bookmarks in the resulting PDF.

Small Format Paper Printing

When you create print definitions, it is recommended that you choose a print style that creates PDFs. If you would like to print to paper or mylar later, it is best to divert to a printer at print time. For small format paper printing, confirm that your default Windows printer has the paper size you want to print on. Then, when you choose the appropriate printer driver configuration file, the correct paper size will be set.



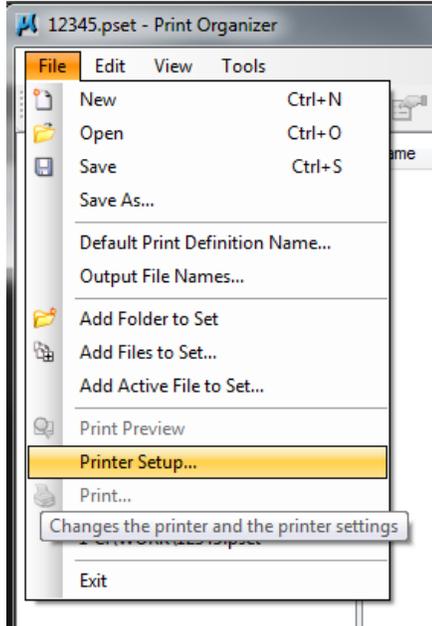
Reminder: The Print Styles will apply the plans.tbl pen table and a PLTCFG file to control the type of printing.



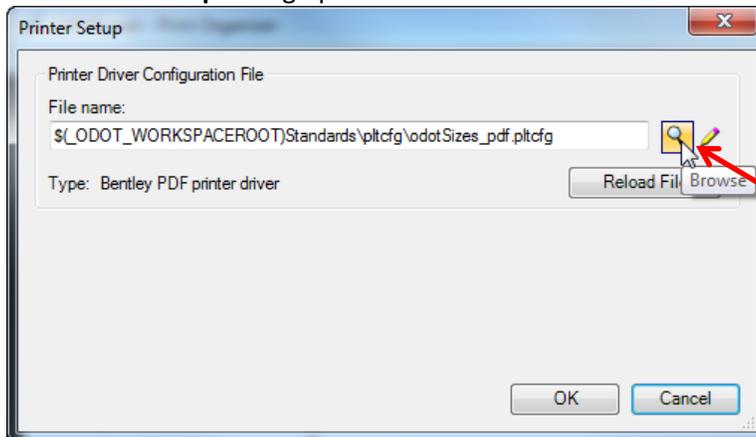
Note: The odotAB_printer.pltcfg printer driver configuration file automatically sets a paper size of **ANSI B -11 x 17**.

To change from creating a PDF to printing 11x17 on a small format printer:

1. Select **File > Printer Setup...** from the main menu on the **Print Organizer** dialog.



The **Printer Setup** dialog opens.



Browse, select odotAB_printer.pltcfg and click **Open**.

2. On the **Printer Setup** dialog, click the **Browse** button, select odotAB_printer.pltcfg and click **Open**.

Large Format Paper Printing

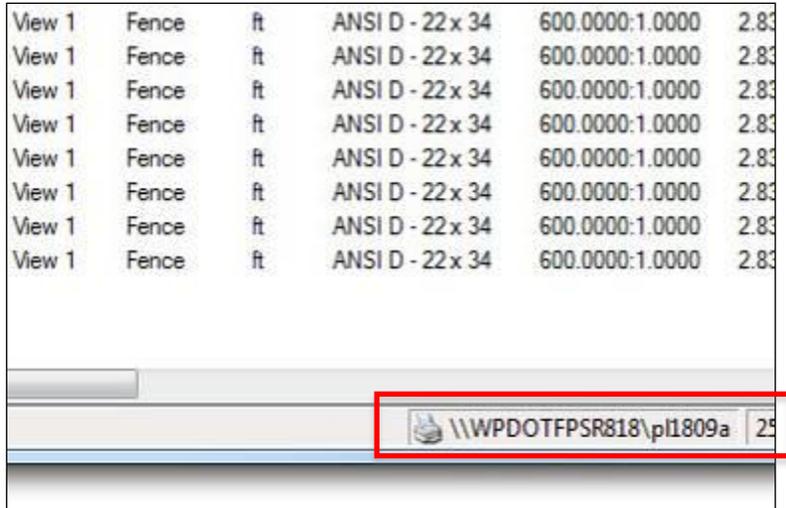
You may also change from small format PDF to large format paper or mylar after the print definitions have been created. For large format paper printing, confirm that your default Windows printer is set to a plotter and has the paper size you want to print on. Then, when you choose the appropriate printer driver configuration file, the correct paper size will be set.

To change from creating an 11x17 PDF to printing 22x34 on a large format plotter:

1. From the Control Panel, open the Devices and Printers window and set a plotter to be the default printer.



2. Select **File > Printer Setup...** from the main menu on the **Print Organizer** dialog.
3. Follow the steps shown in the Small Format Paper Printing section above to browse to the printer driver configuration files and choose **odotCD_printer.pltcfg**.
4. Upon clicking **OK** on the **Printer Setup** dialog to accept the printer driver configuration file change, the paper size and scale will adjust to the larger format. The printer path to the plotter displays at the bottom of the Print Organizer window.



5. Select **File > Print...** to send the prints to your plotter.

Save the Print Definition File

The PSET file contains all the information about the print definitions and can be reopened in Print Organizer for printing single sheets from the print set, for reprinting after revisions are made to content, or for applying a different print style to create check prints, PDF files or Mylar prints.

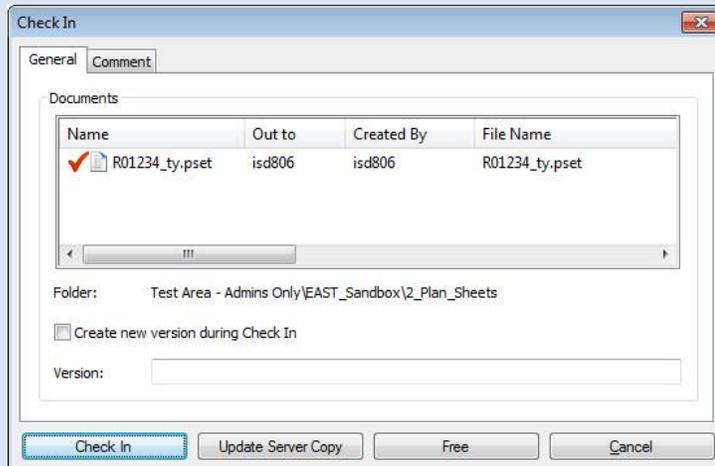
The print definition file does not contain any information about elements in the file. It does contain a fence location and when you request a print preview or a print, the source file is looked at to determine which elements are displayed within the fence location. When you save the PSET file, it records the fence locations, the path and name of the source files, the paper size and scale.



Tip! Only save one PSET file for a print set, even if you need to print digital and paper products. Multiple print sets for the same project can lead to difficulty synchronizing sheet order, etc. For a temporary change, select **File > Printer Setup** on the main menu bar. It is recommended to save PDF print definitions for consistent paper sizes.



Reminder: Saving changes to a print set takes two steps if your files are stored in a ProjectWise datasource. First, use **File>Save** in Print Organizer, then select **Check In** on the **Check In** dialog when you close the Print Organizer.



Source File Data Preparation

The files that contain the borders must have the last active view left print-ready. Print-ready means the displayed levels and orientation of the last active view are ready for printing without rotation. Save the print settings with an active view rotated to align border cells with the view axes. To do this, leave one view oriented to Top rotation, or Unrotated if 2D, and place borders in the unrotated view.

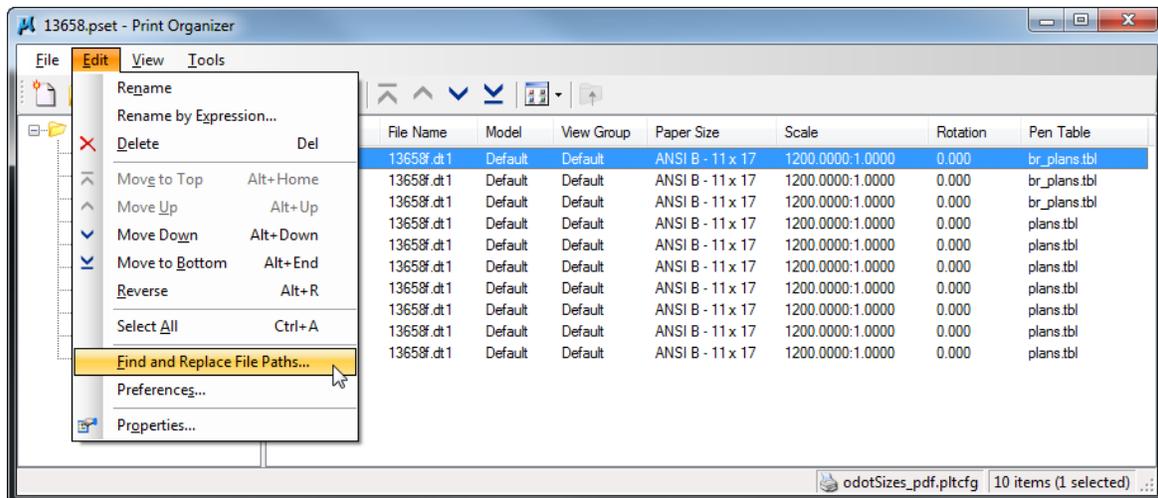
Note: If the last active view had the view rotated with respect to the borders, you will get strange scales and rotated previews in the Print Organizer.

Note: You can load Saved Views directly into the Print Organizer by dragging them from Project Explorer and dropping them into the Print Organizer window.

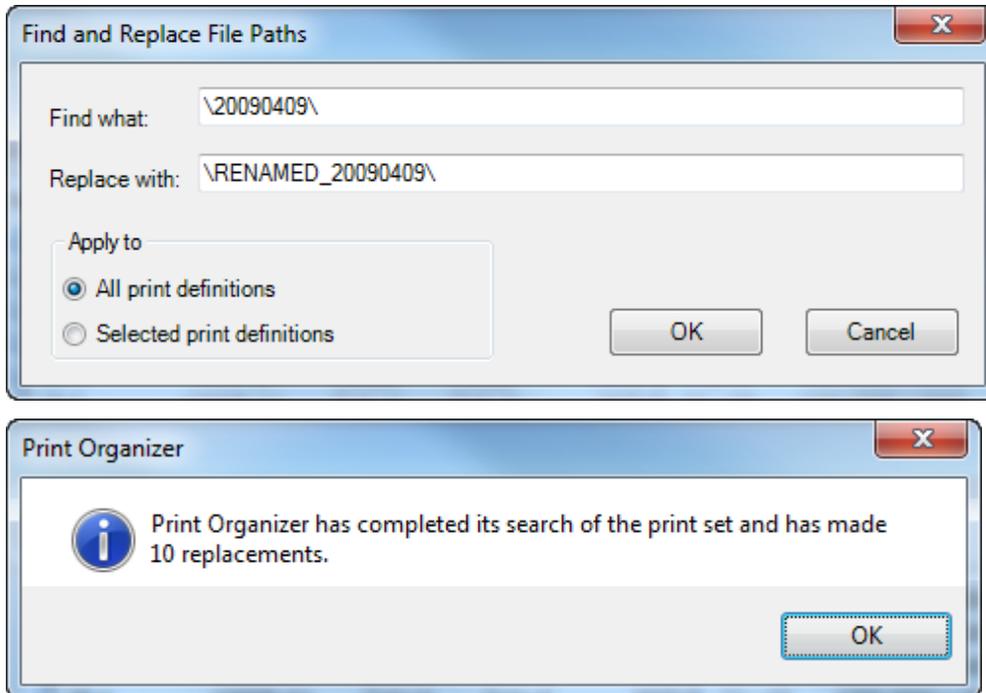
Printing the File Location

Many pen tables replace a string of text in the border cell with the location of the file. When using Print Organizer, the full path to the file is also recorded in the properties of the print definition when it is created. Sometimes the files that make up print set are renamed or moved to another folder. When the file is printed at a later date, the location will not be automatically updated and will display an incorrect file location on the print. **Find and Replace File Paths...** can be used to correct the path.

Manually replace the file paths by selecting **Edit > Find and Replace File Paths...** in Print Organizer.



Fill out the **Find and Replace File Paths** dialog. If a folder name has changed, all print definitions can be updated by selecting **All print definitions**. After clicking **OK**, a message will display indicating how many print definitions were updated.



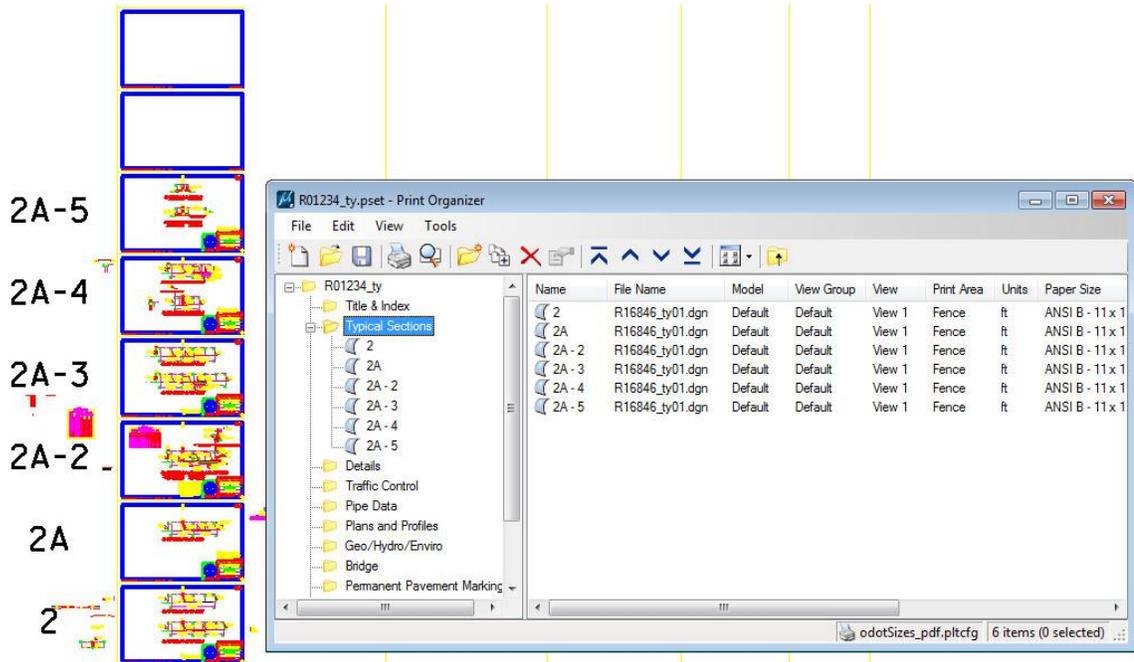
Now when Print Organizer applies a pen table that replaces a text string with the file location, it will read the **Filename:** field from the print definition Properties and display the corrected file location.

Adding a Sheet to Print Organizer

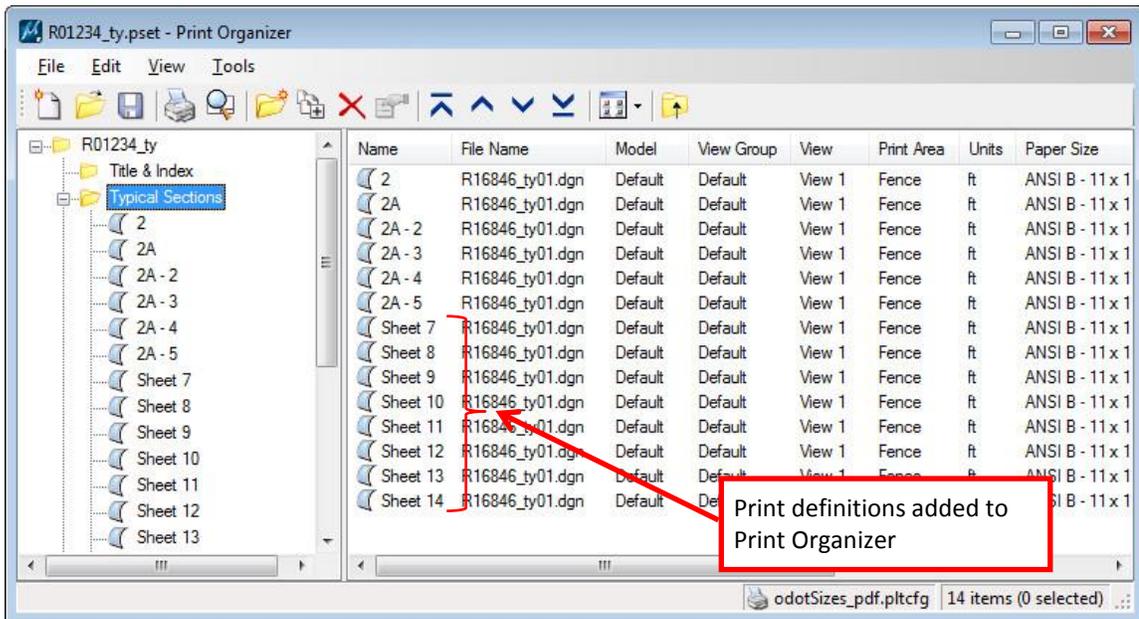
Occasionally you will need to add sheets to your .pset file. For most projects the following steps can be used to add sheets to Print Organizer.

Standard Method to Add Sheets

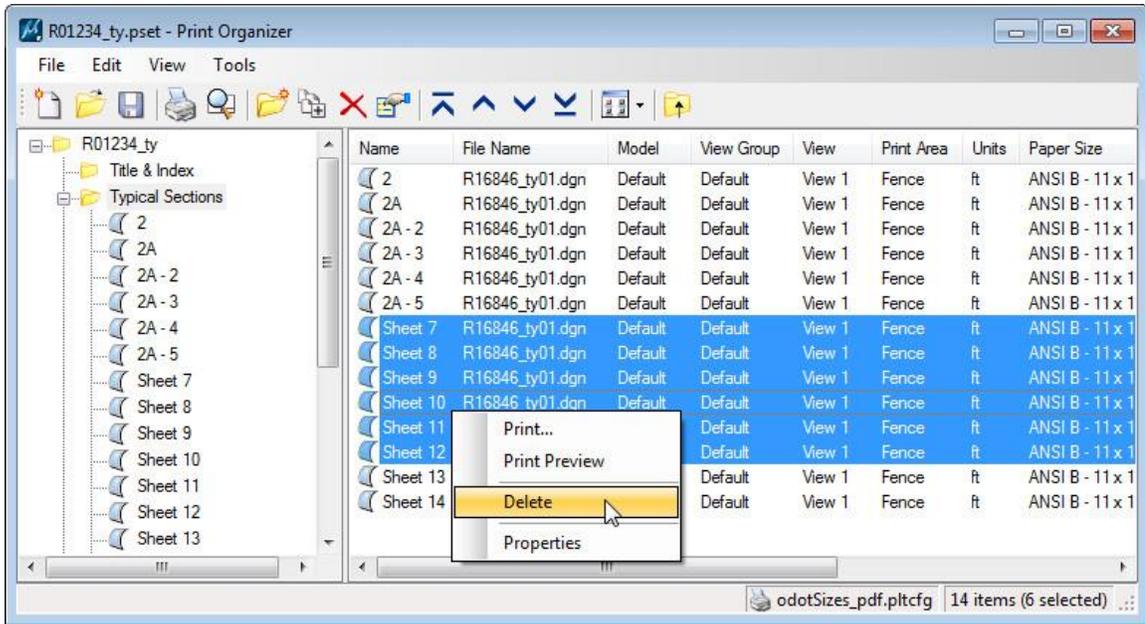
1. Open the file containing your existing sheet borders and add a border cells for the new sheets.
2. Open your project PSET with Print Organizer. Note that the project PSET may be in the Print Organizer file history.



3. With the correct folder active, use **File>Add Active File to Set...** Select **_PDFPlans_ODOT** Print style. This creates additional print definitions in Print Organizer (Sheet 7 through Sheet 14 in this example).



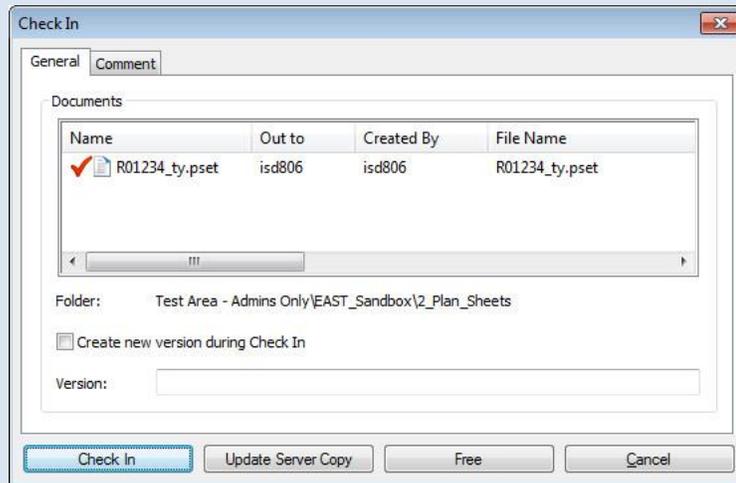
4. The last print definitions listed are the sheets just added to the DGN. Preview the last print definitions to confirm that you want to add them (Sheets 13 and 14 in this example).
5. Delete the other duplicate print definitions that were just created (Sheet 7 through Sheet 12 in this example).



6. Rename the print definitions.
7. Save the print set.



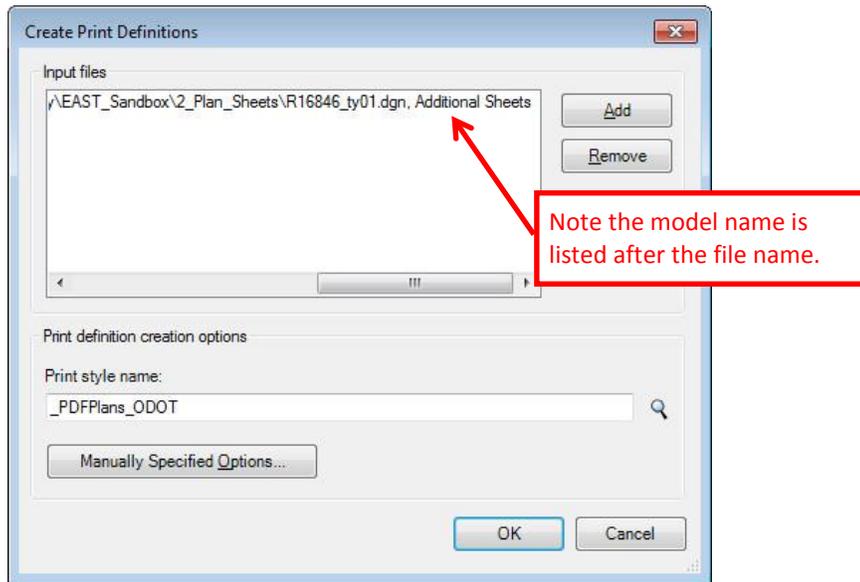
Reminder: Saving changes to a print set takes two steps if your files are stored in a ProjectWise datasource. First, use **File>Save** in Print Organizer, then select **Check In** on the **Check In** dialog when you close the Print Organizer.



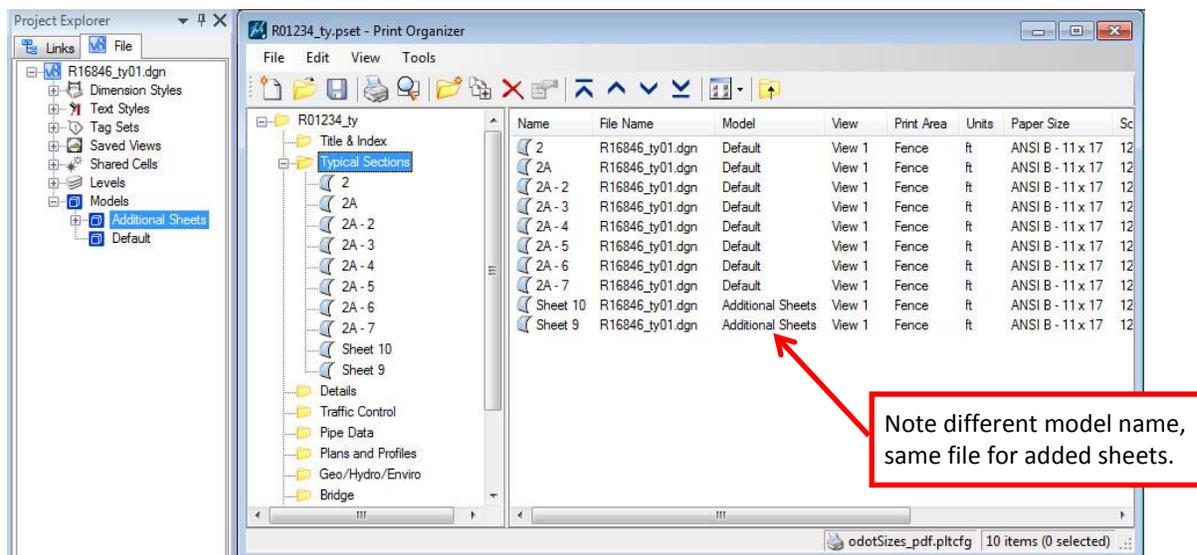
Model/File Method to Add Sheets

For some large complex projects the previous method of adding sheets to Print Organizer may not be practical. In this case create a model or file just for the additional sheet(s) you want to add to Print Organizer.

1. Add the border cell for the sheet to a new model or design file.
2. Open your project PSET with Print Organizer. The project PSET may be in the Print Organizer file history.
3. In Project Explorer expand the design file and drag just the new model from Project Explorer into Print Organizer and apply a PDF print style. This creates additional print definitions in Print Organizer (model named Additional Sheets in this example).

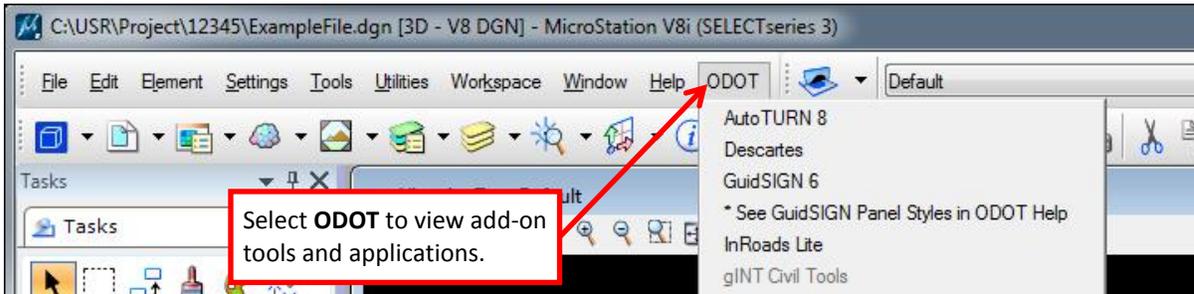


4. Rename the print definitions.
5. Save the print set.



MicroStation Add-on Tools

From the **ODOT** menu on the main menu, you can access MicroStation add-on tools and applications to use.



AutoTURN 8.0

AutoTURN 8.0 is used for vehicle turn simulation and swept path analysis. If installed, AutoTURN 8.0 appears on the ODOT menu.



Note: If you don't have AutoTURN 8.0 installed, but need it, call the Computer Support Desk to request the tool.

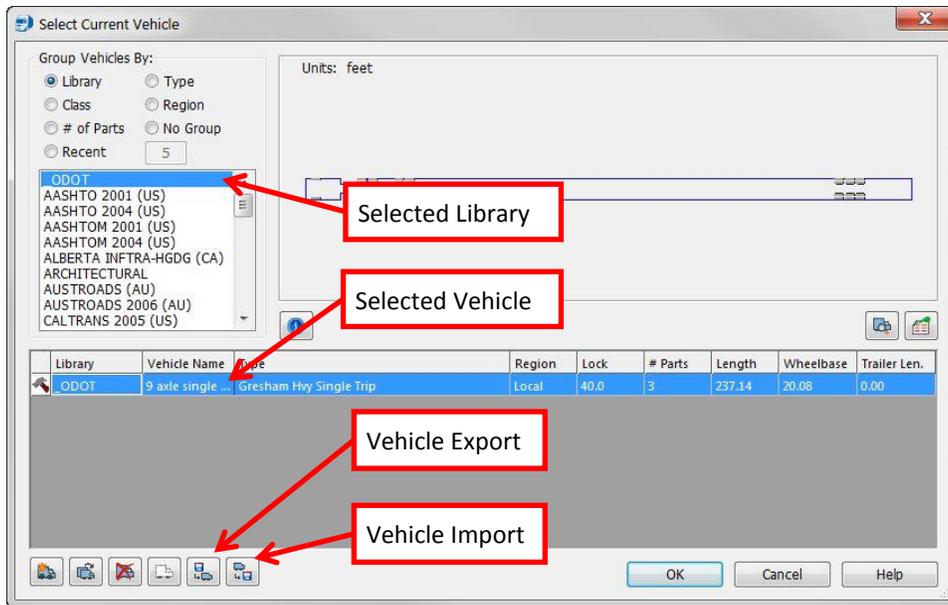
AutoTURN 8.0 stores vehicle data in the F:\ODOT_DATA\AutoTURN\database folder. You can import previous AutoTURN vehicle VLC and type TYP vehicle files into the database and export them from it. AutoTURN 7.0 vehicles must be exported. To share vehicle data, you must export the VLC and TYP files from the database of one user, and then import the vehicle files into the database of the second user.

To import and export vehicle files using AutoTURN:

1. On the AutoTURN toolbar, select the **Vehicles** icon.



The **Select Current Vehicle** dialog opens.



2. **To share a vehicle**, select the **Library** and the **Vehicle Name** to export out to VLC and TYP format, and click the **Vehicle Export** button.



Note: The **Vehicle Export** button will **not** appear if custom vehicles are not listed.

3. **To import vehicles into the AutoTURN 8.0 database**, click the **Import Vehicle** icon and select a VCL Vehicle file to import.



Note: The TYP type file must be in the same folder as the vehicle file. If the TYP type file is not found, AutoTURN will report the name of the missing type file that needs to be in the same folder as the VCL vehicle file. The vehicle and type files must be in the same folder. Before importing, move your TYP files from the F:\ODOT_DATA\AutoTURN\types user folder to the F:\ODOT_DATA\AutoTURN\vehicles user folder where the vehicles are typically located.

4. On the **Import Vehicle** dialog, select the **Library** within the database in to which you want to import the vehicle. You can accept the default of Imported or enter your own library such as **_ODOT**.



5. Click **OK**. The vehicle is imported and listed in the library.



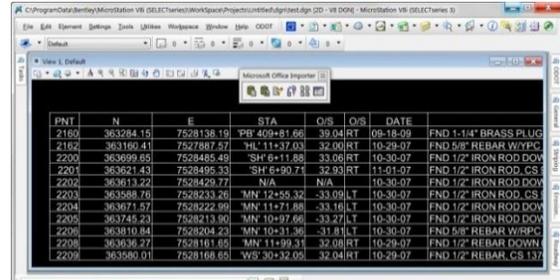
Tip! If you start your library name with an underscore (such as **_ODOT**, it will appear at the beginning of the library list so you will not have to scroll through the list to find it.

Axiom Microsoft Office Importer

The Axiom Microsoft Office Importer tool will produce native MicroStation graphics from Microsoft Word and Excel documents. You can import Word and Excel files into MicroStation using the tool, but it does not export from MicroStation back to the original Office format.

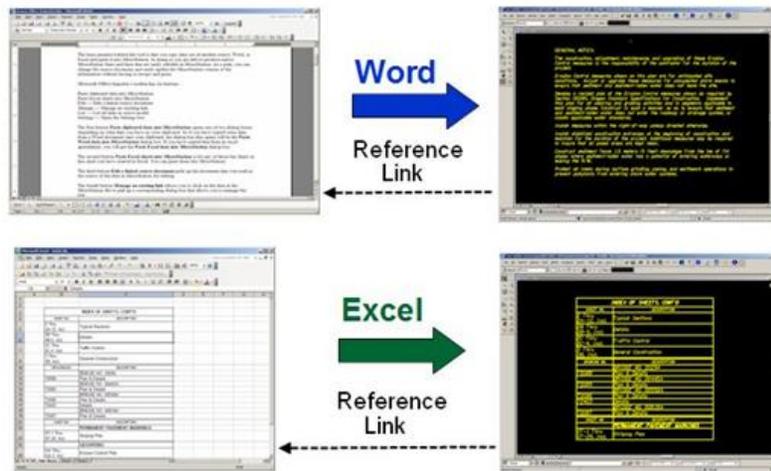


PNT	N	E	STA	O/S	O/R	DATE	
2160	363284.15	7528138.19	'PB' 409+81.66	39.04	RT	09-18-09	FND 1-1/4" BRASS F
2162	363160.41	7527887.57	'HL' 11+37.03	32.00	RT	10-29-07	FND 5/8" REBAR W
2200	363699.65	7528485.49	'SH' 6+11.88	33.06	RT	10-30-07	FND 1/2" IRON ROD
2201	363621.43	7528495.33	'SH' 6+90.71	32.93	RT	11-01-07	FND 1/2" IRON ROD
2202	363613.22	7528429.77	N/A	N/A		10-30-07	FND 1/2" IRON ROD
2203	363588.76	7528233.26	MN 12+55.32	-33.09	LT	10-30-07	FND 1/2" IRON ROD
2204	363671.57	7528222.99	MN 11+71.88	-33.16	LT	10-30-07	FND 1/2" IRON ROD
2205	363745.23	7528213.90	MN 10+97.66	-33.27	LT	10-30-07	FND 1/2" IRON ROD
2206	363810.84	7528204.23	MN 10+31.36	-31.81	LT	10-30-07	FND 5/8" REBAR W
2208	363636.27	7528161.65	MN 11+99.31	32.08	RT	10-29-07	FND 1/2" REBAR W
2209	363580.01	7528168.65	WS 30+32.05	32.04	RT	10-29-07	FND 1/2" REBAR, C



Although you can't export the graphic from MicroStation back to the original Office format, MicroStation stores a reference to the original Office document, which makes it easy to update a graphic if needed. Axiom Microsoft Office Importer works with Office Documents stored in ProjectWise the same as documents stored in the Windows file system. The settings (*.ini) files are located on a network drive and are not stored in ProjectWise.

Warning: When updating an Excel or Word document that has been imported into MicroStation, open the document and make changes with the application or ProjectWise Explorer. After the server is updated, the updated document can be reimported with the Axiom Office Importer **Manage** or **List Update** command. Avoid using the adjacent **Edit Source** which creates confusing error messages.



Axiom Office Importer is only licensed to use at these ODOT offices:

- Portland (Flanders only)
- Salem (Region 2 and TLC)
- Springfield
- Roseburg
- White City
- Bend
- Klamath Falls
- La Grande

Custom Tools (Pipe Data Sheet)

A workflow for preparing ODOT Pipe Data Sheets in Excel and importing them in to MicroStation is available. The Pipe Data Spreadsheet User Guide can be found on the EAST website. Even if you do not use the Pipe Data Sheet, you may get some ideas about using the Axiom Microsoft Office Importer. Additional training documents are also available for this tool.

By default, Axiom Microsoft Office Importer loads a settings file called **office.ini** and stores it in F:\ODOT_DATA\USERCFG\data. You can make your own settings files to configure text, line, colors and weights to use when you import Office content into MicroStation. Additional settings (*.ini) files have been developed for the Pipe Data Spreadsheet and surveyor coordinate tables.

The settings (*.ini) file does have a limitation: TrueType fonts are referred to by MicroStation font number rather than by name. TrueType fonts can vary between computers. A settings file created on one computer may need the TrueType fonts to be reselected when used on another computer.

Descartes

Descartes is used to process images, legacy documentation, point cloud data and digital terrain models (DTMs). If installed, it appears on the ODOT menu. After Descartes is launched from the ODOT menu, Descartes toolbars can be displayed and additional commands are available in the MicroStation Raster Manager.



Note: If you need Descartes but don't have it installed, call the Computer Support Desk to request the tool.

GuidSIGN 6

GuidSIGN 6 is for designing roadway signs. If installed, it appears on the ODOT menu.



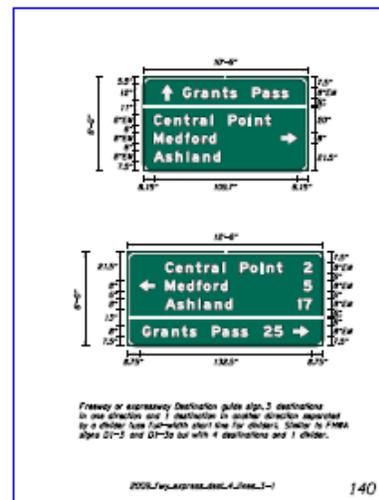
Note: If you don't have GuidSIGN 6 installed, but need it, call the Computer Support Desk to request the tool.

ODOT Sign Styles

The ODOT sign style files that conform to MUTCD 2009 have the prefix **_2009_** and should be used for new projects. The ODOT sign style files are copied to your computer from the workspace. Store your own custom styles that you develop for your projects in the F:\ODOT_DATA\GuidSIGN folder. The ODOT GuidSIGN Reports and Sheets are set as the default.

The GuidSIGN panel styles are documented in ODOT_Custom_Panel_Styles_for_GuidSIGN.pdf which includes examples of each style. This PDF can be opened from the MicroStation Menu ODOT > ODOT Help > GuidSIGN Panel Styles.

Consultants will find the GuidSIGN sign styles files on the local computer in the ODOT workspace, which by default is C:\ProgramData\odot_space\Standards\data\GuidSIGN.

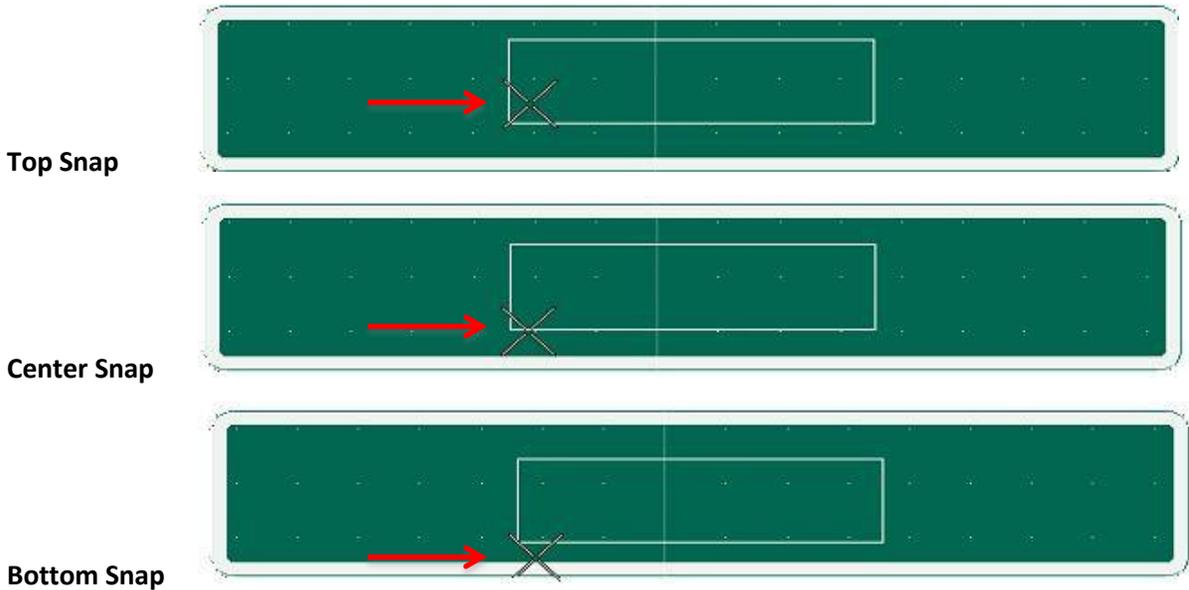


GuidSIGN Toolbar

GuidSIGN Templates and Export on the toolbar are not used. To save screen space, you can hide these icons; right click on the icon and uncheck the tool from the list.

Style Locks

GuidSIGN 6 provides horizontal and vertical locks for panel styles. Horizontal locks snap to a left, center or right justification instead of just a single locked location. You will want to be careful that the text and legends are placed at the correct justification. Vertical locks allow text and legends to be placed at a top, center or bottom justification instead of a single locked location. The difference can be small as shown by the examples below:



You can use the Move Multiple Objects tool to correct a misplaced object. It also snaps to multiple lock locations like placing objects.

 **Tip!** For more information about how locks in GuidSIGN 6 work, contact the Sign Design Specialist at the ODOT Technical Leadership Center

Old ODOT GuidSIGN Panel Styles

When working on older designs using the standard ODOT GuidSIGN panel styles, you may get an error message “GuidSIGN cannot find the panel style...” because the style file is not available to the program. ODOT GuidSIGN users can find the older panel styles via the shortcut “Old 2009 GuidSIGN ODOT Panel Styles” in the Engineering desktop folder. Older ODOT panel styles are stored in the Old_ODOT_Panel_Styles folder below the yearly folder, with the standard panel styles. The older panel style can be then copied and pasted into the personal panel style folder on the F:\ drive e.g. F:\ODOT_DATA\GuidSIGN\Styles\2009. Even older MUTCD 2003 styles can be found on the local computer in C:\Program Files\Transoft Solutions\GuidSIGN 6\Contents\Styles\2003\Old_ODOT_Panel_Styles folder.

Consultants can find the older panel styles in the workspace which is typically located at C:\ProgramData\odot_space\Standards\data\GuidSIGN\Styles\2009\Old_ODOT_Panel_Styles.

InRoads Lite

InRoads Lite is simply InRoads launched on demand within MicroStation from the ODOT menu, rather than from the InRoads desktop shortcut. InRoads Lite is provided as a convenience for simpler tasks. InRoads Lite does not load all of the tools such as Roundabouts, Data Acquisition and Civil Geometry. These tools are available when you use the InRoads desktop shortcut to launch InRoads V8i.

gINT Civil Tools

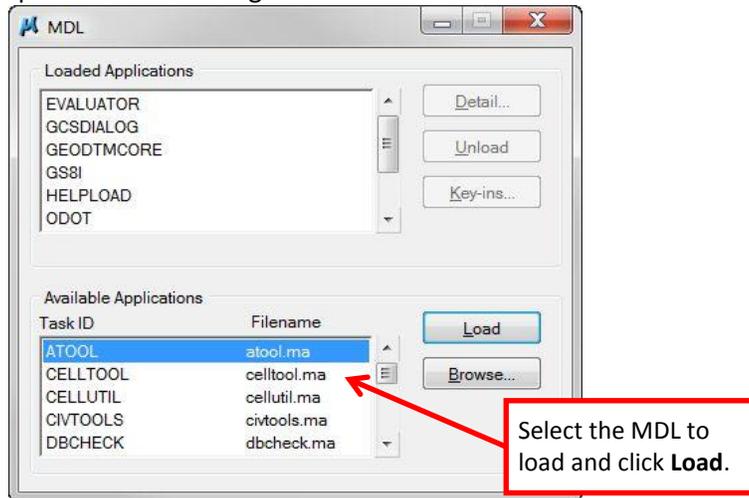
gINT Civil Tools is activated only after launching InRoads or InRoads Lite. gINT Civil Tools can be used to extract information from a gINT database and uses a loaded InRoads alignment to allow placement of borehole locations in plan view. Borehole profiles and cross sections can also be placed in InRoads profiles and cross sections. Methods are described in a separate user guide on the EAST website in the MicroStation Drafting | Geology category of the [Tips & Workflows](#) – “Draw and Pattern Boreholes in Plan, Profile, and Cross Section using gINT Civil Tools”.

MDL Applications

You can load add-on applications written in MicroStation Development Language (MDL).

To load an MDL application:

1. On the main menu, select **Utilities > MDL Applications** or enter the key-in **mdl load**. This opens the **MDL** dialog.



2. On the **Available Applications** list, select the MDL to load and click **Load**. The **Available Applications** list includes both standard MDLs bundled with MicroStation and MDLs in the ODOT Workspace.
3. To assign a MDL application to a function key, select the function key. In the **Action** field, enter **mdl load** followed by the application name. For example: **mdl load atool**.

Atool (Area Tool)

File: (Workspace)\V8i\Standards\mdlapps\intelInt\Atool.ma

Description: Allows you to identify, trace or place areas and measure them. You can place the resulting area measurements as text on the drawings.



Tip! For more information about using the *Atool*, see the article **Measuring Acreage with the Area Tools** on the EAST website.

Celltool (Cell Tool)

File: (Workspace)\V8i\Standards\mdlapps\intelInt\Celltool.ma

Description: Provides you with the ability to:

- Place Active Cell with an interactive rotation angle.
- Place Active Cell on a selected element with interactive rotation angle.
- Place Active Cell on an element by partial deleting the target element to fit the cell.
- Place multiple copies of the active cell along or offset from a selected element at a given distance between each copy.

Cellutil (Cell Utility)

File: (Workspace)\V8i\Standards\mdlapps\intelInt\cellutil.ma

Description: Allows you to group cells in a grid to be placed in a design file. You can plot the grid to create a book of the cells. The dialog now displays the modification time date stamp of the Model or cell.

Civtools (Civil Tools)

File: (Workspace)\V8i\Standards\mdlapps\intelInt\civtools.ma

Description: Designed for Civil/Site users. Opens a palette that allows you to place, label and modify 3D linestrings as contours; set element elevations; place coordinates and marker elevations; and set level, symbology and size of all elements placed with civtools.ma.

HSP – Highway Spiral

File: (Workspace)\V8i\Standards\mdlapps\intelInt\hsp.ma

Description: Places a clothoid spiral with inputs of beginning and ending radii and length; result is a curve with 64 vertices. This is a counterpoint to MicroStation's onboard **Place Spiral: Clothoid** on the **Create Curves** toolbar that uses initial and final degree of curve to create a B-spline curve with 4 poles.

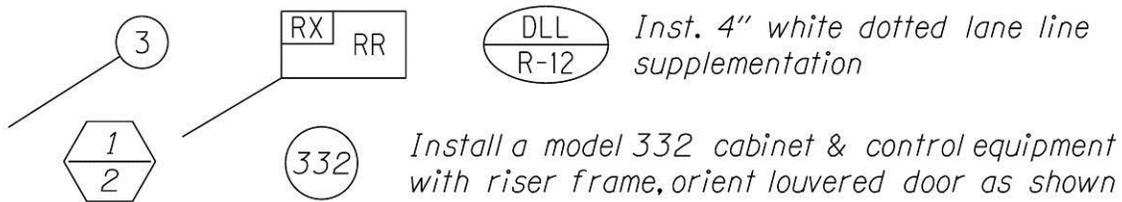
InfoSnap

File: (Workspace)\V8i\Standards\mdlapps\intelInt\infosnap.ma

Description: Provides element information in a banner next to the cursor. Ability to make those attributes active and reuse them for new elements. Gain full control over AccuSnap's balloon. Navigate across reference files and DGN models. Hide or shrink (and expand) MicroStation dialog boxes on cursor flyover.

Bubble Tools

The “bubble” or **Place Note** tools draw bubbles for Final Design (FD) Plans, Illumination, ITS (Intelligent Transportation Systems), Signals, Signing and Striping plans. Bubbles can be drawn with or without a leader line as shown in the examples below.



The bubbles are orphan (no name) cells. The active scale is automatically set based on the annotation scale that is set for the model. Legend text and leader lines are separate from the cell, but are included in the same graphics group. Each tool has a help button that will open a web page to the current tool documentation for each tool

The Signals and Striping bubble tools have predesigned bubbles and legend text. These are selected on the **Note Type**, **Category** and **Note** drop-down menus.

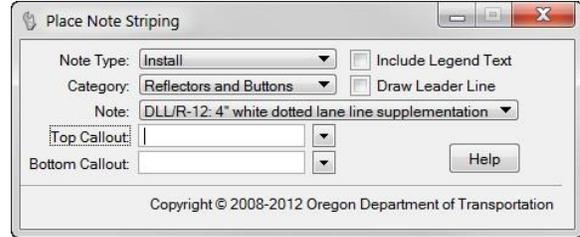
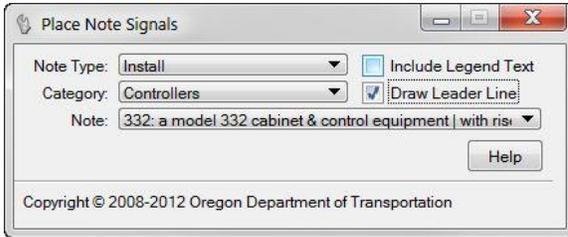


Table 8. Bubble Tool Keyin and Workflow

Bubble Type	Keyin	Workflow
Final Design Plans	place notes fdplans	Roadway > Notes > Bubble Notes
Illumination	place notes illumination	Traffic > Illumination > Bubble/Notes
ITS	place notes its	Traffic > ITS > Bubble Notes
Signals	place notes signals	Traffic > Signal > Signal Plans > Bubble Notes
Signing	place notes signing	Traffic > Signing > Sheets > Hex and Hex with Leader
Striping	place notes striping	Traffic > Striping > Striping Notes > Bubble Notes



Tip! The ODOT mdl is required for many drafting tools including the Bubble tools and Leader macros. If you have launched InRoads from a desktop shortcut instead of just MicroStation, you will receive errors and those commands will not run.

“Unknown key-in or command” or “Execution failed at line 168. Error: 1702”

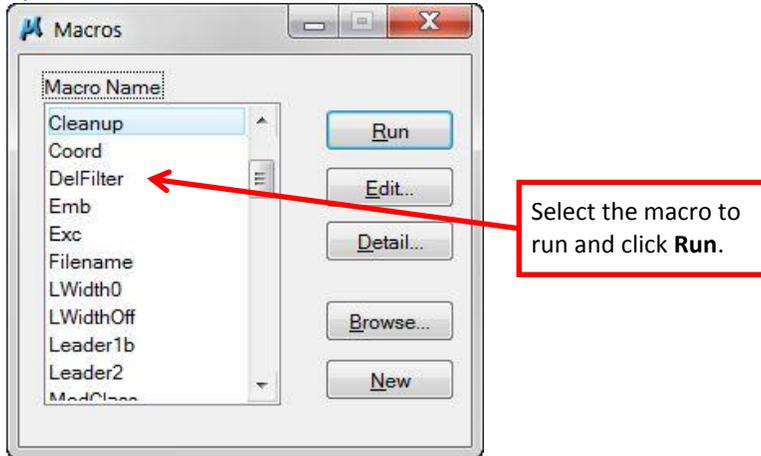
*It might be easiest to exit InRoads, then launch just MicroStation and if you need InRoads, launch it using **ODOT>InRoads Lite**. Alternatively, a key-in can be used leaving InRoads running and can be assigned to a function key. Key in: mdl load odot.*

Macros and Other Tools

Macro tools written in MicroStation Basic are available to use. Most of the macros are called by the tasks and workflows, so loading a macro directly may not be needed.

To load a BASIC macro:

1. Select **Utilities > Macros > MicroStation BASIC** from the main menu. The **Macros** dialog opens.



2. Select the macro to load from the **Macro Name** list and click **Run**.

To activate a BASIC macro function key or key-in, enter **macro** and the application name, for example **macro modz**.

Table 7. MicroStation BASIC Macros in the ODOT Workspace

Macro	Description
AnchorM	Places a guy line with an anchor. Usage: Select a cell for placement to be the anchor. Activate the macro. <DP> to start the guy line. <DP> to end the guy line and place the anchor cell. Location: Several ODOT Tasks that place a pole anchor.
CkLev	Check Level. Usage: Activate macro. Key-in the number of the level to be displayed (eg. For P_RDWY_ALIGN_Main key-in 348). <DP> to show the next higher level number or key-in another level number. Right-click to exit. Location: Not used in ODOT Tasks.
Cleanup	Restores state after another macro runs. Restores settings saved by the setup macro. Usage: Activate the macro. Location: Called by most macros at exit; not intended to be used directly.

Macro	Description
CtlPntEd	<p>Change the text of a PI station flag generated by InRoads to match the ODOT standard.</p> <p>Usage: Place PI station flag with InRoads Horizontal Annotation with RW or Survey preference. Activate macro. <DP> on the PI text. <DP> again to accept. Right-click to exit.</p> <p>Location: Not used in ODOT Tasks.</p>
Emb	<p>Places an embankment line on earthwork diagrams for profile sheets and places text centered below the line.</p> <p>Usage: Activate macro. <DP> to begin embankment line. <DP> to end line. Enter the text. Macro repeats. Right-click to exit.</p> <p>Location: ODOT Tasks>Roadway>Profiles>Earthwork Brackets>Embankment.</p>
Exc	<p>Places an excavation line on earthwork diagrams for profile sheets and places text centered below the line.</p> <p>Usage: Activate macro. <DP> to begin excavation line. <DP> to end line. Enter the text. Macro repeats. Right-click to exit.</p> <p>Location: ODOT Tasks>Roadway>Profiles>Earthwork Brackets>Excavation.</p>
Leader1b	<p>Places a curved leader line with an arrowhead at one end.</p> <p>Usage: Activate macro without or with options – leader1b gives arc radius = active text height; leader1b /f gives 10' arc radius; leader1b /v gives 130' arc radius; leader1b /r=N gives N' arc radius; leader1b /L gives sharp vertex and Project Limit Arrow. Choose the type of arrow. <DP> to place tail of leader line. <DP> to place the angle point. <DP> to place the arrow head. Macro repeats. Right-click to exit.</p> <p>Note: arc radius is scaled by the active scale factor.</p> <p>Location: ODOT Tasks>Roadway>General>General Arrows.</p>
Leader2	<p>Places a leader line with arrowheads at both ends.</p> <p>Usage: Activate macro. <DP> to place one end of the leader line. <DP> to place the other end of the leader line. Macro repeats. Right-click to exit.</p> <p>Location: ODOT Tasks>Survey>Cadastral>Misc>Survey Double Headed Arrow.</p>
LWidth0	<p>Sets the custom line style width to zero. Key-in: macro lwidth0.</p> <p>Usage: Activate the macro.</p> <p>Location: Used in many commands in ODOT Tasks.</p>
LWidthOff	<p>Turns the custom line style width off. Key-in: macro lwidthoff.</p> <p>Usage: Activate the macro.</p> <p>Location: Not used in ODOT Tasks.</p>
ModClass	<p>Toggles an element's class between PRIMARY and CONSTRUCT modes, wasn't easily accessible.</p> <p>Usage: Activate macro. <DP> to select an element. Element's current class is shown in the status area. <DP> to toggle the class or right-click to continue without toggling the class. Macro repeats. Right-click to exit.</p> <p>Location: Not used in ODOT Tasks.</p>

Macro	Description
Modz	<p>Modifies the Z values of all vertices of an element.</p> <p>Usage: Activate macro. Enter the new Z value. If there are selected elements or an active fence: click [Yes] to change the Z value of all selected or fenced elements; click [No] to manually select elements; click [Cancel] to quit – command exits after the change is made. If there are no elements selected and no active fence: click [OK] to select elements one at a time or [Cancel] to quit. <DP> to select each element and change its Z value. Command repeats – click [OK] to change another element or [Cancel] to quit.</p> <p>Location: ODOT Tasks>Roadway>General>Tools>Modify Elevation.</p>
North	<p>Places a north arrow (odot.cel, Arrow), automatically rotated to point north regardless of view rotation.</p> <p>Usage: Activate macro. <DP> to place the north arrow. Macro repeats. Right-click to exit.</p> <p>Location: Not used in ODOT Tasks.</p>
RWcir	<p>Places Subdivision Block Number, Parcel Number or Access Point Symbol with a leader line.</p> <p>Usage: Activate macro. If leader - <DP> on an element to place the end of the leader line; symbol will be rotated to match the element’s rotation. Type <Ctrl>+E to add a vertex to the leader if desired, then <DP> to place the vertex. Block and Parcel Number or symbol - <DP> to place the symbol. Macro repeats. Right-click to exit.</p> <p>Location: ODOT Tasks>Survey>Cadastral>Proposed R/W>Misc>File Parcel Number and Access Point Symbol, and ODOT Tasks>Survey>Cadastral>Properties>Subdivision Block Number.</p>
SecCor	<p>Places section corner monument with section numbers.</p> <p>Usage: Activate macro. Enter upper-right section number. <DP> to place cell. Remaining section numbers are automatically filled in. Macro repeats. Click [Cancel] to exit.</p> <p>Location: ODOT Tasks>Survey>Cadastral>Monuments>Found Section Corner.</p>
SetTxScl	<p>Scales text width, height and line spacing by the active scale.</p> <p>Usage: Activate the macro.</p> <p>Location: Used in many commands in ODOT Tasks; not intended to be used directly.</p>
Setup	<p>Saves current settings, gathers information and checks scale.</p> <p>Usage: Activate the macro.</p> <p>Location: Called by every macro at startup; not intended to be used directly.</p>

Macro	Description
SlabE	<p>Places a slope label given any two points and a vertical exaggeration factor. Uses three possible switches to vary snap mode, vertical exaggeration, and set decimal format.</p> <p>Key-ins: macro slabe [/k or /n] [/d or /f or /t or /v] [/x]</p> <p>Snap modes: /k – keypoint or /n – nearest</p> <p>Exaggeration: /d – none or /f – 5 or /t – 10 or /vN – N (any number)</p> <p>Format: /x – decimal</p> <p>Typical Usage: Assign key-in to function key. Activate macro. If switches not specified, macro dialogs will request snap mode and exaggeration input, enter and click [OK]. <DP> on line to be measured, then <DP> again on another part of the line. The slope between the two points will be displayed in a text dialog. Type <Ctrl>+T to toggle the slope format between ratio, decimal, and percentage. <DP> to place the text at the same slope as the line. Macro repeats. Right-click to Exit. Type <Ctrl>+E before selecting the first point on a line to change the vertical exaggeration.</p> <p>Location: Not used in ODOT Tasks.</p>
TPDT	<p>Places traffic pattern shapes with patterns.</p> <p>Key-in: macro tpdt [/s] (/s switch causes only the outline shape to be placed; shape can be patterned later using the Tern mvba.)</p> <p>Usage: Activate macro. Select the pattern type from the dialog and click [OK]. Place <DP>s to draw a shape. When shape is closed the pattern will be drawn. Continue to draw shapes or right-click to return to pattern selection dialog. Click [Cancel] to exit. Uses annotation scale for pattern scale.</p> <p>Location: ODOT Tasks>Traffic>Traffic Control>TCP Patterning: Place Patterned Shapes (TPDT) Place Shapes for Future Patterning (TPDT /s) Pattern Previously Placed Shapes (Tern.mvba)</p>



Tip! The ODOT mdl is required for many drafting tools including the Bubble tools and Leader macros. If you have launched InRoads from a desktop shortcut instead of just MicroStation, you will receive errors and those commands will not run.

“Unknown key-in or command” or “Execution failed at line 168. Error: 1702”

*It might be easiest to exit InRoads, then launch just MicroStation and if you need InRoads, launch it using **ODOT>InRoads Lite**. Alternatively, a key-in can be used leaving InRoads running and can be assigned to a function key. Key in: mdl load odot.*

Geographic Coordinate Systems

A geographic coordinate system is a method for uniquely defining a location on the earth. The Oregon State Plane coordinate systems are examples of geographic coordinate systems.

Many applications assign geographic coordinate systems (also known as projections) to the data that is related to a location in the world.

- ArcGIS shapefiles include a file with a PRJ extension that contains information about the geographic coordinate system and the units the features will display in.
- Various types of raster imagery (JPEG, GEOTIFF, TIFF) may either include the geographic coordinate information within the raster header information, or in a sister or world file text file.

MicroStation V8i is able to project data with assigned coordinate systems (like shape files and raster imagery) into the same geographic coordinate system assigned to the vector data. You may hear people refer to this as “on the fly projection.” For this functionality to work, a geographic coordinate system must be assigned to the model containing the MicroStation vector data. The surveyors for the project can provide information about the correct geographic coordinate system to use. Not all raster imagery includes geographic coordinate system information, so you may still need to manually copy, move and rotate the raster data to align with your vector data.



Note: *In MicroStation V8i, the geographic coordinate system is assigned to a model. This means you could have several different geographic coordinate systems in one MicroStation DGN file. Also, if MicroStation has to project a large data set on the fly, it will impact how quickly the data refreshes as you pan and zoom. You may determine that it is better to save the data in the same geographic coordinate system as the vector data.*

The MicroStation seed files have an advanced resolution that is set to meters, but ODOT sets the file’s master and sub units to feet and inches. Do not change the settings of the advanced resolution because it will change the distance between elements in the file if it is not done correctly. The geographic coordinate systems in the ODOT_Favorites library are set up with units set to metric to match the units of resolution in most ODOT seed files.

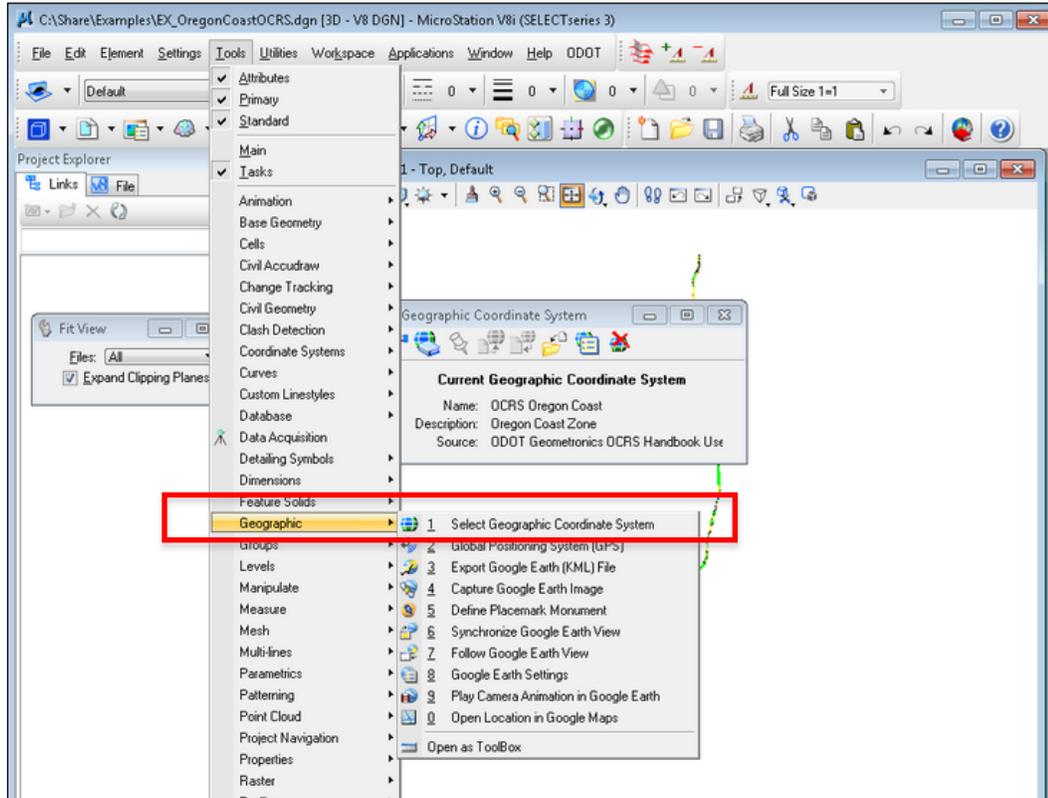
The OR83_SSCGIS geographic coordinate system is set up with units of international foot because you will typically be setting it for raster or shape files that were created with foot units.

Assigning Geographic Coordinate System

The ability to select or assign a geographic coordinate system enables you to bring data together from disparate sources.

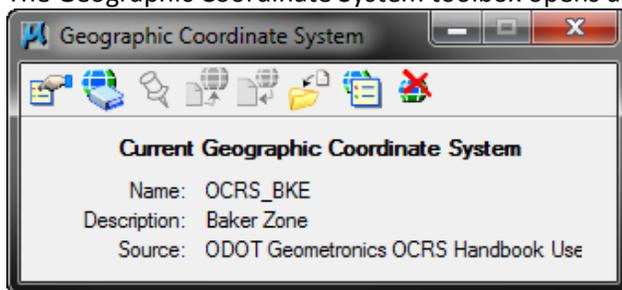
To assign or select a geographic coordinate system:

1. Select **Tools > Geographic** from the menu bar and select **Select Geographic Coordinate System** from the drop-down menu.

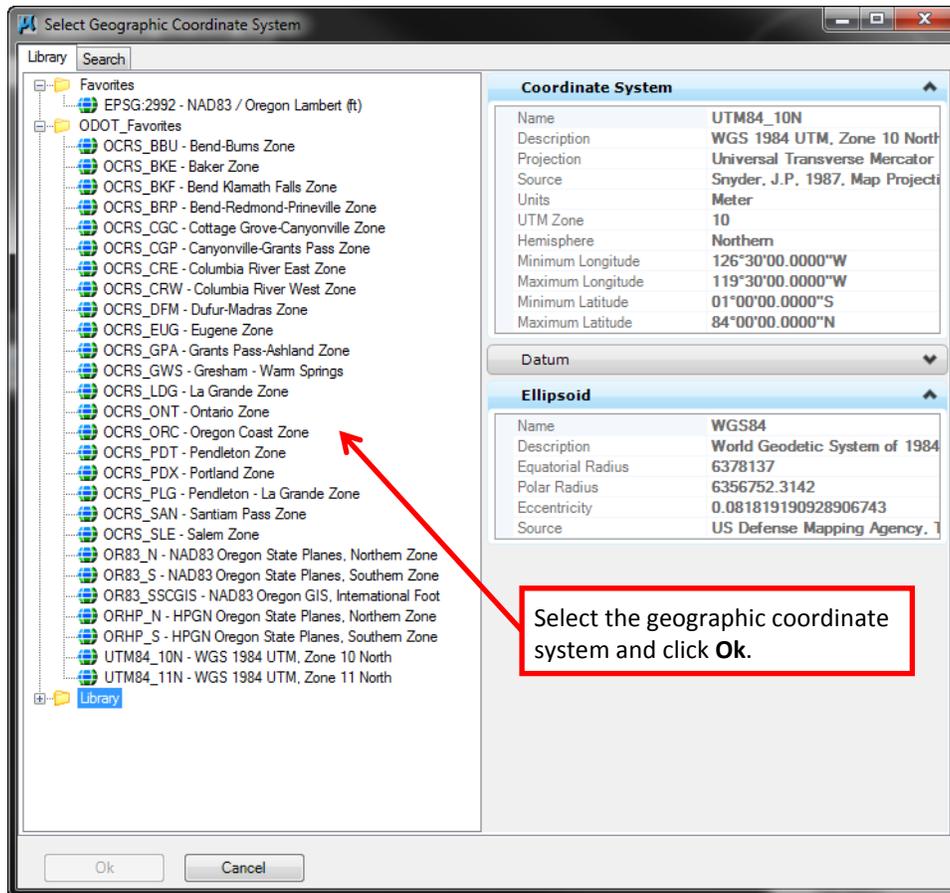


Note: If you select **Open as Toolbox**, the **Geographic** toolbox opens. Click the **Select Geographic Coordinate System** icon.

The Geographic Coordinate System toolbox opens and lists the current system set in the model.



2. Click the **Geographic Coordinate Systems Library** icon. The **Select Geographic Coordinate System** window opens from which you can access a library of geographic coordinate systems.



3. Select the geographic coordinate system that matches your vector data and click **Ok**.



Note: If the geographic coordinate system is already set in another file (such as a basemap provided by a surveyor), click the **From File** icon in the Geographic Coordinate System toolbox to open the **Select Geographic Coordinate System Source** dialog to select the file and set the coordinate system.

Oregon Coordinate Reference System (OCRS)

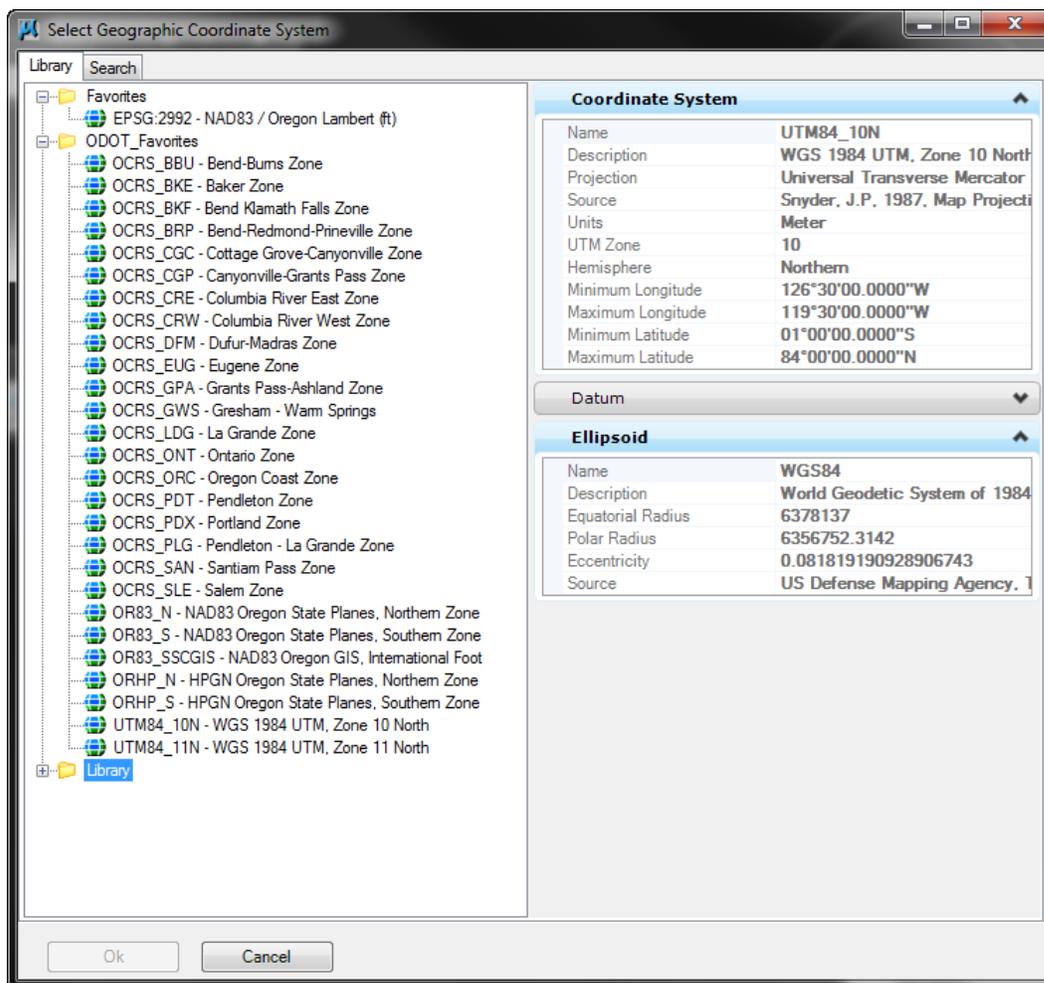
ODOT has developed a series of low-distortion map projection coordinate reference systems. You can find the details about these on the ODOT Geometronics website at:

<http://cms.oregon.gov/ODOT/hwy/geometronics/Pages/ocrs.aspx>

ODOT_Favorites Geographic Coordinate Systems

You can also find Oregon geographic coordinate reference systems typically used for datasets in a custom library called ODOT_Favorites. The naming conventions are:

- Oregon Coordinate Reference System: OCRS_*
- Oregon State Plane Zones, North and South with NAD83 datum: OR83_*
- Oregon State Plane Zones, North and South with the HARN datum: ORHP_*
- Oregon GIS Coordinate System designed for coverage of the entire state: OR83_SSCGIS*
- Universal Transverse Mercator Projections that cover Oregon: UTM84*



You can access other geographic coordinate reference systems in the MicroStation-provided library.

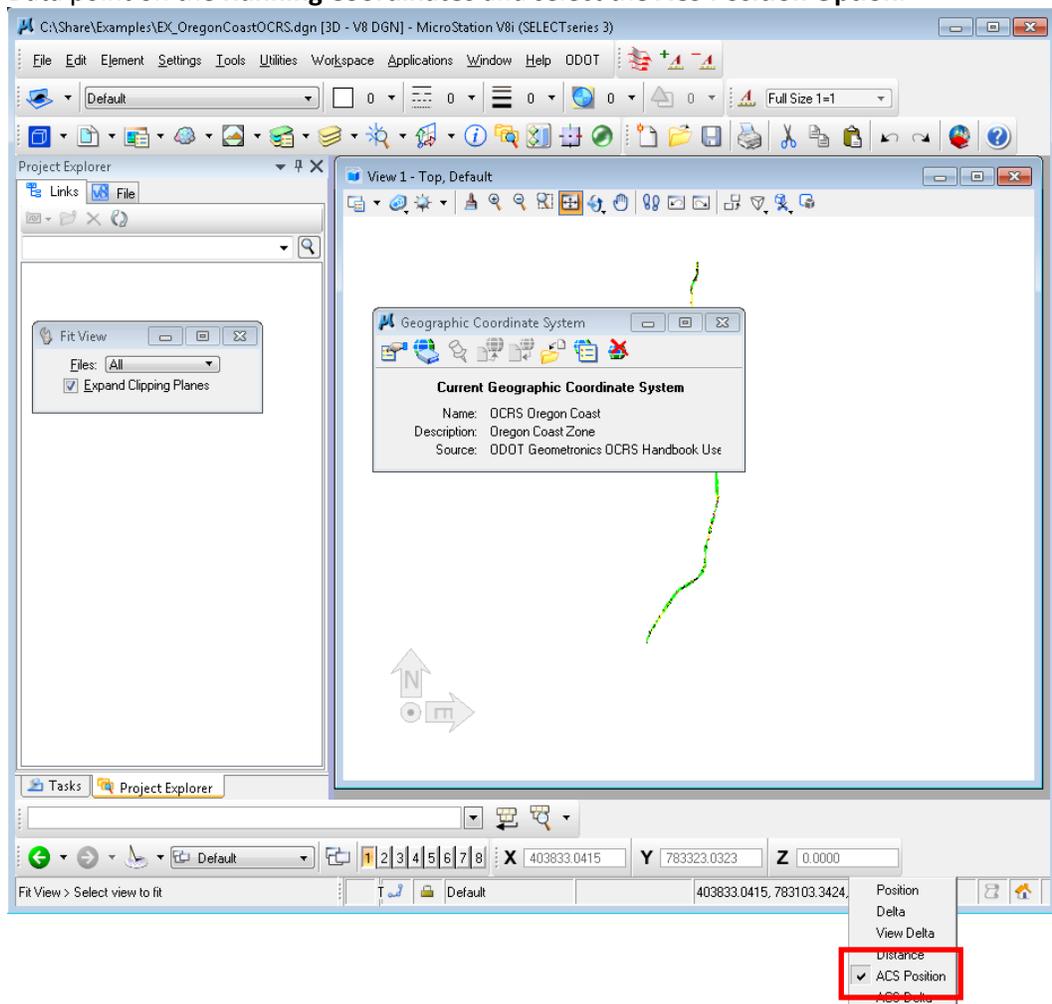


Note: You can create custom geographic coordinate systems using MicroStation. For a geographic coordinate system that is not available in ODOT_Favorites or the Library, contact the Engineering Applications Support Team (EAST) for assistance.

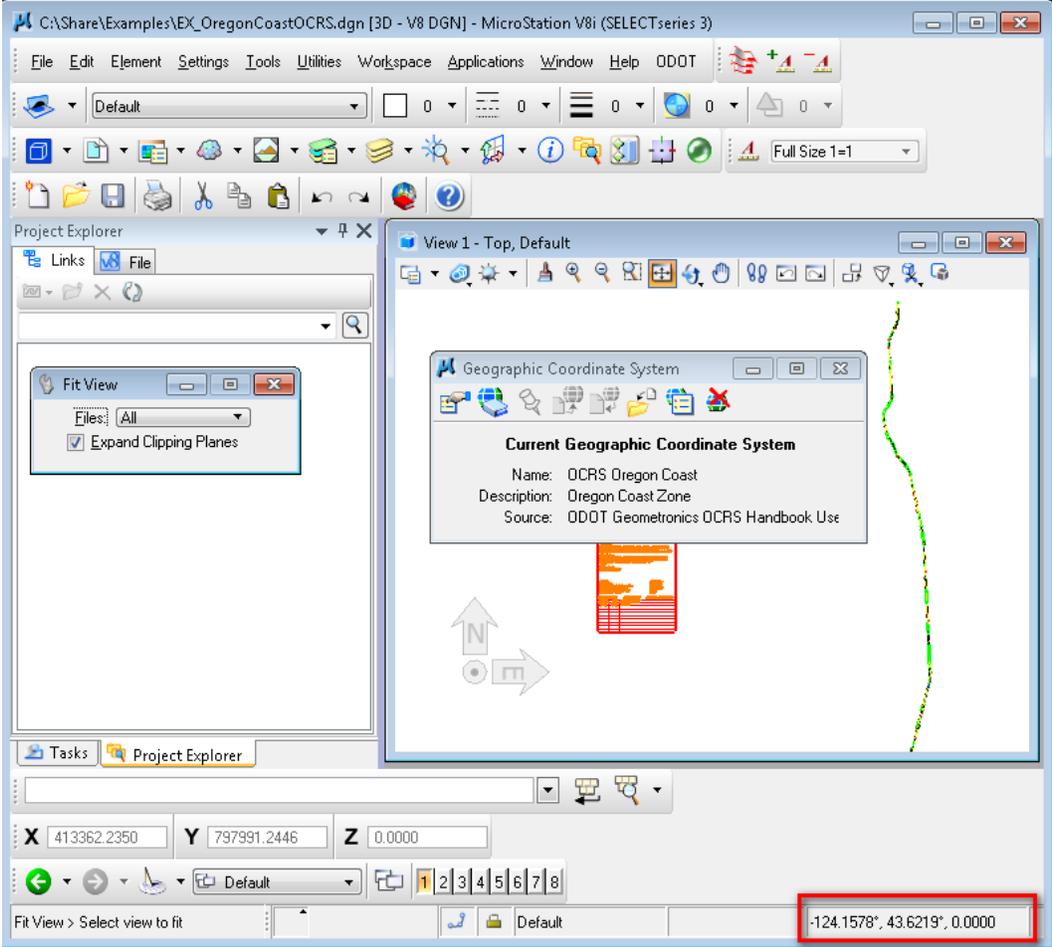
Once a geographic coordinate system is assigned to a model, the latitude and longitude can be displayed within MicroStation.

To display the latitude and longitude:

1. Select **Tools > Coordinate System > ACS > Auxiliary Coordinates**.
2. Select (double-click) the **Geographic Coordinate System** in the **Auxiliary Coordinates** dialog. It should appear below the line.
3. Close the dialog box.
4. Right click in the status bar area of the MicroStation interface (where the active level, locks and snaps are shown) and select **Running Coordinates**.
5. Data point on the **Running Coordinates** and select the **ACS Position Option**.



The running coordinates at the bottom reflect latitude and longitude values. The **AccuDraw** dialog displays the x, y and z coordinates.



Raster and GIS Files

Raster data, including aerial photography and GIS data, is available from a variety of sources. It's important you understand the raster and GIS data that you gather from others and use the information appropriately. Information you will want to gather before viewing the raster and GIS files includes:

- Geographic coordinate system for the data
- Units of measure
- Accuracy
- Use restrictions

Displaying Raster Images

The ODOT GIS Unit maintains raster imagery on the following server:

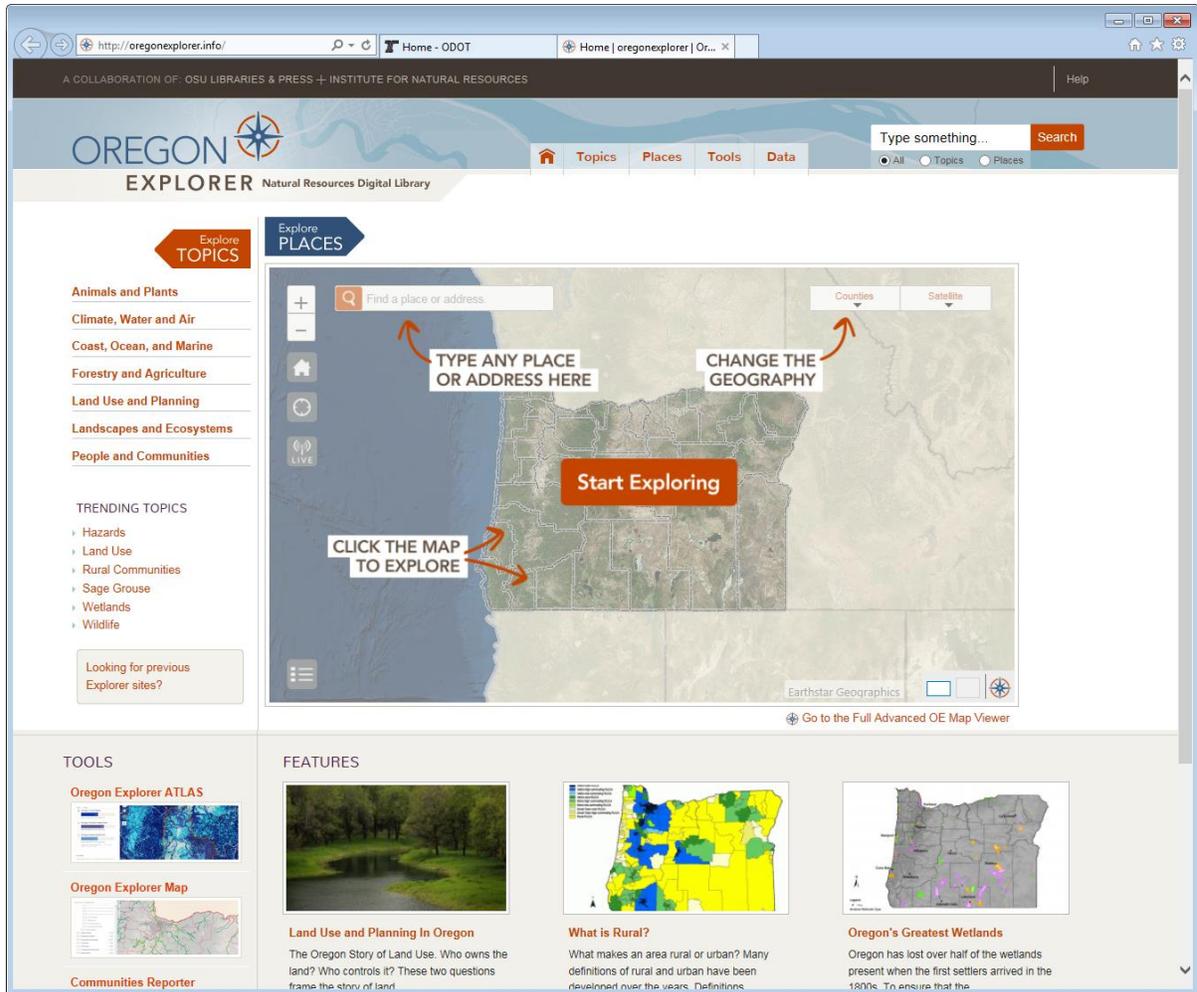
- <\\wpdotfill13\gis\IMAGES> in Salem

Imagery is available in a wide variety of formats in different projections on this server. Aerial photography, USGS scanned topographic maps (DRGs for Digital Raster Graphics), USGS orthophoto quads (DOQs), and USGS digital elevation models (DEMs) are available.

Data in the gis\IMAGES folder includes:

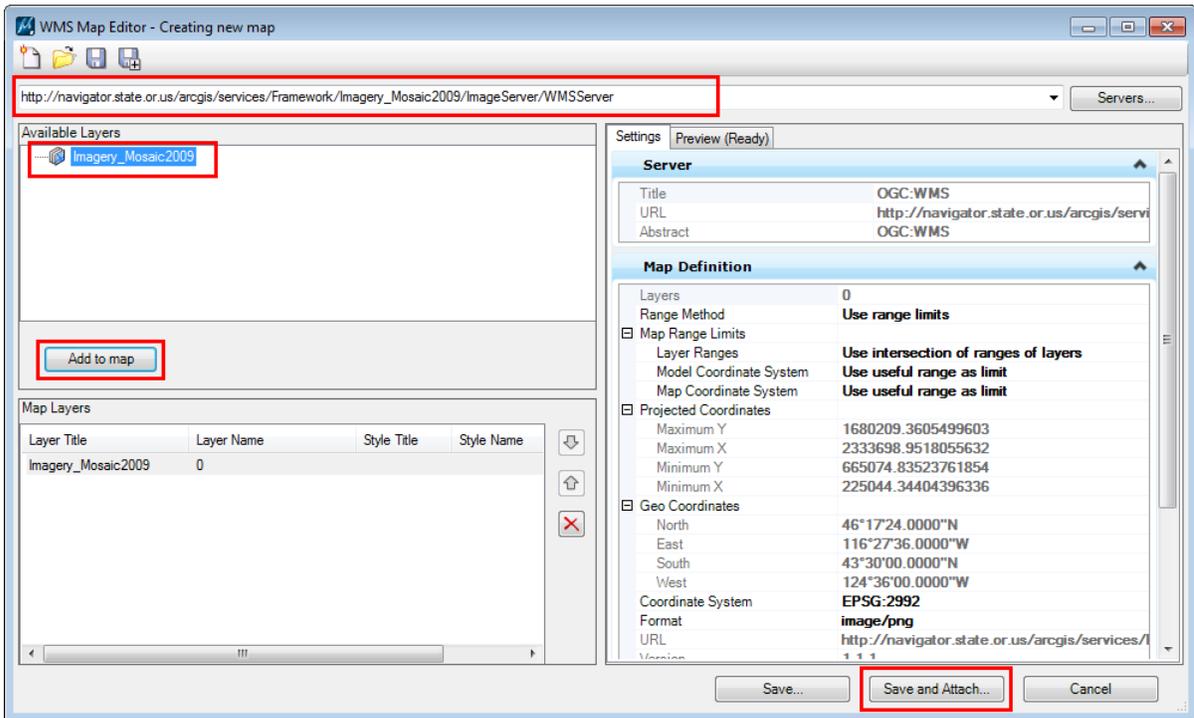
- Bypass_images
- Climate
- Color_IR
- County_aerial
- DOQs_00
- DOQs_05_NAIP_UTM
- DOQs_95
- DRG100K
- DRG250K
- DRGs
- ESRI
- GRID_from10mDEM
- Hillshade
- Image_Servers
- Land_Cover
- LANDSAT
- Misc_images
- NAIP_CCM_2009
- Relief_Images
- Scnd_img
- Urban_other

The Oregon Explorer is an imagery portal (<http://oregonexplorer.info/>) you can use to either stream imagery or to download imagery as defined by the end user. You can define the imagery format, the geographic coordinate system and the extents.



To stream the imagery data from within MicroStation:

1. Assign a geographic coordinate system to the model in which you will view the image.
2. Open the **Raster Manager** dialog.
3. Select **File > New > WMS** from the main menu
4. Paste the following URL in the Servers field at the top of the **WMS Map Editor** dialog, then press the <Enter> key:
http://navigator.state.or.us/arcgis/services/Framework/Imagery_Mosaic2009/ImageServer/WMServer.
5. From the Available Layers box (left-hand side), select **Imagery_Mosaic2009**
6. Click on the **Add to Map** button below the available layer.
7. Choose **Save and Attach**; name the XWMS file and **Save**.
8. Complete the attachment by following the prompts and dialog boxes from the Raster Manager.



Note: The imagery is stored in the State GIS Service Center Geographic Coordinate system. If you are using a different coordinate system, then the imagery will need to be projected to the coordinate system in the model. Consider which data set will take the most effort to project when setting up your models and the referencing.

To reduce the time it takes to manipulate and pan:

1. Create a model for the streamed imagery.
2. Set the geographic coordinate system to OR83_SSCGIS_NAD83 Oregon GIS, International Foot.
3. Set the geographic coordinate system in the model with the vector data.

Reference the vector data model in the streamed imagery model with the option to re-project.



Warning: Some WMS URLs have extra information that does not work with MicroStation. A link like

http://imagery.oregonexplorer.info/arcgis/services/NAIP_2011/NAIP_2011_IR_SL/ImageServer/WMServer?request=GetCapabilities&service=WMS

should have the question mark and following text removed before using with MicroStation. Use the Notepad++ text editor to remove the extra characters from the WMS URLs as in the example below:

http://imagery.oregonexplorer.info/arcgis/services/NAIP_2011/NAIP_2011_IR_SL/ImageServer/WMServer

Displaying SHP Files

The ODOT GIS Unit maintains GIS Data on the following servers:

- <\\wpdotfpr832\gis\DATA\shp> in Roseburg
- <\\wpdotfpr825\gis\DATA\shp> in La Grande
- <\\wpdotfill13\gis\DATA\shp> in Salem

MicroStation can read GIS data stored in shape file format. The shape files are further subdivided by the type of information they contain. The GIS Unit can provide more information or you can refer to their web page located at

<http://transnet.odot.state.or.us/tdd/GIS/Shared%20Documents/Data.aspx>.

The ODOT GIS Unit shapefiles are typically stored in the State GIS Service Center Geographic Coordinate System. In MicroStation this is listed as OR83_SSCGIS_NAD83 Oregon GIS, International Foot.



Note: *The shapefiles are stored in the State GIS Service Center Geographic Coordinate system. If you are using a different coordinate system, then the data will need to be projected to the coordinate system in the model. Consider which data set will take the most effort to project when setting up your models and the referencing. For example, if you are displaying contours within MicroStation and Wetland boundaries from a shapefile, it would be best to project the Wetland boundaries to the projection used for the contours.*

Although, ArcGIS Desktop is able to read DGN files, it will only display vector data stored in the default model, and it does not read the geographic coordinate system information associated with a model. If intending to load DGN data into ArcGIS, you should attach the OR83_SSCGIS_NAD83 Geographic Coordinate System to the MicroStation design file first.

User Customization

You can customize your workspace by creating your own tools, toolboxes, tasks and workflows. Most of the user interface aspect can be modified to suit your own needs or preferences.

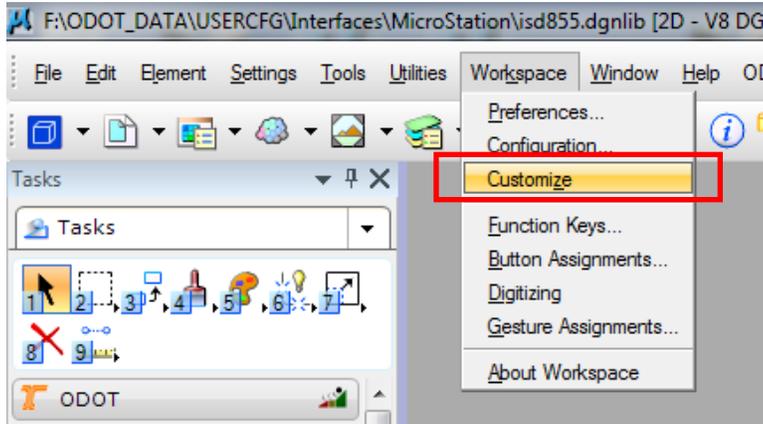
You can customize any or all of the parts of the active workspace's user interface. Those aspects include tools, toolboxes, tasks, main tasks, menus, context menus, view pop-up menu, tentative pop-up menu and icons.

Customizing Your Workspace

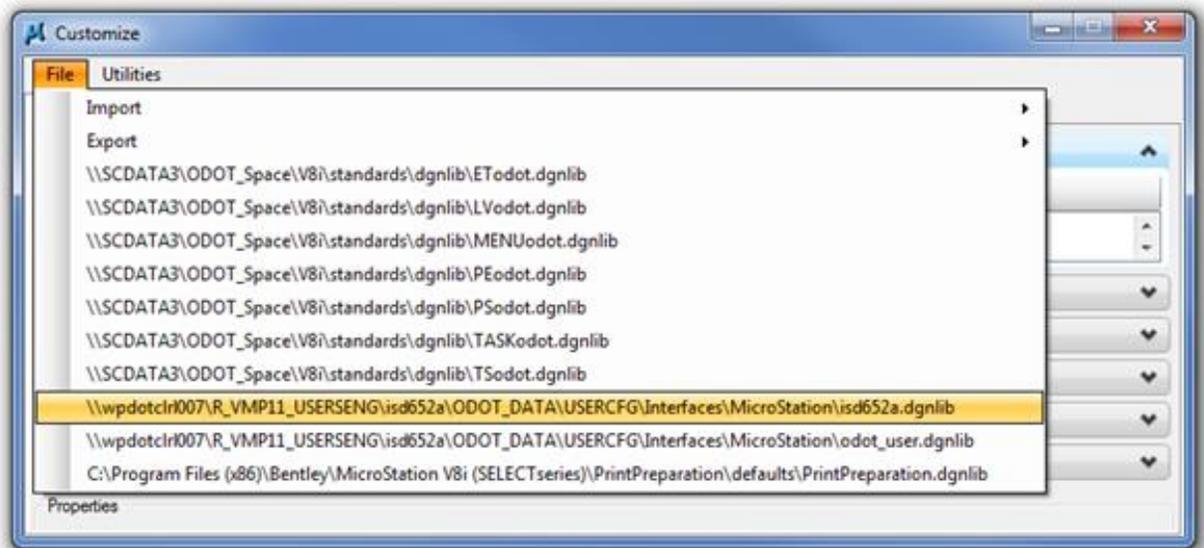
To customize your workspace and make user interface changes, you must work directly in your DGN library (DGNLIB) file. Your personal custom DGNLIB is located on your personal server share space (F: drive) at **YourServerName\Userseng\LogonID\ODOT_DATA\USERCFG\Interfaces\MicroStation**. The file name is **LogonID.dgnlib** where **LogonID** is your user Logon ID.

Open your DGNLIB file:

1. From within MicroStation v8i, Select **Workspace > Customize** from the main menu.



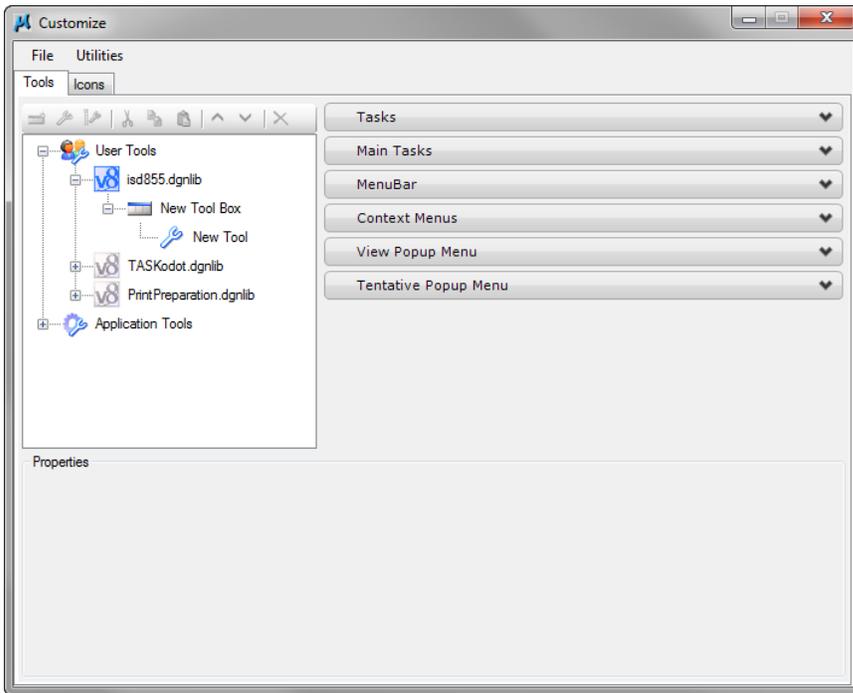
2. The **Customize** dialog opens. Select File and then your LogonID.dgnlib. This will close any open files and load your LogonID.dgnlib file.



You are now ready to create or customize your workspace.

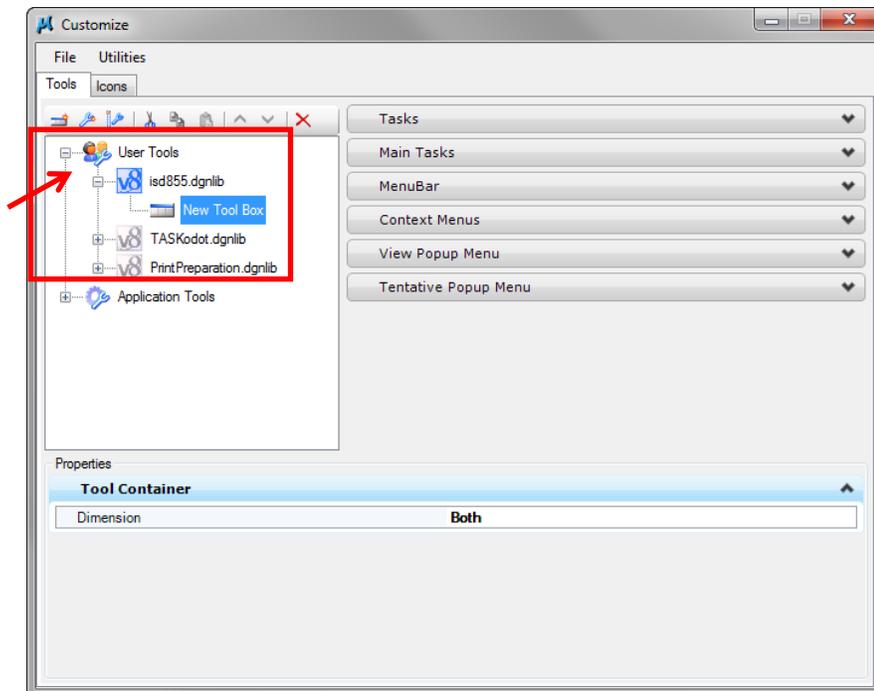
Creating New Toolboxes and Tools

You can create and customize new tools on the **Tools** tab of the **Customize** dialog.

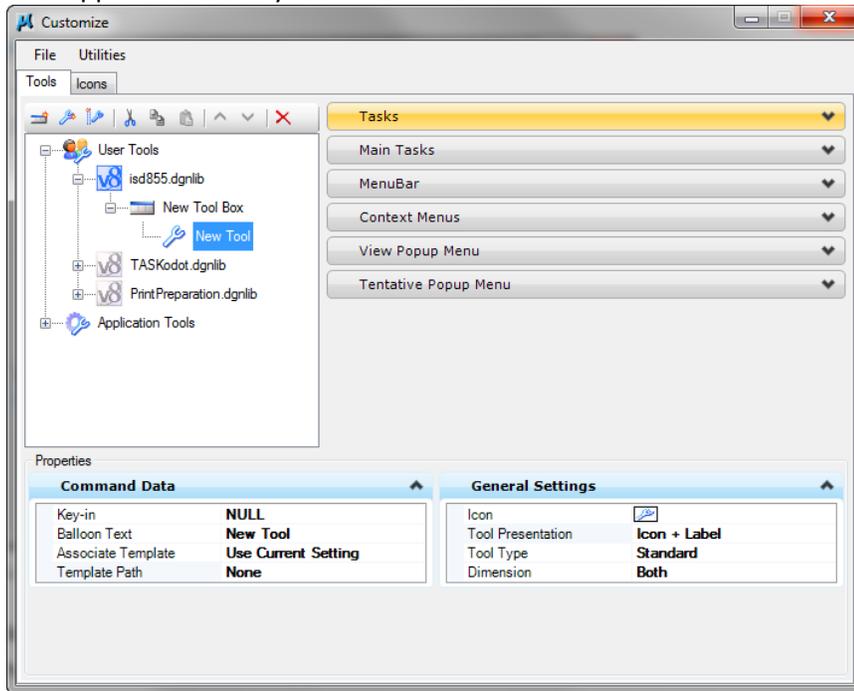


To create a new toolbox and tool:

1. On the **Tools** tab, expand **User Tools** and select your custom DGNLIB file from the list of DGN libraries. It appears as a blue V8 icon indicating you can make changes to it, but not the other DGN libraries.



2. With your custom DGNLIB file selected, click the **New Tool Box** icon on the tool bar. **New Tool Box** appears beneath your DGNLIB file.
3. Select **New Tool Box** and enter a name for the toolbox.
4. **To create and add a tool to the new tool box**, click the **New Tool** icon on the tool bar. **New Tool** appears beneath your new tool box.



5. Select **New Tool** and enter a name for the tool.
6. In the **Properties** panel at the bottom of the **Customize** dialog, you may build the functionality of the tool. Refer to the Help files within MicroStation for information on how to do this.

Copying Existing Tool Boxes and Tools

You can create custom tool boxes and tools to fit your needs by copying and modifying standard MicroStation or DGN library tool boxes and tools on the **Tools** tab of the **Customize** dialog. You can copy entire tool boxes and tools from any DGNLIB file to your custom DGNLIB file, and then modify them.

To copy and modify an existing tool box or tool:

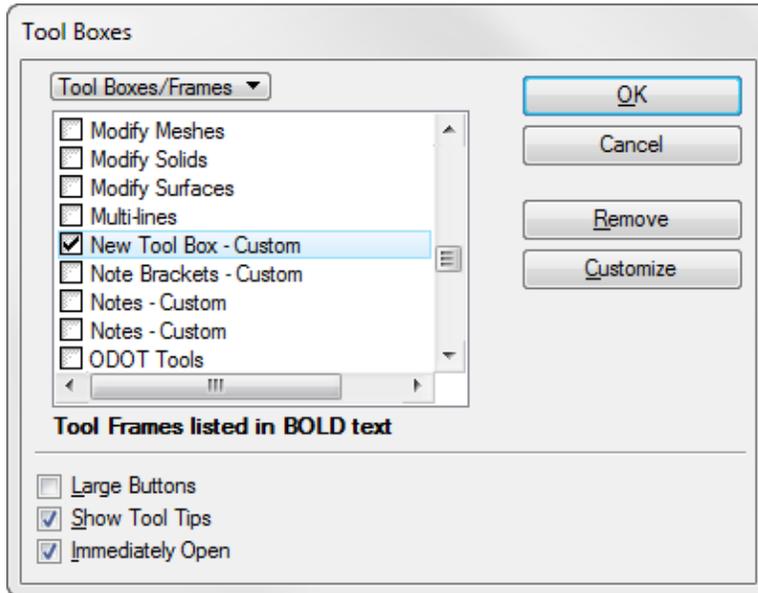
1. On the **Tools** tab, expand **User Tools** and select the DGNLIB file from which you want to copy a tool box or tool.
2. Expand the DGNLIB file and select the tools or tool boxes you want to copy. Either drag them to the desired location in your custom DGNLIB file, or right click and copy the tools or toolboxes and paste them into your file.
3. In the **Properties** panel at the bottom of the **Customize** dialog, you may modify the functionality of the tool box or tool. Refer to the Help files within MicroStation for information on how to do this.

Viewing Custom Tool Boxes

After you create custom tool boxes, you need to make them visible from the Tool menu on the main menu bar.

To view a custom tool box and its tools:

1. Select **Tools > Tool Boxes** on the main menu. The **Tool Boxes** dialog opens.



2. On the **Tool Boxes** dialog, scroll through the listed **Toolboxes/Frames** until you find the tool box you created.
3. Check the box in front of the tool box and click OK.

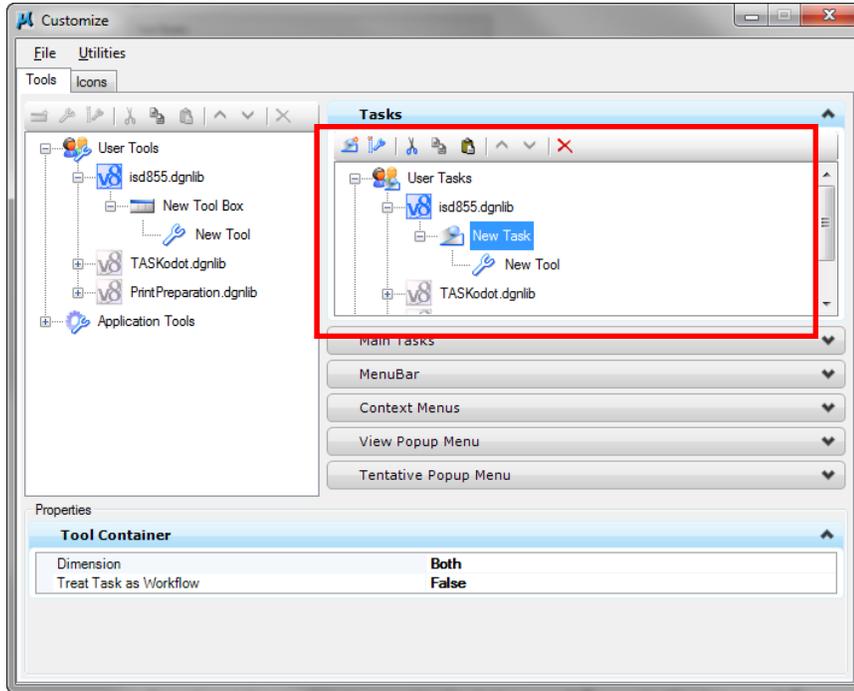
Like all tool boxes, you can dock any custom tool box on the edge of your MicroStation window.

Creating Custom Tasks and Workflows

You create custom tasks and workflows on the **Customize** dialog.

To create a custom task or workflow:

1. On the **Customize** dialog, click the down arrow on the **Tasks** bar to expand the Tasks panel.



2. Under **User Tasks**, select your LogonID.dgnlib file.
3. From the Tools tab, select a tool box, then drag and drop it in your LogonID.dgnlib file in the Tasks panel. The toolbox becomes a task; any tools contained inside it are inside the task.
4. The task may not open so it may have to be opened with a keyin. Keyin the command **tasktoolbox open mytaskname** where “mytaskname” is the name of the task you created.



Tip! A workflow is a task with the **Treat Task as Workflow** property set to **True**. One advantage to making tasks into workflows is that a workflow can contain many subtasks that will show up in your panels where a task cannot.

You may also customize Main Tasks, the Menu Bar, Context Menus, View Popup Menu and Tentative Popup Menu functions from the **Customize** dialog.

For more information on creating tasks and workflows, or customizing your workspace, refer to vendor-provided training documents or the MicroStation Help files.

Appendix A. Using MicroStation V8 2004 file in MicroStation V8i

MicroStation V8 2004 files will open directly into MicroStation V8i without any conversion process. The file will look similar to what is expected with a few exceptions. The exceptions are caused by Annotation Scale.

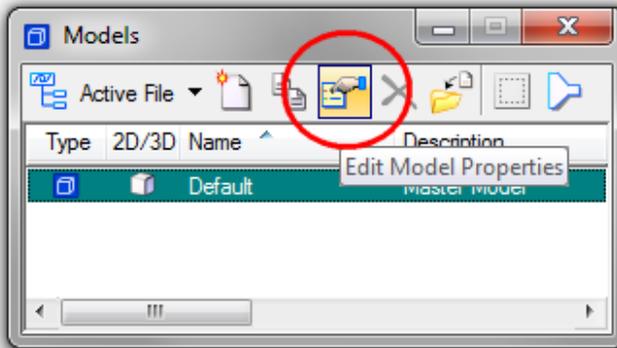
If early in the project phases, you may want to totally update your files to MicroStation V8i standards and adopt Annotation Scale. To do that, you will need to make several changes to the model properties as well as possible changes to the line style, text and cells in the model.

Line Styles

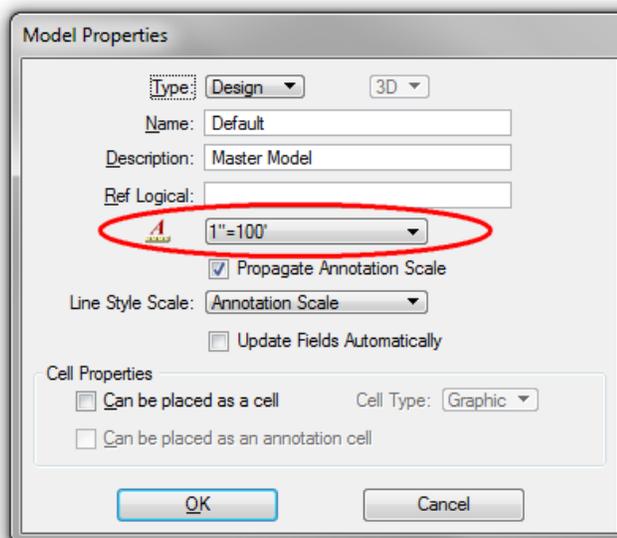
Any custom line style patterning will appear very small, such that the lines appear as single continuous lines.

To correct the line styles:

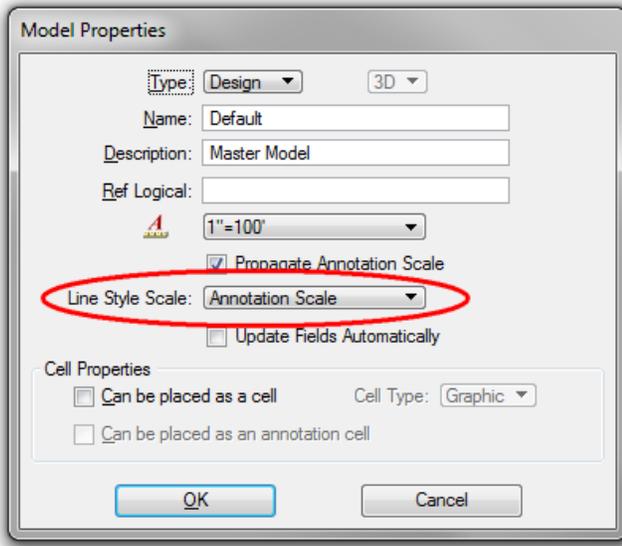
1. Open the **Model Properties** dialog.



2. Select the Annotation Scale drop down and choose the appropriate scale (usually **1"=100'**).



3. From the **Line Style Scale** drop-down menu, select **Annotation Scale**.



4. Click **OK**.



Note: Print borders placed with Plotypus in MicroStation V8 2004 will be found and presented for printing by the Print Organizer using ODOT print styles. Once the line styles look correct, you will be able to print without placing fences.



Note: You may have existing references to MicroStation V8 2004 files whose line styles do not display correctly. To correct this, edit the reference attachment settings by clicking on the **Display Raster References** icon at the bottom of the **References** dialog and then reopen the active file. After reopening the active file, the referenced line styles will display correctly.

5. **Zoom Out** or **Fit** the View.
 - a. If very large text or cells are seen, use **Edit > Undo** to undo setting the model properties,
 - b. then use **Annotation Scale Select** to select all of the text and cells in the model that have that Annotation Scale attribute set to True,
 - c. finally, use **Remove Annotation Scale** to set the Annotation Scale attribute to False for the selection set, and perform steps 1 through 4 again before proceeding.



c. **Remove Annotation** button.

b. **Select Annotation** button.

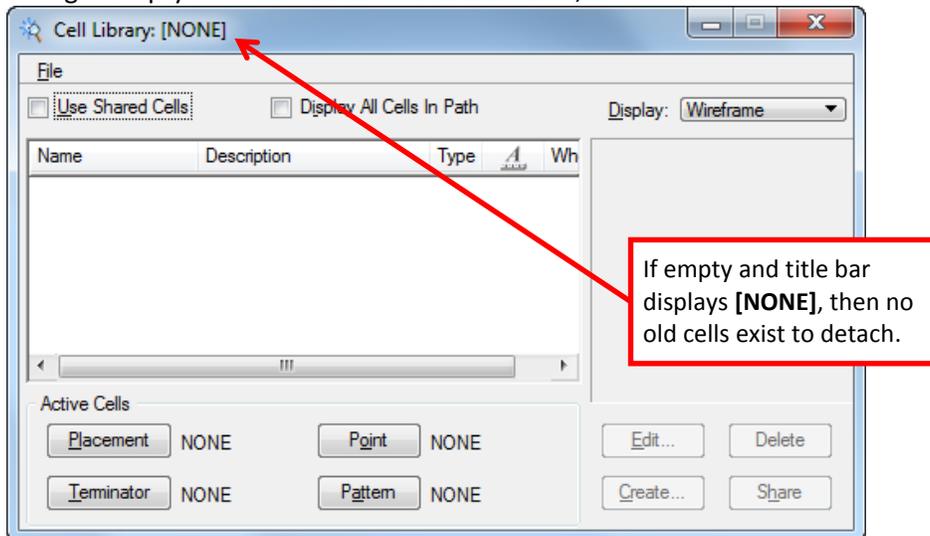
Cells

Cells placed from the custom ODOT tasks and workflows will appear too small. You may use different methods to correct the appearance of cells in the older 2004 file. The method chosen depends primarily on what use you have for the file.

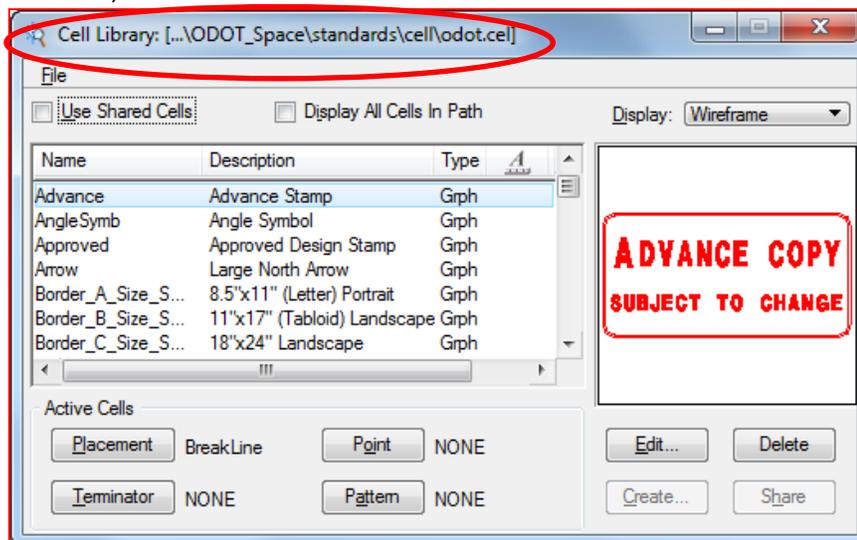
Detach any old cell libraries to ensure that new cells placed in your file will be from the correct library and annotatable.

To detach old cells:

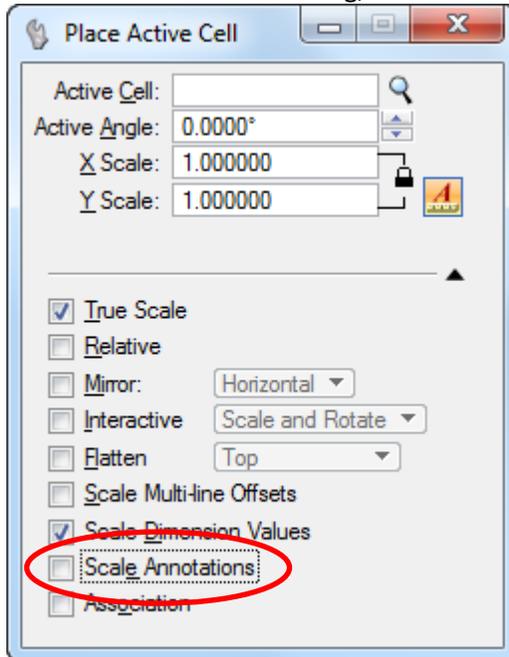
1. Select **Elements > Cells** from the MicroStation menu to open the **Cell Library** dialog. If the dialog is empty and the title bar indicates **NONE**, there are no old cells to detach.



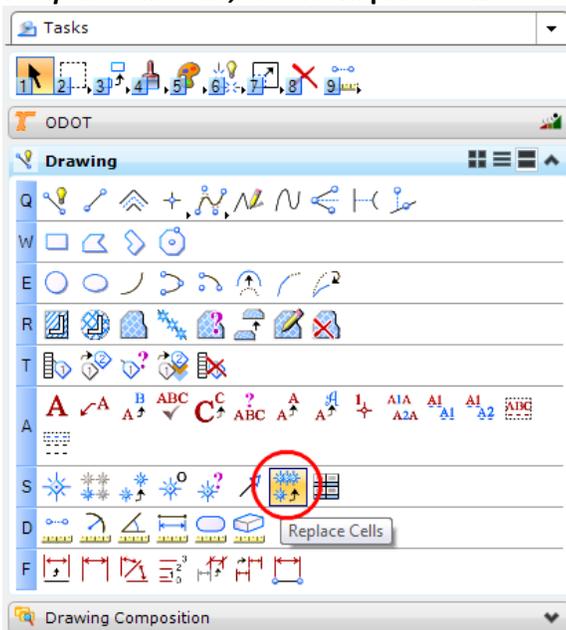
2. If a list of cells appears in the **Cell Library** dialog, and the title bar indicates a cell library is attached, select **File > Detach**.



3. In the **Place Active Cell** dialog, uncheck the **Scale Annotations** check box.



4. Save the design file settings using **File > Save Settings** or Ctrl+F.
5. Replace cells, if desired. If you placed cells in an old MicroStation V8 2004 file, they will not respond to Annotation Scale. You may either leave them (provided they were placed at the correct size) or update them with the new cells set up to respond to Annotation Scale.
6. **To update the cells**, use the **Replace Cells** tool on the Cells Toolbox on the Drawing Task.

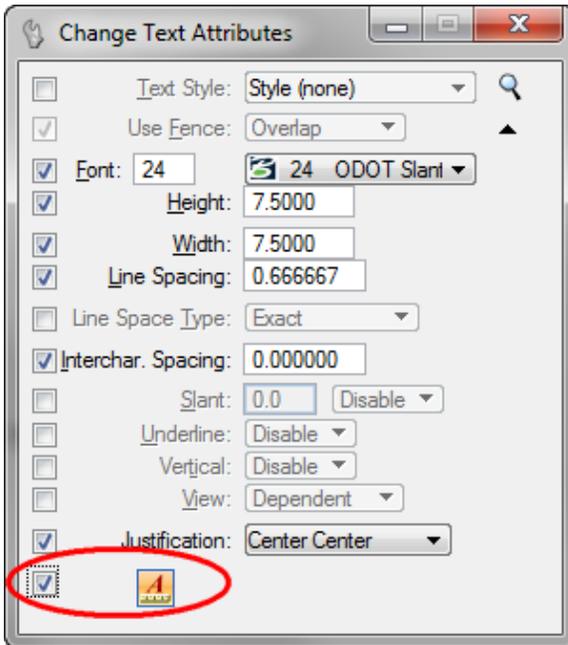


7. Use **Method Update** and **Mode Global**. Select each cell used in the file and update it with the corresponding new cell.

Text

Text may not be noticed until you try to place text from the ODOT Tasks and Workflows. Text placed from these tasks, invokes a text style with Annotation Scale enabled. This may cause new text to be placed very small in a new file. There are a few different ways to correct the appearance of text in the older 2004 file. The method chosen depends primarily on what use you have for the file.

Update text, if desired. Annotation Scale uses Text Styles. Several text styles respond to Annotation Scale. If desired, you can modify your text to match the correct text style. Use the **Change Text Attributes** tool in conjunction with selection sets to accomplish this. An alternate method might be to simply toggle on the Annotation Scale check box in the Change Text Attributes tool and not associate a style.



Appendix B. How to Use Serval Application

Serval provides a shortcut to a VB application that is contained in the engineering workspace. It allows you to connect to another user's data space, ODOT_DATA\Projects, on a server. You do not need to know which server the data space resides on. A connection to another user's \share folder may also be made without knowing the PC name.

Serval uses several other processes to combine attributes of employees, so that it is only necessary to know an employee's last name. The attributes are full name, userID, homeshare (server), computer name, and computer description in Active Directory. The processes that combine the attributes are run separately on a Ctrl-M server. They automatically run at 6:30 a.m. each weekday. The results are replicated out to two text files in the engineering workspaces on 20 servers throughout the state.



Note: Changes to computer descriptions and homeshare servers are not immediately seen in Serval, but are updated shortly after 6:30 a.m. the following weekday.

Accessing Files From a User's ODOT_Data\Projects Folder on a Server

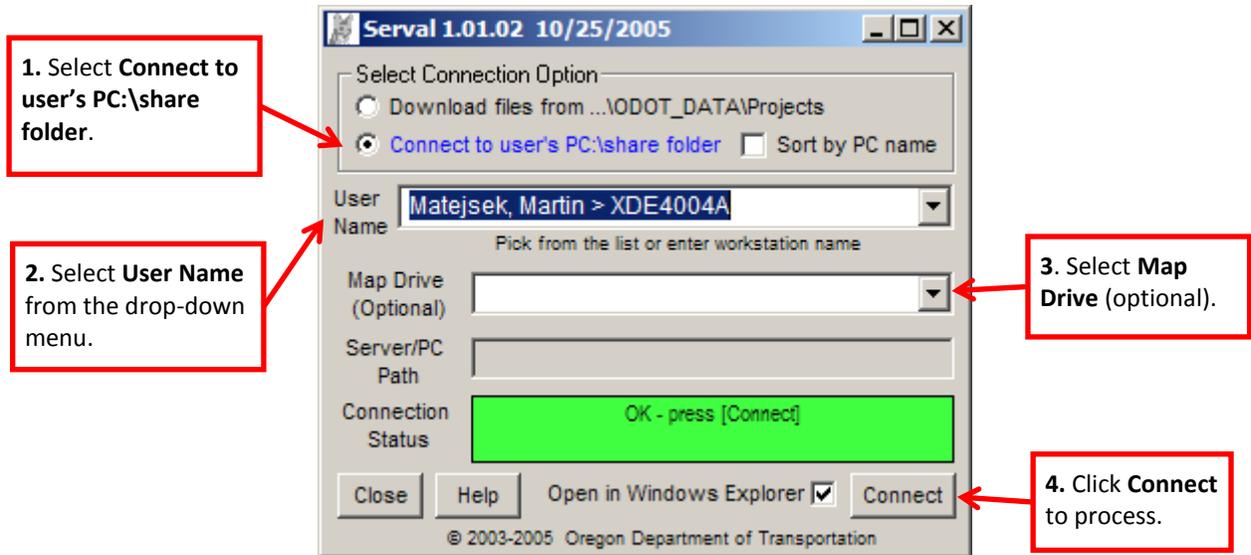
Follow steps 1 through 4 below. An Explorer window will open showing the other user's ODOT_DATA server share. Retrieve the desired files using standard drag and drop actions.

The screenshot shows the Serval 1.01.02 application window with the following callouts:

- 1. Select the Download files from ... option.** (Points to the selected radio button in the 'Select Connection Option' section.)
- 2. Select User Name from the drop-down menu.** (Points to the 'User Name' dropdown menu.)
- The Server/PC Path lists the server.** (Points to the 'Server/PC Path' text box.)
- 3. Select a Map Drive (optional).** (Points to the 'Map Drive (Optional)' dropdown menu.)
- The Connection Status updates.** (Points to the 'Connection Status' text box.)
- 4. Click Connect to process.** (Points to the 'Connect' button.)
- Click Close to close Serval.** (Points to the 'Close' button.)
- Check the Open in Windows Explorer box if you want the folder to open in Explorer. If you do not select a Map Drive, this is automatically checked and cannot be unchecked.** (Points to the 'Open in Windows Explorer' checkbox.)

Placing Files in User’s Local PC:\Share Folder

Follow steps 1 through 4 below. An Explorer window will open showing the other user’s c:\share folder. Place the desired files using standard drag and drop actions.



FAQ and Troubleshooting Information

Q: Why doesn’t my name and computer in the User Name list?

A: The list is generated from the General Description in the Active Directory account. Your computer account may have someone else’s name, Vacant or Crew Share listed as its description. Vacant and Crew Share are filtered out from the drop-down list.

Troubleshooting:

Contact the Computer Support Desk, FSU Technician or Engineering Support personnel to correct this problem using Active Directory Users and Computers or Hyena. It is not necessary to log on to the machine or even have it powered on. Open the **Properties** dialog for the computer using either tool. In **Active Directory Users and Computers**, on the General tab, enter **Lastname, Firstname** of the current user in the **Description** field. In **Hyena**, on the Directory tab, enter **Lastname, Firstname** of the current user in the **Description** field.



Tip! The browser comment (net view) can be updated using **Hyena** and the computer properties. The browser comment is on the General tab in Hyena; a computer needs to be powered on and connected to the network to edit this field.



Note: Serval does not use the browser comment.

Q: Why do the names of people who no longer work for ODOT appear in Serval?

- A:** You may see a person's server share (ODOT_DATA\Projects) folder because their files were not unshared when they left state service. You may see a PC:\share folder associated with a person who is gone because the Active Directory account properties for the computer were not updated to Vacant or a new user status.

Troubleshooting:

See the Troubleshooting for the prior question for a PC:\share folder still associated with a person who has left state service or changed crews. Update the **Description** to **Vacant** if computer is not used.

For a server share folder that is still seen or is in the wrong location, a common problem is that a Computer Security Delete User or Update User Request was never submitted for the person. These names and user IDs can be submitted to Computer Security, but if a User Request was never submitted, that situation will have to be rectified by the previous employee's last known manager.

Appendix C. Viewing Raster and GIS Data

ODOT Tutorials

A set of ODOT tutorial files can be provided to you for learning about how Geographic Coordinate Systems are selected in MicroStation V8i SELECT Series 3.

Several different files are provided in this example set. The files are from different sources and different Geographic Coordinate Systems may be associated with each file.

Table 9. Example Set Files

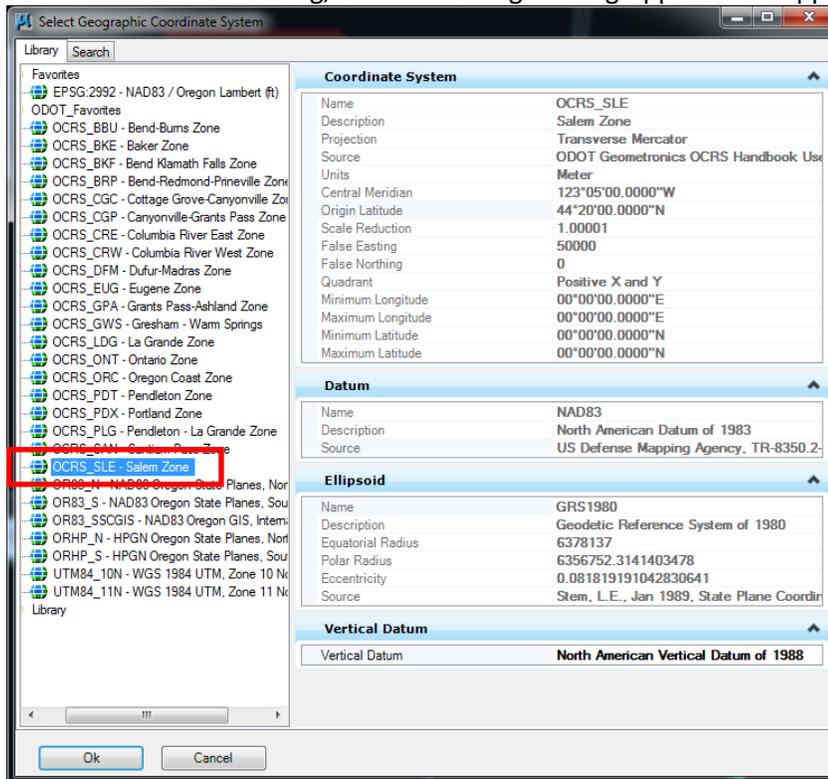
Folder/File Name	Source	Format	Projection	Units
DouglasCounty	Douglas County	SHP	State Plane South	International Feet
GISU_CountyMap	ODOT GISU	DGN	OGIC	International Feet
GISU_ShpFiles	ODOT GISU	SHP	OGIC	International Feet
MetrolImage	Portland Metro	TIF	State Plane North (SPC 5076)	International Feet
OregonCoastOCRS	Region 3 Survey	DGN	OCRS Oregon Coast	International Feet
PortlandOCRS	Region 1 Survey	DGN	OCRS Portland	International Feet
CombinedFactor	Region 3 Survey	DGN	LDP	International Feet

Other files include:

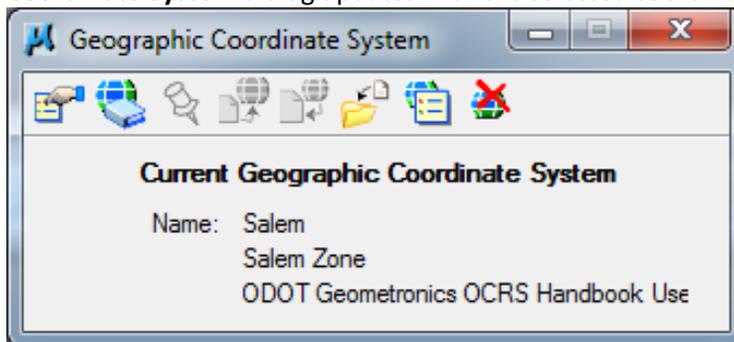
- OregonExplorer.xwms: Connection to Web Mapping Service (WMS) for raster imagery supplied by Oregon Explorer
- Example_NoCoordSystem.dgn: Empty file with no coordinate system set
- Example_SPN: Empty file set to State Plane North, NAD 83 and International Feet

Tutorial 1. Set DGN File to Project Reference Data “On the Fly”

1. Open the file ...\\ODOTExampleData\\Example_OCRSSalem.dgn.
2. Select **Tools > Geographic > Select Geographic Coordinate System** and set the **Geographic Coordinate System** to **OCRS Salem**.
3. Click the second icon from the left From Library. From the ODOT_Favorites Folder, locate the Geographic Coordinate Systems set up for the Oregon Coordinate Reference System (OCRS) and other coordinate systems typically used at ODOT.
4. Click **OCRS_SLE – Salem Zone** to review the Coordinate System parameters. You won't be able to edit them. If wrong, contact the Engineering Application Support Team (EAST).



5. Click **Ok** to set up the DGN file with the selected coordinate system. The **Geographic Coordinate System** dialog updates with the selected coordinate system.



6. Open the **Reference** dialog and attach the files ...**DouglasCounty**\Township.shp, ...**GISU_ShpFiles**\counties.shp and ...**GISU_ShpFiles**\state.shp.



Note: Be sure to change *Files of type* to either **All Files (*.*)** or **Shape Files (*.shp)**.

7. In the Reference Dialog Settings, change the **Orientation View** to **Geographic - Reprojected**. The Township.shp file from Douglas County appears within the Douglas County border.
8. Add ... **GISU_CountyMap**\doug1.dgn file. The **Orientation View** option **Geographic – Reprojected** is not listed. You will have to set the Geographic Coordinate System up so that MicroStation V8i SELECT Series 2 will recognize it.
9. Open the **doug1.dgn** file and assign the Geographic Coordinate System titled **OR83-SSCGIS – NAD83 Oregon GIS, International Foot** from the ODOT_Favorites library and **Save Settings**.

You can also navigate through the folders **Library > Projected (northing, easting, _) > North America > United States of America > Oregon** to find it.

10. Use the arrow in the lower left to return to the **Example_OCRSSalem.dgn** file.
11. Reference in the DGN file ...**GISU_CountyMap**\doug1.dgn. The **Orientation View** option **Geographic – Reprojected** is listed. Select it and when the reference file loads it should line up with the shape files.
12. To add DGN files surveyed in OCRS coordinates, set the Geographic Coordinate System in the files in order to use the **Geographic – Reprojected** view.
13. Open up the file ...**OregonCoastOCRS**\EX_OregonCoastOCRS.dgn.
14. From the ODOT_Seed library, select **OCRS_ORC – Oregon Coast Zone** and click **Ok**.
15. Open the **Example_OCRSSalem.dgn** file, and reference in the ...**OregonCoastOCRS**\EX_OregonCoastOCRS.dgn file with the **Orientation View** set to **Geographic – Reprojected**. If file is hard to see, turn off the display of **doug1.dgn** and zoom to it.

Tutorial 2. Reproject DGN File From One Coordinate System to Another



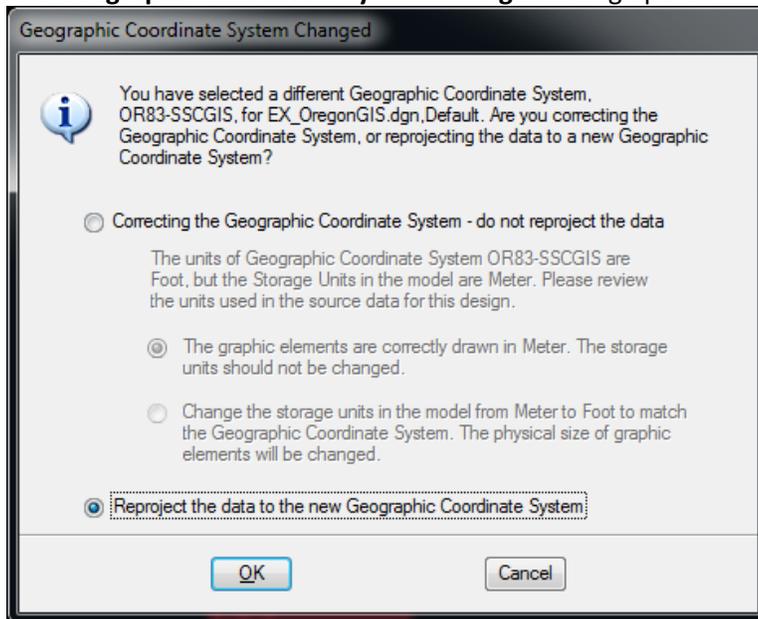
Note: You cannot change units using this method, even if the dialogs suggest you can. You may wonder why you would want to do this since MicroStation will project on the fly. I'm not really sure why either, once everyone is using MicroStation V8i in ODOT. There are likely some glitches in how the reprojection technique works. Take a look at what happens when you edit a text node, drop cells, or check to see if your leader lines and dimensions are exhibited correctly.

1. Make a copy of the file ...\\ODOTExampleData\\OregonCoastOCRS\\EX_OregonCoastOCRS.dgn and rename it **EX_OregonGIS.dgn**. You'll transform the file into this coordinate system.
2. Open the file **EX_OregonGIS.dgn**.
3. Select **Tools > Geographic > Select Geographic Coordinate System**.

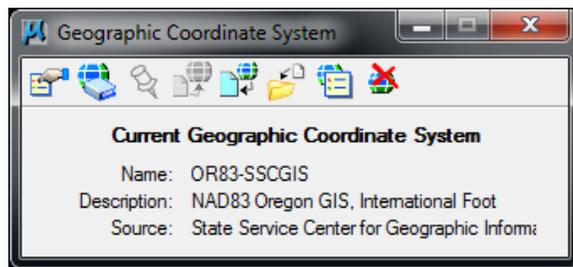


Note: The Geographic Coordinate System should already be set in this file as you set it in Tutorial 1.

4. Click on the second icon from the left From Library. In the ODOT_Favorites, click on **OR38_SSCGIS** and click **OK**.
Or, navigate to the Coordinate System titled **OR83-SSCGIS** by selecting **Library > Projected (northing, easting, _) > North America > United States of America > Oregon** and click **OK**. The **Geographic Coordinate System Changed** dialog opens.



5. Select **Reproject the data to the new Geographic Coordinate System** and click **OK**. The Current Geographic Coordinate System information in the **Geographic Coordinate System** dialog will change to reflect the Geographic Coordinate System now set in the file.



6. Edit the file information to reflect that the coordinates are associated with a different Geographic Coordinate System. You could update the File Properties, add text in the title block area describing what you did, edit the existing text, by updating the table.
7. Click the **Remove the Coordinate System** icon with the red X to verify the coordinates really did change, and that the Geographic Coordinate System is not being used to “project on the fly” when you reference in another file drawn in the NAD83 Oregon GIS, International Foot Geographic Coordinate System.

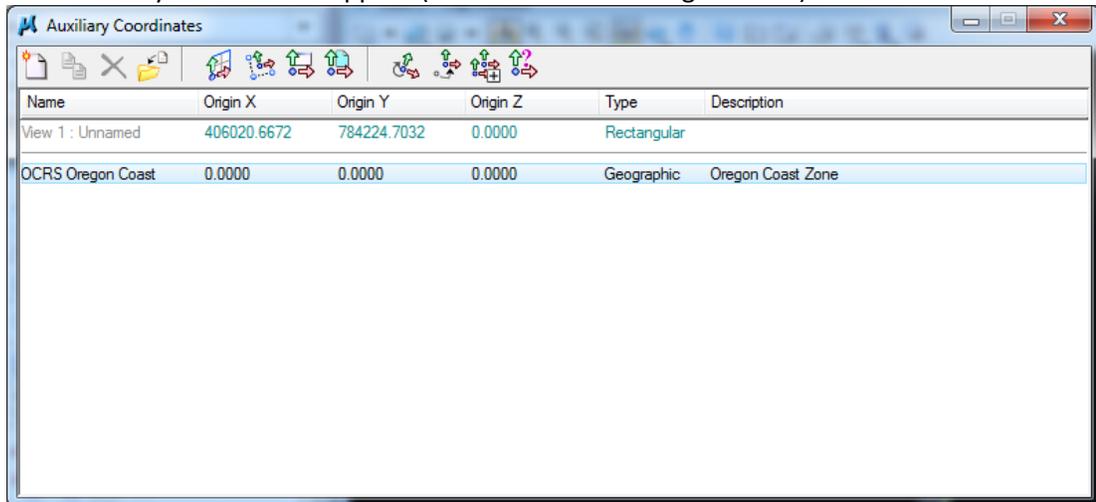


Note: *In the future when you reproject files, you may skip this step.*

8. Click **Save Settings**.
9. Reference the file ...**ODOTExampleData\GISU_CountyMap\doug1.dgn**. Choose the **Orientation Coincident – World view**. The files should match up.

Tutorial 3. View Geographic Coordinates (Latitude and Longitude)

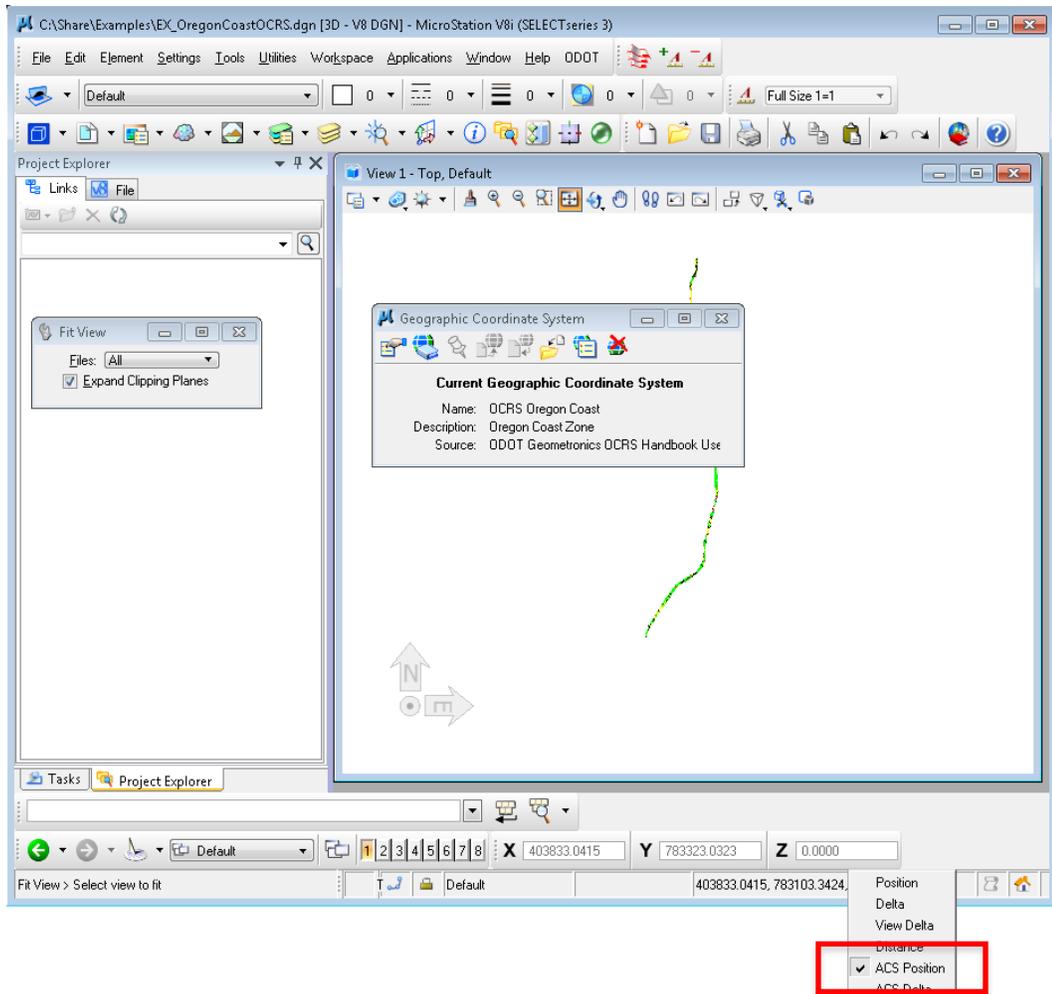
1. Open the file ...**ODOTExampleData\OregonCoastOCRS\EX_OregonCoastOCRS.dgn**.
2. Select **Tools > Geographic > Select Geographic Coordinate System** and confirm the **Geographic Coordinate System** is set to **OCRS Oregon Coast**.
3. Go to **Tools > Coordinate Systems > ACS > Auxiliary Coordinate Systems**. Two auxiliary coordinate systems should appear (View 1 and OCRS Oregon Coast).



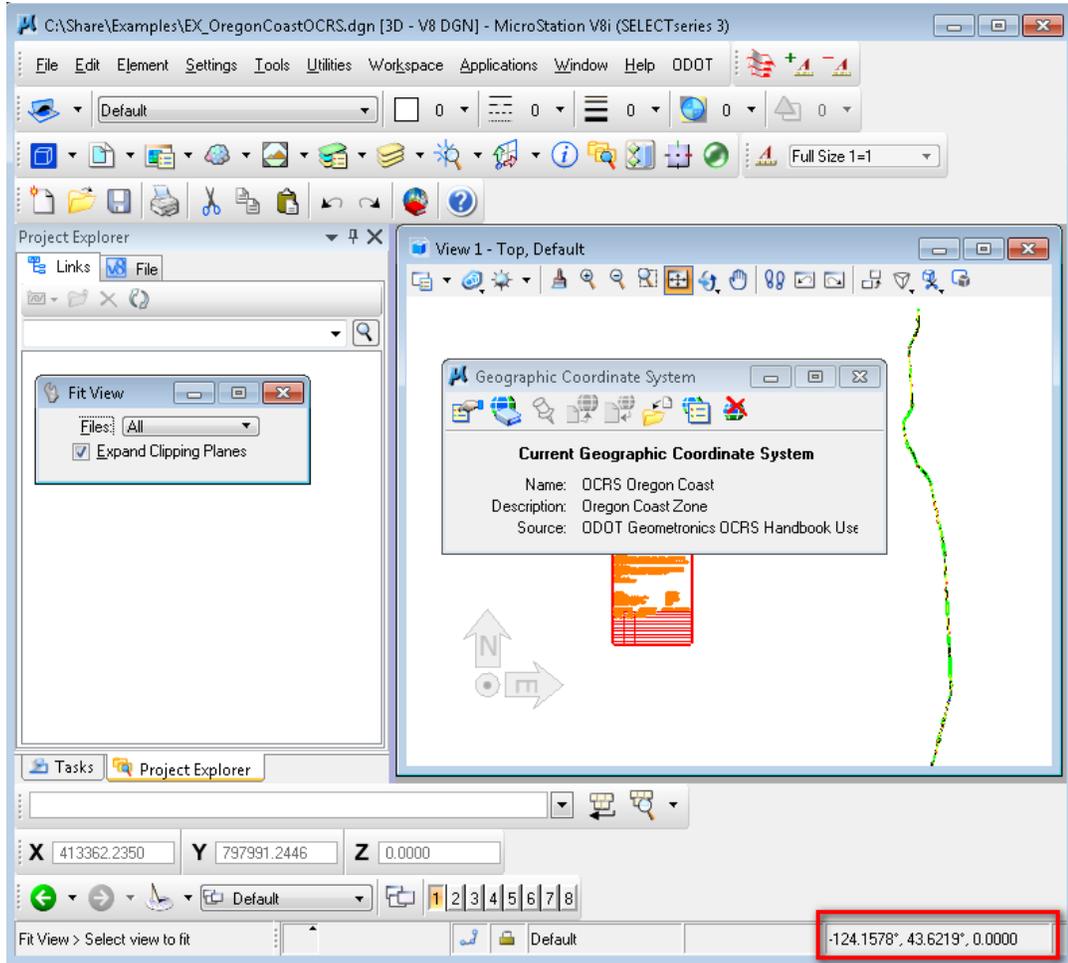
4. Double-click **OCRS Oregon Coast** to activate it.
5. Close the **Auxiliary Coordinates** dialog.
6. Right-click in the status bar area of the MicroStation interface (where the active level, locks and snaps are shown) and select **Running Coordinates**.
7. Data point on the **Running Coordinates** and select the **ACS Position Option**.



Note: Your image will be different than the own shown below as you selected a different geographic coordinate system.



The running coordinates should appear at the lower edge, reflecting latitude and longitude values. The **AccuDraw** dialog displays the x, y and z coordinates.



Tutorial 4. Set DGN File in LDP to Align with Data in Other Coordinate Systems

1. Create a new file and call it ...**ODOTExampleData\CombinedFactor\StatePlaneSouth.dgn**.



Note: This will be an empty file that you will reference a CAD file set up in an LDP into. Text in the file reports:

“Basis of Bearing: Oregon South Zone, NAD_83(91)

Coordinates shown are LDP Coordinates.

Vertical Datum based on VNAVD88 elevations

To convert LDP Coordinates to SPC ORS, multiply LDP Coordinates by 0.99987087.

2. Select **Tools > Geographic > Select Geographic Coordinate System** to set the **Geographic Coordinate System** to match.
3. Click the second icon from the left From Library. From the ODOT_Favorites Folder, select the Geographic Coordinate System listed as **ORHP_S**. Click **OK**.
4. Add a text box in the file that describes the purpose of the file and the coordinate system it has been set up with. For example:

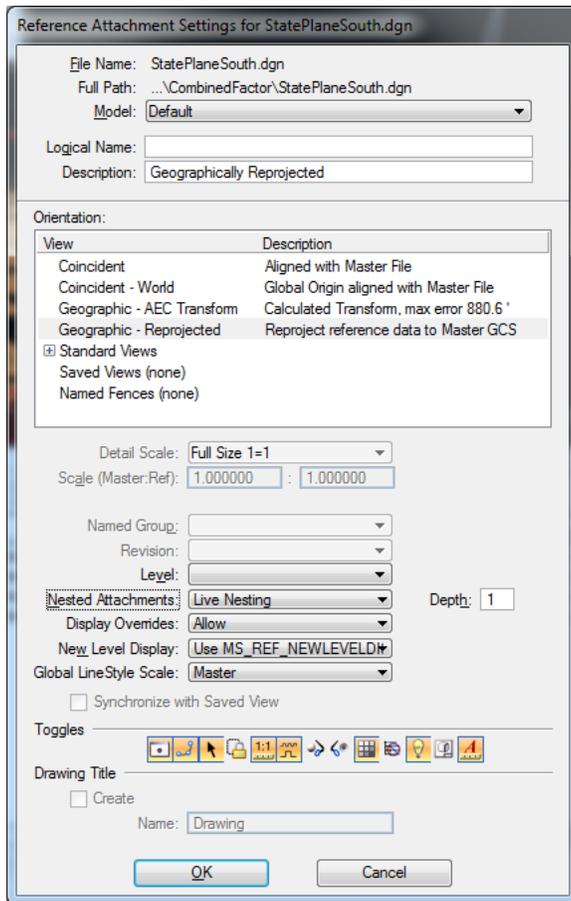
This file 15186E_SPS.dgn was assigned the Coordinate System Oregon South Zone, NAD_83(91) using MicroStation V8i Select Series 2 for the purpose of demonstration. The file 15186E.dgn was referenced in at a scale of master(ref) of 1(0.99987087). You can reference this file into other files set up with a coordinate system.

5. Reference in the file ...**ODOTExampleData\CombinedFactor\15186E.dgn** with the **Orientation** set to **Coincident – World Global Origin Aligned with Master File** and the **Scale (Master: Ref)**: set to **0.99987087:1**.



Note: After it is referenced in, MicroStation will set the **Ref** to **1** and the **Master** to the correct value.

6. Merge the reference file into the master.
7. Open the file ...**ODOTExampleData\EX_OregonCoastOCRS.dgn**.
8. Reference in the file you just created ...**ODOTExampleData\CombinedFactor\StatePlaneSouth.dgn** with the **Orientation** set to **Geographically Reprojected**.



9. Confirm that the reference file appears in the correct location relative to the other reference files.

Tutorial 5. Raster Imagery



Note: It helps to know something about the coordinate systems and the imagery, before you get started. Open the XML files associated with the images to review information about the image including coordinate system and unit details.

2s1w10u.tif

There is a sister file (with the TFW extension), but you need to know the units for the file. The XML file contains information about how the file was created. It states that the image units are international feet.

```
horizsys> -<planar> -<gridsys> <gridsysn>State plane coordinate system 1983.</gridsysn> -<spcs>
<spcszone>5076</spcszone> </spcs> </gridsys> -<planci> <plance/> <plandu>International
feet</plandu> </planci> </planar> -<geodetic> <horizdn>North American Datum of 1983/1991
(HPGN)</horizdn>
```

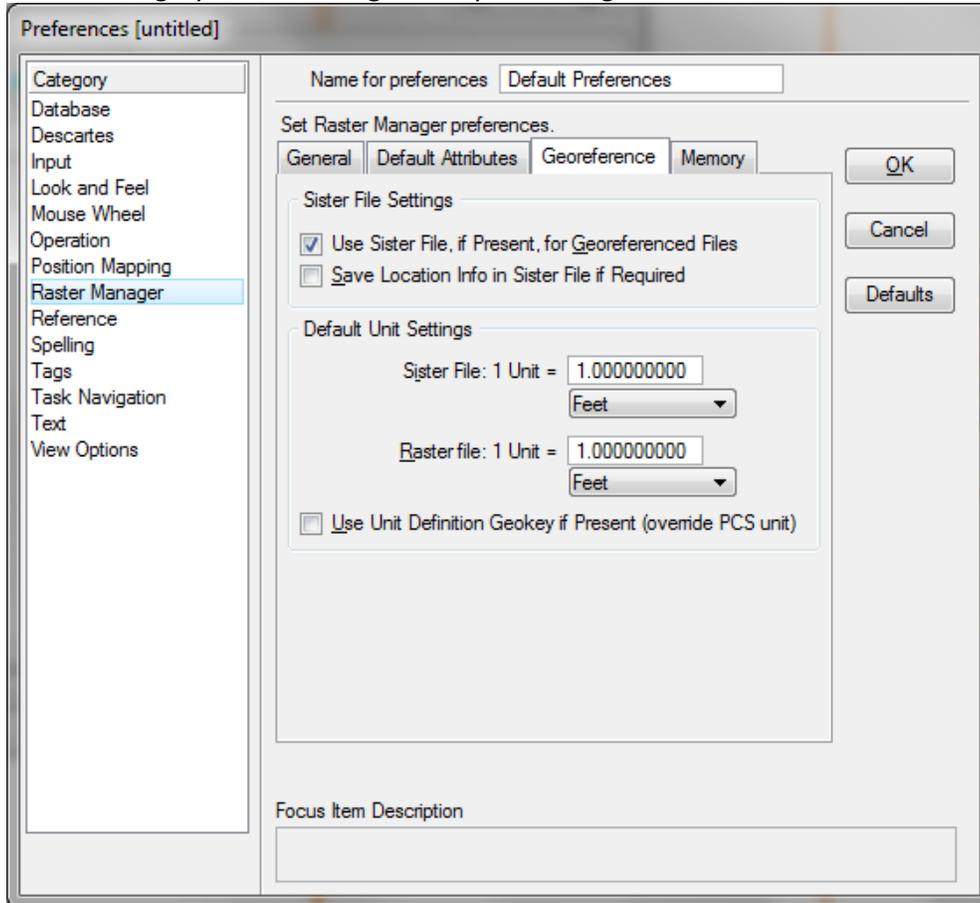
Multnomah.sid

This file also has a sister file (SDW) and an XML file which reports units are set to meter. The XML file says:

```
<SRS>PROJCS["UTM Zone 10, Northern
Hemisphere",GEOGCS["NAD83",DATUM["North_American_Datum_1983",SPHEROID["GRS
1980",6378137,298.257222101,AUTHORITY["EPSG","7019"]],TOWGS84[0,0,0,0,0,0],AUTHORITY["
EPSG","6269"]],PRIMEM["Greenwich",0,AUTHORITY["EPSG","8901"]],UNIT["degree",0.01745329251
99433,AUTHORITY["EPSG","9108"]],AXIS["Lat",NORTH],AXIS["Long",EAST],AUTHORITY["EPSG","426
9"]],PROJECTION["Transverse_Mercator"],PARAMETER["latitude_of_origin",0],PARAMETER["central
_meridian",-
123],PARAMETER["scale_factor",0.9996],PARAMETER["false_easting",500000],PARAMETER["false_
northing",0],UNIT["Meter",1],AUTHORITY["EPSG","26910"]]</SRS> <GeoTransform>
5.0455100000000000e+005, 1.0000000000000000e+000, 0.0000000000000000e+000,
5.0666120000000000e+006, 0.0000000000000000e+000,-
1.0000000000000000e+000</GeoTransform> -<Metadata> <MDI
key="GEOTIFF_CHAR__GTModelTypeGeoKey">ModelTypeProjected</MDI> <MDI
key="GEOTIFF_CHAR__GTRasterTypeGeoKey">RasterPixellsArea</MDI> <MDI
key="GEOTIFF_CHAR__ProjLinearUnitsGeoKey">Linear_Meter</MDI> <MDI
key="GEOTIFF_CHAR__ProjectedCSTypeGeoKey">PCS_NAD83_UTM_zone_10N</MDI> <MDI
key="GEOTIFF_NUM__1024__GTModelTypeGeoKey">1</MDI> <MDI
key="GEOTIFF_NUM__1025__GTRasterTypeGeoKey">1</MDI> <MDI
key="GEOTIFF_NUM__1026__GTCitationGeoKey">IMAGINE GeoTIFF Support
```

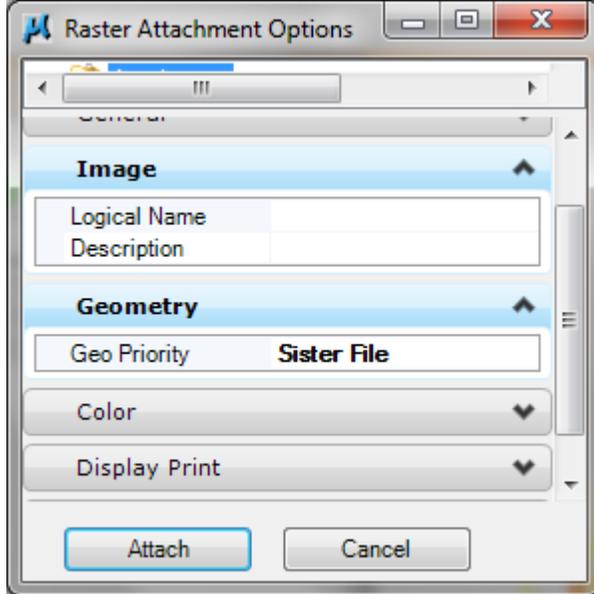
EX_PortlandOCRSrw_set.dgn

1. Open the file ...**EX_PortlandOCRSrw_set.dgn**. The coordinate system has already been set in this file. Shapefiles have been referenced in to provide a frame of reference.
2. Preferences affect how raster files open in MicroStation V8i. It helps if you know something about the raster data that you want to view. First, you will reference in a TIF file from Portland Metro. The “sister file” with a TFW extension is associated with it and the units are set to international feet. To set the Preferences correctly, select **Workspace > Preferences** and the category **Raster Manager**. Set your settings as shown below.

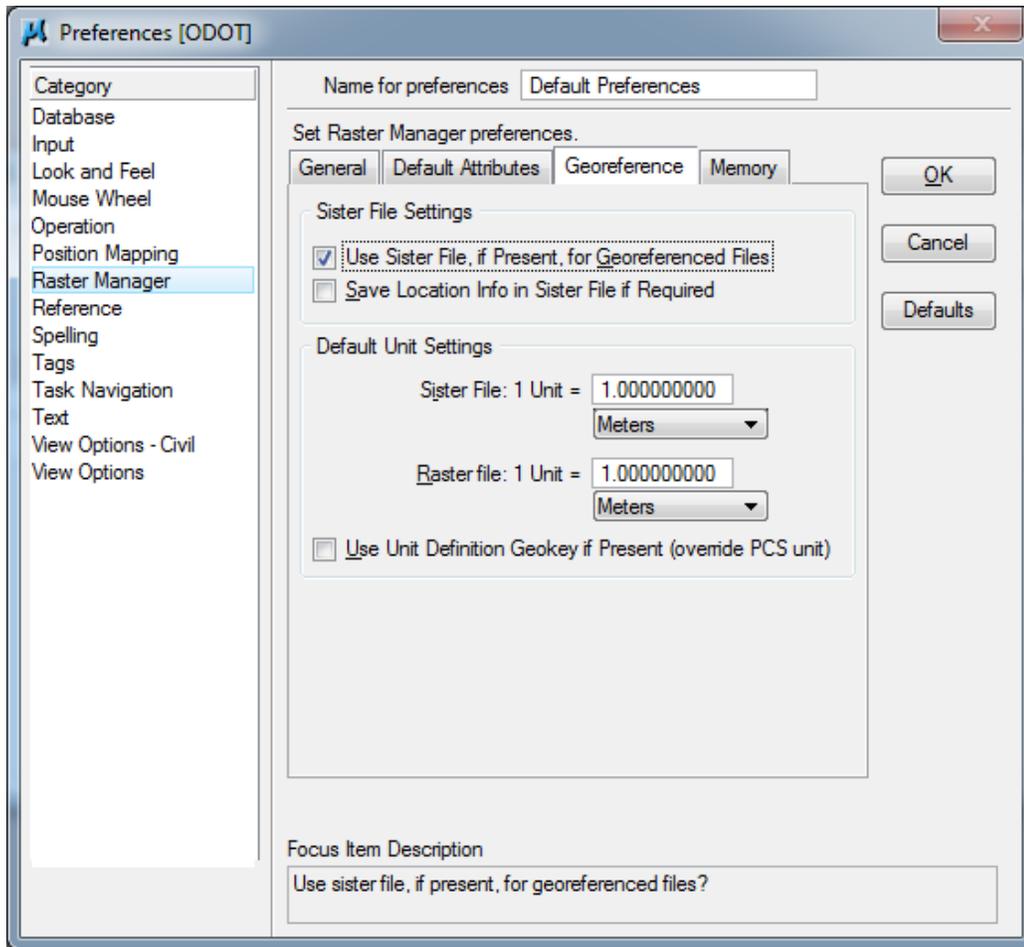


3. Open **Raster Manager** and choose **File > Attach > Raster**. Navigate to the file **2s1w10u.tif** and click **Open**.

4. In the **Raster Attachment Options** dialog, expand the **Geometry** category and change the **GeoPriority** option to **Sister File** and click **Attach**.



5. In Raster Manager, right-click on the file and choose **Coordinate System > Select from library**.
6. Choose **ORHP-NIF – HARN (HPGN) Oregon State Planes, North Zone, International Foot**. Add it to your favorites if you typically use raster files provided by Portland Metro.
7. Select **Fit View** and zoom in to compare the vector data to the raster data. It should match up fairly close without needing to rotate, move or scale the raster image.
8. Add a large MrSID image by detaching all of the images to make things display more quickly. Change the **Preferences** for **Raster Manager** again as shown below:



9. In the Attachment setting, change **GeoPriority** to **Sister File**, and change **Inherit GeoCS** from **Model** to **Not Inherited**; it should line up with Multnomah county boundaries.
10. Right-click on the file in Raster and select **Geographic Coordinate System**.



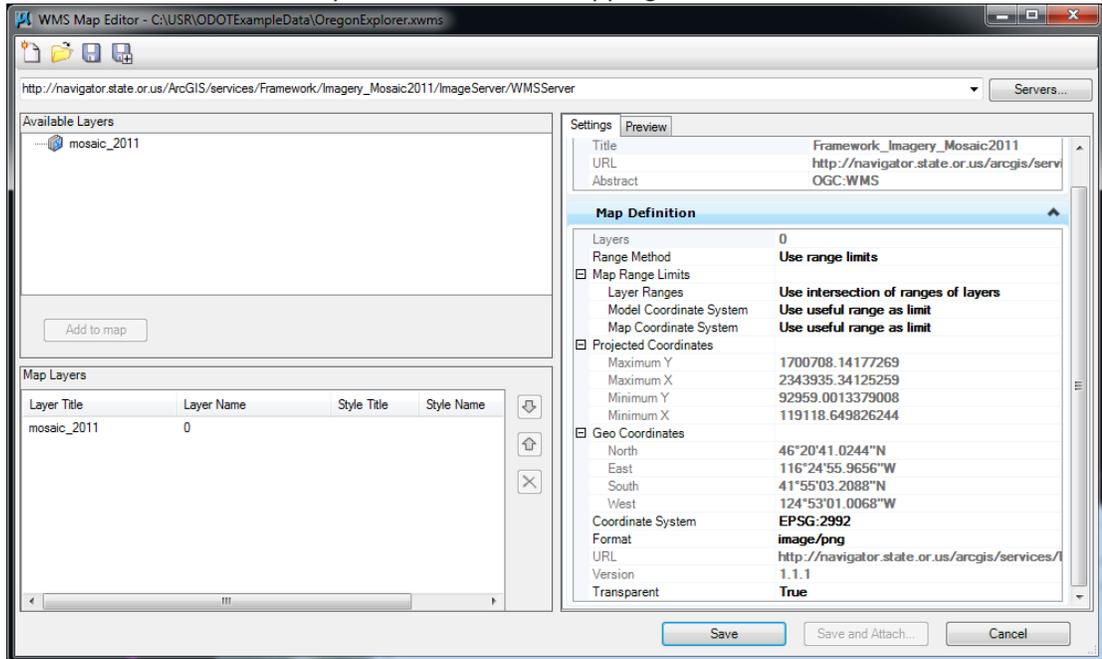
Note: As the imagery is being reprojected, it may take awhile to display as you zoom in and out.

11. Detach the raster references again.
12. Try a Web Mapping Service (WMS). This one is from the Oregon Explorer portal that is located at OSU. The parameters are set in a file titled **OregonExplorer.xwms**.
13. In the **Raster Manager** dialog, select **File > Attach > WMS** and navigate to **...ODOTExampleData\OregonExplorer.xwms**. Select the file and click **Open**. It will default to Raster Header.
14. Choose the defaults and click **Attach**. Wait for the image to appear.



Note: If you're on a really slow network, this may not work.

- When the image appears, right-click on **OregonExplorer.xwms** and select **Edit WMS** to determine the coordinate system for the web mapping service.



- Click **Save** (or **Cancel**).
- Right-click on **OregonExplorer.xwms** in the Raster Manager window and select **Coordinate System > Select from Library**.
- Select **Library > Projected (northing, easting, ...) > North America > United States of America > Oregon** and select the coordinate system with a name similar to **EPSG:2992**.



Note: You may want to add it to your favorites.

