# MicroStation V8 XM Edition Administrator

Second Edition
MicroStation V8 2004 Edition to XM Edition 8.9.3

*Bentley Institute Course Guide*

Bentley Institute

TRN007710-1/0002

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08.09.03.xx

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# 1 Getting Started

The changes and enhancements in MicroStation V8 XM Edition are designed to add to the capabilities of the V8 platform while providing a task-appropriate user experience.

## Installing MicroStation V8 XM Edition

You can install and run MicroStation V8 XM Edition on the same workstation as a previous version of MicroStation, such as MicroStation V8 2004 Edition. However, you should never install MicroStation V8 XM Edition over an existing MicroStation installation, whether that is MicroStation V8 2004 Edition or an earlier release. Install to a separate directory. Also, remember to always back up your data prior to installation.

### Requirements

Hardware and software requirements have changed, so be sure to check the Requirements section of the product ReadMe for recommendations and prerequisites before installing. Find it in \Program Files\Bentley\MicroStation

**Operating System**

Windows XP Professional
Windows XP Professional x64
Windows XP Home Edition
Windows 2000 Professional (SP3 or later)
Windows 2000 Server
Windows Server 2003 (SP1 or later)
Windows Server 2003 x64
(Windows NT, Windows 9x series are not supported)

Microsoft Internet Explorer v5.5 or later with 128-bit cipher strength

**Software Prerequisites**

The *MicroStation V8 XM Edition Software Prerequisite Pack* ***v08.09.03.xx*** needs to be installed to your workstation prior to the installation of MicroStation V8 XM Edition v08.09.03.32. The *MicroStation V8 XM Edition Software Prerequisite Pack* is available from the Web download/MSELECT Channel of SELECTservices Online. The contents of the *MicroStation V8 XM Edition Software Prerequisite Pack* include:

Windows Installer 3.1v2
Microsoft .NET Framework 2.0
MSXML 4 with Service Pack 2
VB4.6.4
DirectX 9c
DHTML Editing Control for Applications

**Important Note:** MicroStation V8 XM Edition Software Prerequisite Pack v08.09.03.xx needs to be installed prior to the installation of MicroStation V8 XM Edition v08.09.03.32 even if MicroStation V8 XM Edition Software Prerequisite Pack v08.09.00.xx was previously installed to the same workstation.

MicroStation V8 XM Edition uses Windows Installer 2.0.

## Desktop Analyzer

Download and run the Bentley Desktop Analyzer to see if a system is optimized to run MicroStation V8 XM Edition. It will help you find out if your workstation is optimized to take advantage of the capabilities in MicroStation V8 XM Edition. Specifically, the new Display Subsystem, which leverages Microsoft's DirectX technology to optimize view and navigation performance in 2D and 3D models

There is a link to the download in the ReadMe

*Notes:*

Download it and install it on the workstation on which you intend to run MicroStation V8 XM Edition, following the instructions. When you run it, it will examine your system for the following information:

Operating system

System memory

Video card manufacturer

Video card RAM

DirectX installation and version

☞ **NOTE**: This utility requires Microsoft NET Framework version 1.1, which can be downloaded from the Microsoft Web site

To uninstall, go to the Windows Control Panel and then to Add/Remove programs. Select Bentley Desktop Analyzer and select Remove.

## Software prerequisite pack

This is a series of Microsoft packages that must be installed on a workstation prior to the installation of MicroStation V8 XM Edition or any of the MicroStation V8 XM Edition derivative products. For example, XML facilitates communication between applications. DirectX provides enhanced graphics. If you are not sure a workstation has all of these prerequisites, or if they are up to date, it is strongly recommended that you install the software prerequisite pack prior to installing MicroStation

### Components

The MicroStation V8 XM Edition Software Prerequisite Pack requires a minimum of 400MB to install all of its components.

A complete list of the components can be found in the Installation Requirements section of the ReadMe. Or, to get a list of available command options, submit the following command:

"Setup Prerequisites 08.09 03 xx_en exe" /?

### Obtaining the pack

The MicroStation V8 XM Edition Software Prerequisite Pack is available at the Downloads/ MySELECT CD area of SELECTservices Online.

The following command will extract the files to the listed location (C:\some\full\path) without continuing on to installation:

"Setup Prerequisites 08 09 03 xx_en exe" /C /T:C:\some\full\path

### Files necessary to install the MicroStation V8 XM Edition Software Prerequisite Pack

If you open PrerequisitesGUI hta from the extraction with a text editor, you can obtain a listing of the files that need to be installed in order to install the MicroStation V8 XM Edition Software Prerequisite Pack in its entirety. The appropriate section begins with the comment "The HTML dialog layout". Each command line follows the attribute "BSI_CMD=". You only have to issue the command indicated in each of the HTML List Items (LI element tag)

### Prerequisite pack installation

Important Note: It is highly recommended that you close any programs and disable any antivirus software that is running prior to the installation of this software. Be sure to turn your antivirus software back on again when you are finished. To install:

1 In Windows Explorer, click Setup Prerequisites 08 09 00.20_xx exe

2 In the MicroStation Prerequisites dialog, Click Install.

The MicroStation Prerequisites install to your system. When finished, a dialog appears telling you that the installation is complete

3 Click OK

You now have the appropriate prerequisites installed to run MicroStation V8 XM Edition.

## New single-use MicroStation installation

It is recommended that you close any programs and disable any antivirus software that is running prior to the installation. Be sure to turn your antivirus software back on again when you are finished.

Download and run the executable. When you run the installer for MicroStation V8 XM Edition, you will see two options for installing the product. Select the Extract and install installation package option. This will automatically run and complete the installation.

## Updating an existing installation

You can update an existing MicroStation version with a newer version that contains changes to existing functionality or adds new enhancements. This install acts as a minor upgrade, which means that it will not disturb any customizations that you have completed for your current MicroStation configuration.

Download the newer version and run the executable. When prompted with an installation choice, select the Extract and install installation package option. This will automatically run the installer and update the original version loaded on the system.

## MSI MicroStation installation

Use silent installation to install MicroStation without interacting with the install wizard. To perform a silent installation, run the Windows Installer msiexec at a system command prompt, specifying appropriate installation parameters.

Download and run the executable. When prompted with an installation choice, select the Extract installation package only option. Note the location of the MicroStation MSI file.

The following command line parameters can be set for a customized silent installation. They allow you to set the installation folder, the location of your workspaces and the information necessary to obtain licenses using SELECT Server.

For example, the following command invokes a silent MicroStation installation producing an install log file named silent.log in C:\, placing the program files and workspaces into the specified directories:

msiexec /l*v C:\silent.log /qn INSTALLDIR="C:\silent install\Program\" BSI_USTN_HOMEROOT="C:\Silent install\homeroot\" /i "MicroStation 08.09.03.xx.msi"

- **msiexec** is the Windows installer
- **/l*v C:\silent.log** will create a log file named silent.log in the specified location

- /qn indicates the silent install; the installer's user interface will be suppressed
- INSTALLDIR is the folder where the MicroStation program and associated files will be installed. This value must be quoted if it contains spaces or other characters that are reserved by the command shell.
- BSI_USTN_HOMEROOT is the folder where the MicroStation workspaces and associated files will be installed. This value must also be quoted if it contains spaces or other characters that are reserved by the command shell.
- /i "MicroStation 08.09.03.xx.msi" specifies the MicroStation package to install

You can also search for the online help topic "Command Line Arguments and Exception Logs" (include quotes to search for the specific topic).

To see command options for the Windows command msiexec, select Windows Start menu > Run and enter msiexec.

### Suppressing installation of workspace files

Use the following command to suppress the installation of workspace files and set the install to leverage an existing workspace location by setting the workspace path to another location in msdir.cfg.

```
msiexec /l*v C:\silent.log /i MicroStation.msi  /qn+
ADDLOCAL=ALL
REMOVE="WorkSpaces,Users,SystemBorders,System,Standards,Projects,Interfaces,Font_T
raditionalChinese,Font_Korean,Font_Japanese,DatabaseExamples,AdditionalFontFiles"
INSTALLDIR=c:\08090300 BSI_USTN_HOMEROOT=c:\08090300-WS
```

The first three properties launch the Windows installer, create a log file and specify the MicroStation package to install.

- /qn+ is a silent installation with a single modal dialog indicating that the installation is complete
- ADDLOCAL=ALL installs everything, but
- REMOVE="WorkSpaces,Users,SystemBorders,System,Standards,Projects,Interfaces,Font_TraditionalChinese,Font_Korean,Font_Japanese,DatabaseExamples,AdditionalFontFiles" indicates the components not to install
- INSTALLDIR=c:\08090300 BSI_USTN_HOMEROOT=c:\08090300-WS indicates the path to be written as the workspace path in msdir.cfg

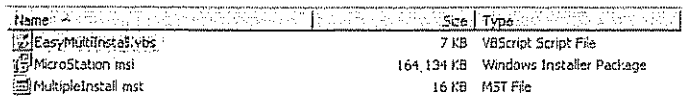
## Multiple versions on the same system

With MicroStation V8 XM Edition 08.09.02.52 or higher, you also have the option to install multiple versions of the software on the same system.

⚠ **IMPORTANT**: This type of installation is suggested for testing purposes only, as multiple versions cannot be updated. Only the original version can be updated

If you are installing a second build, different than the original version, on the same system, select the Extract installation package only installation option. This offers you a choice to select either the VBS file

Select the .vbs file for installations of additional product versions for testing purposes. These additional installations cannot be upgraded in the future.




## Disk space

If an installation fails with an insufficient disk space message, there may be insufficient space on the drive assigned to your system's TEMP and TMP environment variables, regardless of the destination drive you chose

During the installation temporary space is needed to uncompress the install set before files get copied to their final destination. If your TEMP and TMP environment variables are pointing to a location on a drive that has less than 500MB of free disk space and you can not free up any more disk space, you can permanently assign a new value to TEMP and TMP through Windows' System Properties. If you do not wish to permanently change these system environment variables, you can do the following as an alternative

1. Open a Command shell (Windows Start menu > Run > cmd).

2. Reassign the TEMP environment variable to another drive or folder that has more space (for example, set TEMP=D:\temp)

3. Set TMP=%temp%

4. Run MicroStation .exe

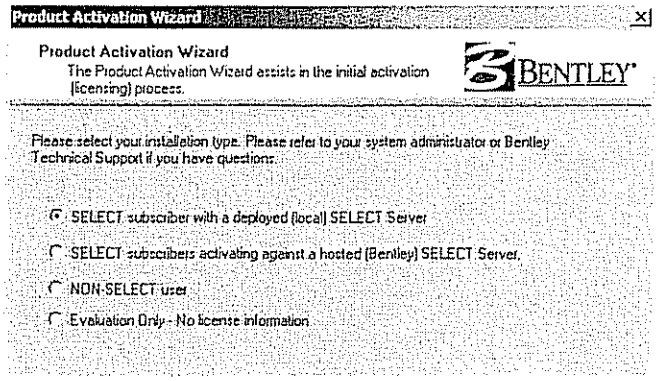
5. Close the Command shell after the installation process is complete

Note that the TEMP and TMP environment variables are temporarily reassigned only in the DOS session using these steps. The reassignment does not permanently impact the system environment

# Product Activation Wizard

After a product is installed, you must obtain a license and then activate that license. Obtaining a license and activating a product are two separate steps. Use the wizard to help you through the process.

To open it, select *Utilities* > *License Management* to open the License Management Tool dialog box, and then select *Tools* > *Product Activation Wizard*. The wizard also opens automatically at the end of product installation.




## Activating against a local SELECT Server

To activate the product against a SELECT Server that you have deployed, select the first option.

Enter your Server Name and Site Activation key. If you are using HTTPS, enable the HTTPS (SSL) check box. If you are using a Proxy server to connect to the SELECT Server, click the Proxy button and enter the Proxy Server information, then click OK. Click Next.

The Wizard Selections dialog box displays the information you provided. Review the information and click Finish to activate the product.

## Activating against a hosted SELECT Server

To activate products from a Bentley hosted SELECT Server, select the second option.

Enter your Site Activation key. If you are using HTTPS, enable the HTTPS (SSL) check box. If you are using a Proxy server to connect to the hosted SELECT Server, click the Proxy button and enter the Proxy Server information, then click OK. Click Next.

On the Check out a license now page, enter your email address. The appropriate product name and version are supplied. Click Next.

The Wizard Selections dialog box displays the information provided. Review the information and click Finish to activate the product.

### Activating if you are a NON-SELECT Bentley customer

Select the third option, click Next and select the option that applies to your site on the License Information page.

If you have a license file ready for import, select the option, click Next and Browse to the license file. On the Wizard Selection page, review the file location and click Finish. The Product activation complete dialog box opens and the activation is complete.

If you have an activation key, select the option, click Next and enter your activation key in the Site Activation Key field. The Server Name is supplied. To enable HTTPS, check the HTTPS (SSL) check box.

If you are using a proxy server to connect to SELECT Server, click Proxy and enter your Proxy Server information. Click Test Connection. The Product Activation dialog box opens and the product is activated.

If you do not have any license information, select the option, click Next and you can license the product in evaluation mode. Request a license from Bentley Sales Support by clicking the Go To Bentley.com button.

## Using the License Management Tool

Use this tool to check out application and program licenses that are under concurrent license control of the SELECT Server License Manager to systems that are not always connected to a network with access to SELECT Server. This lets users who are dependent on the concurrent licensing feature use managed application licenses on remote systems for extended periods. To open it, select *Utilities* > *License Management*.

### Running an application remotely

The application the user is running can reside on the remote system continually, even when its license is not active. The only requirement is that the remote system is connected to a network with access to SELECT Server during the time that the license is being checked out using the License Management Tool.

Once the license is checked out, the system can be disconnected from the network and the application can be used during the valid check-out period. This is noted in the Check Out Expiration Date field.

### License check out and check in

The Available licenses list box at the top of the dialog box lists licenses that are available to be checked out For each license, the number available is listed The term is specified in the expiration date field Select a license and click Check Out

The Checked out licenses list box at the bottom of the dialog box lists licenses that are checked out and the expiration is listed.

☞ **NOTE**: If you do not select a license before clicking Check In, the utility will check in the first license in the list

After the check-out period has expired, the application will no longer operate until a new license is checked out. Once the license checkout period expires, the License Management Tool utility automatically checks in the license and makes it available to other users.

If an application is no longer needed a license can be checked in, making it available to other users within the network or remotely.

### Tools

Items on the Tools menu let you manage settings, activate products and communicate with Bentley.

- Use the Options dialog box to enter or edit your SELECT Server Settings, Protocol and/or Proxy Configuration.
- Select Send Logs to directly send product usage logs to Bentley.
- Enable Use last saved email address so the email provided on license checkout is used for interaction with Bentley.

## New Directory Structure

The installed MicroStation directory structure conforms to Microsoft Windows standards. The structure makes updates easier and reduces the likelihood of overwriting data when reinstalling MicroStation Most noticeable are the separate default locations for program files and document files.

By default MicroStation installs binary files and executables to the following locations

C:\Program Files\Bentley\Documentation

C:\Program Files\Bentley\MicroStation

## Shared data

Storing shared data in the All Users sub-folders makes them available to any user

\Documents and Settings\All Users\Application Data\Bentley\Licensing

You will find any licensing log files here. Licensing is handled through the Windows registry.

\Documents and Settings\All Users\Application Data\Bentley\MicroStation

\Documents and Settings\All Users\Application Data\Bentley\WorkSpace

The Workspace folder is where you create and maintain standards and projects in a networked environment.

In this folder you will find the following sub-folders:

\Interfaces, where workspace interfaces are stored.

\Projects, where project-specific data is typically stored

\Standards, where the system administrator stores and maintains corporate standards. Project data that can be used on multiple projects can be moved to here.

\System, which is updated by Bentley. User data placed in this folder will be overwritten by subsequent software installations or updates

\Users, where user configuration files for using workspaces are stored.

User data files can be stored in the Workspace folder or in a shared network resource in order to share project data, enforce the use of drawing standards and control the appearance of MicroStation on the desktop.

## Workstation specific data

You will also find the folder \Documents and Settings\<username>\Local Settings\Application Data\ for each user.

The . \Local Settings\Application Data\Bentley\MicroStation folder is the local storage location for some Bentley product specific data that is unique to a workstation. The location of this folder is defined by the variable _USTN_HOMEROOT. User preference files and dflruser.cfg are found in a \prefs sub-folder here.

It is highly recommended that you do not to share user preference files between users. Although multiple users could use the same workspace and user configuration files over a network, . \Local Settings\Application Data\Bentley\ should reside on each local workstation.

☞ NOTE: Run the key-in ustation exe -RestoreDefaults to reset MicroStation so it is using all the default parameters as installed

# Multi-core/Multi-processor Support

MicroStation V8 XM Edition can take advantage of the hyper-threading capability of multi-core or multi-processor systems by performing graphics processing in a separate thread. However, because MicroStation may perform better with hyperthreading disabled, users will be notified upon startup if hyperthreading is enabled on a system

## Example files

Each delivered example data set includes relevant design and data files. They contain DGNLIBs that have examples of shared resources and link sets for use with Project Explorer.

The General data set illustrates features such as access control, change tracking and reference enhancements. The DGN files in the data set have links that you can follow to relevant topics in the online help. This data set is in the \WorkSpace\Projects\Examples\General folder.

If you have a MicroStation installation that includes the delivered examples you can follow along with the exercise.

➔ **Exercise: Familiarize yourself with the examples**

1. Launch MicroStation.
2. In the MicroStation Manager, set the following:

   *User*: examples

   The Project switches to General. This project contains examples of features users regularly use when designing.
3. Open _whats new_ dgn

   This file contains examples of new features. If you open the References dialog box, you can see that the overall sheet is assembled from referenced models.

4. Window Area around the Templates frame.

   Information about the feature is presented in graphic form in this referenced model. To access the geometry you must open the actual model.
5. Right click over the orange frame

   A dialog box appears. It prompts you to select the functionality you want to associate with the reset button. The default is the default MicroStation behavior. If you select this option, a right click is a reset. You can reset and continue to press the mouse button to open the Reset pop-up menu. You also have the option to switch to default

Windows behavior. If you select this option a right click opens the Reset pop-up menu immediately.

6 Click OK.

You will not see the First Reset dialog box after the first right click, but you can change the setting at any time in the Input Category of the, *Workspace > Preferences,* Preferences dialog box. As this is a user preference, the dialog box will appear again if you select another user in the MicroStation Manager.

7 Right click over the frame and continue holding the mouse button.

The right click and press action opens the Reset pop-up menu.

8 Select Exchange from the menu.

The Exchange option on the Reset pop-up menu redirects you to the referenced model containing the geometry.

9 At the upper left of the model, right click and press inside the dashed box.

10 Select *Follow Link > path to help topic.*

You are directed to the Element Templates topic in the online Help file.

11 Close the Help window.

12 Select *File > Close.*

13 In the MicroStation Manager, expand the Project option menu.

Note that all of the vertical disciplines are represented. There is a project for each one. These projects are structured and take significant advantage of new features such as the Project Explorer and task customization.

14 Set the following in the MicroStation Manager:

*User*: Bentley Institute

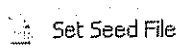
*Project*: MSV8XMAdmin

## Set Seed File Utility

Use this utility to select the seed file that will be copied when users right click and select New > Bentley MicroStation Design File in Windows Explorer or a Windows style file open dialog box. Access the utility by clicking the MicroStation Manager's Tools/File History icon and selecting Set default seed file from the pop-up menu.

☞ NOTE: The MicroStation Manager has many features similar to Windows Explorer. You can right click and create a new Bentley MicroStation Design file.

The Start > Programs > Bentley > MicroStation V8 XM program group also contains a shortcut to the Set Seed File utility.




Options in the dialog box let you choose whether users will be prompted to browse the file system, to use the current seed file or to use the seed file that is currently selected in the dialog box.

This setting has no effect on the variable MS_DESIGNSEED. It is only used when creating a new design file directly from Windows Explorer.

# 2 User Interface Enhancements

When you open a DGN file in MicroStation V8 XM Edition, you will note significant changes to the default layout of the MicroStation V8 application window. These changes make it easy to create a truly custom working environment.

Positional keyboard mapping gives each user the flexibility to configure their entire keyboard so they have immediate access to any MicroStation command with the touch of a key.

Many view controls can be performed using the mouse, and the default button assignments provide more flexibility for using view commands as well as accessing information.

Tools can be customized to simplify design tasks. You can apply a specific set of tools, standards and interface elements to a particular task in a workflow so users can work consistently. This results in standardization and enhanced efficiency throughout the design process.

## Application Window

MicroStation V8 XM Edition presents changes in the layout of the application window.

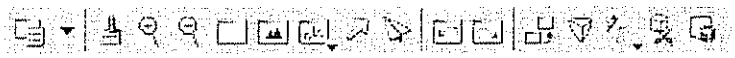
- The Main tool box replaces the Main tool frame. It provides access to the Element Selection, Fence, Manipulate, Change Attributes, Groups and Modify tools, plus the Delete tool. Creation tools are located elsewhere.

Many tools that were formerly accessible from the Main tool frame are accessible from the Task Navigation tool box, which is docked on the right side of the application window, or the Task Navigation dialog box if you are using that option.

The numbers and letters superimposed on the lower left corner of tool icons are associated with positional keyboard navigation

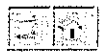
The Main Classic tool frame can be accessed from the *Tools* > *Tool Boxes* dialog box or by using the key-in DIALOG TOOLBOX MAINCLASSIC. It is a single column of tools rather than two columns. Tools and tool boxes can still be accessed from the Tools menu.

- The view control tool box appears at the top of each view window. Move its location to the side or bottom, or remove it, using the user preference Show View ToolBox in the View Options category of the, *Workspace* > *Preferences*, Preferences dialog box.



The first tool in the tool box opens the View Attributes dialog box.

- Additional fields on the right side of the status bar indicate the open DGN file's design history status and the feature that has input focus.



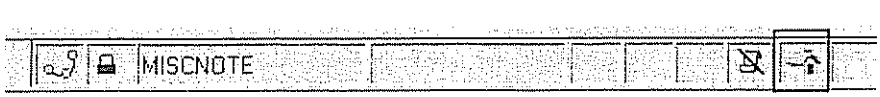
# Positional Keyboard Mapping

Positional keyboard navigation lets you use the keyboard to select tools and change settings. The keyboard is divided into zones and each zone is mapped to a tool box or the Tool Settings window.

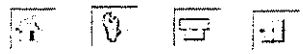
→ **Exercise: View the keyboard map**

1. Open Interface.dgn.
2. Right click over the Position Mapping frame.
3. Click OK in the First Reset dialog box to set the preference for this user to the default.
4. Right click and press over the frame and select Exchange from the pop-up menu to open the Position Mapping model.

MicroStation uses managed focus to follow your actions, moving input focus for common operations. In this system, the top level is called home. Look for the home icon on the right side of the status bar.



This field indicates focus location whether it is home, the tool settings window, the Key-in browser or AccuDraw. If there is no icon, some other window or dialog box has the focus



*Focus at home, the tool settings window, the Key-in browser or AccuDraw*

When you place a line, the focus moves from home to the AccuDraw window during placement, then back to home. The icon in the status bar changes accordingly. To specifically move the focus home, press Esc on the keyboard. From home, press the keyboard key that corresponds to the tool you want to use.

Positional keyboard navigation is enabled by default. To disable it, turn off the user preference Use Position Mapping in the Position Mapping category of the Preferences dialog box.

☞ **NOTE:** If you are left handed, open the Preferences dialog box and select the Position Mapping Category. Click the Left Handed button to change the mapping set up.

### Tools in the Main tool box

When accessing tools in the Main tool box you use a combination of keys. When focus is at home, pressing 3 will open a pop-up menu listing the Manipulate tasks. Press 3 again to activate the tool that is in the third position, Scale, or press 9 to Move Parallel. When focus is at home, press 7 for the Modify tools, then 3 to Extend or 6 to Trim.

### Tools in the Task Navigation tool box

In the Task Navigation tool and dialog boxes, tools are mapped to letters. Pressing W will open a pop-up menu listing the Polygons tasks. Then press 2 for the Place Shape tool. When specific tools that belong to a task occupy the Task Navigation tool or dialog box, only a single key press is needed. Just press the letter that corresponds to the tool you want to use.

☞ **NOTE:** To disable the display of keyboard key labels on interface items that are subject to positional keyboard navigation, disable the Position Mapping user preference Show Positional Keyboard Navigation Aids.

### Additional key functions

The following keys also perform functions.

<Enter> opens the Key-in browser at the pointer location. If it is already open, focus is shifted to it.

<Space bar> moves focus to the AccuDraw window.

<Tab> Change the next element under the pointer.

<PgUp> When the task list is open, go to the next task

<PgDn> When the task list is open, go to the previous task

## Mouse View Controls

Several view operations can be performed using the keyboard and mouse

- Shift and drag while pressing the left mouse button to activate dynamic panning

- Press the wheel of a wheeled mouse and drag for controlled panning

- Press the Shift key then press the wheel of a wheeled mouse and drag for dynamic rotation
- Roll the wheel of a wheeled mouse to zoom in and out dynamically
- Press the Shift key and roll the wheel of a wheeled mouse to zoom in and recenter
- Double click the wheel to fit view

☞ **NOTE**: Double click to fit view is always assigned to the same button as pan drag

There are user preferences in the Mouse Wheel category that let you customize use of the mouse wheel

### Button assignments

The default button assignments give you more flexibility for using view commands as well as accessing information The following table shows many combinations You can see in the second row that a double click with the mouse wheel, which is using it as a button, will fit view. In the third row, if you drag while pressing the mouse wheel you will pan the view

| Action: | Left mouse button | Right mouse button | Mouse wheel as button | Mouse wheel |
|---|---|---|---|---|
| Click | Data point or click | Reset or press and hold* | | |
| Double click | | | Fit View | |
| Drag | Define start and end points | | Pan | |
| Roll | | | | Zoom in and out |
| <Shift> + click | | User-definable view pop-up | | |
| <Shift> + drag | Dynamic panning | | Rotate view dynamically (3D only) | |
| <Shift> + roll | | | | Pan with zoom |
| <Ctrl> + click | Selection logic and following hyperlinks | Main tool box at the pointer | | |
| <Ctrl> + drag | | | Swivel view camera (3D only) | |
| <Ctrl> + roll | | | | Walk (3D only) |
| <Alt> + click | Match attributes fromcursor | Element quick info at the pointer | Rotate view extended | |
| <Alt> + roll | | | | Pan left/right |
| <Shift> + <Ctrl> | Toggle AccuSnap | Current tasks at the pointer | | |
| <Shift> + <Ctrl> and drag | Element Selection's overlap rectangle | | | |

Ctrl + Tentative sets the AccuDraw origin to the resulting tentative point.

☞ * **NOTE**: The default behavior is that a right click works as a traditional reset command. Right press and hold gives you access to the Reset pop-up menu.

## Customizing button assignments

Use the *Workspace > Button Assignments* dialog box to assign any MicroStation key-in to a mouse button, a button chord, or combination of keyboard modifiers with mouse buttons. Even the default assignments are customizable.

You can assign Ctrl + Left Mouse Button + Right Mouse Button to send the key-in PLACE FENCE.

### To customize a button assignment:

1 In the Button Assignments dialog box, enable the check box for the accelerator key you want to associate with the command.

2 Select the button you want to assign the command to from the option list

3 In the Action text field, enter the key-in you want to associate with the assignment and press Tab

4 Click OK when you are done

☞ **NOTE:** If you remap the middle mouse button or wheel to tentative it will no longer be mapped to XButton 1 which, by default, controls many view control operations If you have only three mouse buttons and they are mapped to data, reset and tentative you can map a button chord to XButton 1 so that you can still perform the view controls

*Notes:*

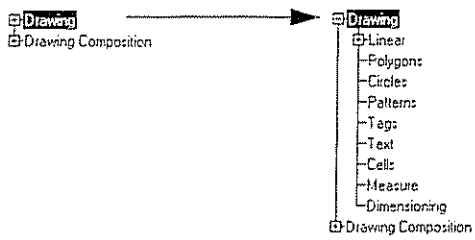
## The Task-based Interface

A task is something that you accomplish using a logical grouping of tools For example, hanging a picture is a task for which you may need a measuring tape and a hammer

Tasks let you organize tools and tool boxes into an interface that is easy to navigate Creating a sequence of tasks creates a streamlined workflow Tasks actually contain references to tools and tool boxes, so they can contain overlapping sets tools A drawing task and a drawing composition task can both contain text tools In the example, the measuring tape you used to hang the picture will also be used to accomplish other tasks

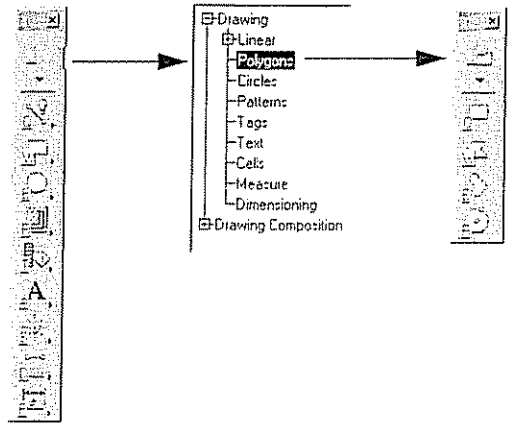
The first icon in the Task Navigation tool box or dialog box is the Task List icon Click it to open the task list Default task lists are provided for drawing tasks (lines, polygons, patterns, etc ) and drawing composition (references, dimensions, annotation)

Use the PgUp and PgDn keys to select tasks. Click the + sign to expand the task to see sub-tasks, which correlate to tool boxes. Use the arrow keys to step through the sub-tasks




*The default task list and the Drawing tasks expanded*

Rather than having a number of tool boxes open, by default, tasks occupy the Task Navigation tool box. The tools presented change when you select a different task from the task list.




*When you select the Polygons task the default Drawing task tools switch to the Polygons tools*

## Options for task navigation

### Task navigation in views

By default, the View control tool box is docked at the top of each view window. Even though this makes them easy to access, the view controls are available from the Main tool box and many are accessible using the mouse

Knowing this, you can choose to have a task bar docked on each view window. Do this by selecting *Window* > *Task Navigation in Views* or setting the Presentation option in the Task Navigation category of the Preferences dialog box to In Views.

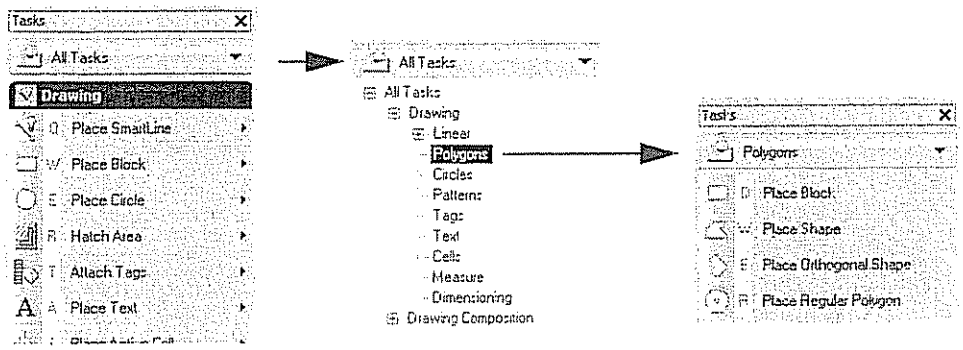

*Drawing task navigation in View 1*

If you have multiple view windows open, different tasks can be active for each view window.

### Dialog box option for task navigation

Select the Presentation option to Dialog in the Task Navigation category of the Preferences dialog box to display tasks in the Tasks dialog box. Displaying tasks this way provides a lot of flexibility. It lets you work with a greater number of tasks, tool boxes, and tools, some of which may have long names.

Clicking All Tasks displays all tasks in the hierarchy tree. Click the + to expand a task. When you select a task it becomes the root task and the other tasks hide, just like the Task Navigation tool box.




Right clicking on a task presents a list of settings for the task.

Select Set Task Root and the selected task becomes the root task, moving it to the top of the Tasks dialog box and hiding the other tasks. Select Clear Task Root to reset the task so that is no longer the root task.

Items on the view sub-menu control what you see.

- Select Icon to see the tools as icons only.
- Select List to see the tools' icons, position mappings, and names.
- Select Panel to see the tools' position mappings and icons.

Apply View to All applies the current task's view to all tasks.

Select Open as Toolbox to open the selected task as a tool box.

# Customizing the User Interface

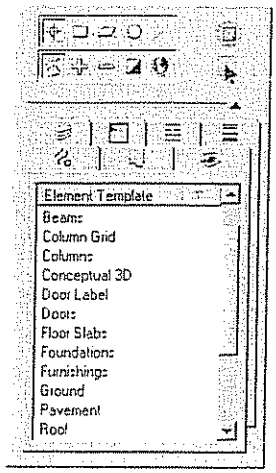
Element Templates, custom tools, tasks and menus are created and managed in the Customize dialog box.

## Enforcing standards with element templates

Element templates are named sets of element parameters that can be used to set active element placement parameters. A user selects an element template, which activates the settings stored in the template and can also activate a key-in stored for that template.

You can create templates and apply them to tools to ensure that elements placed using the tool conform to specific standards. Use templates to further enforce standards by storing them in DGNLIBs.

Element Selection can show all the element templates within the active design file. You can use the listing to select and deselect elements based upon the template that was used for their placement.




## Creating element templates

→ Exercise: Create an element template

1. Open \dgnlib\Bldg.dgnlib

   This DGNLIB contains the tools, tasks and templates available for a project.
2. Select *Workspace* > *Customize*
3. On the Templates tab of the Customize dialog box, expand Bldg.dgnlib.
4. Expand the Design template group.
5. Expand the Symbols template group.

6 Select Handicapped Access

7 Check the General Settings properties.

Any time that this template is applied users will place blue elements on the Special notations level, using weight 0

8 Select the Symbols template group.

9 Click New Template or right click on the template group name and select New Template from the pop-up menu

10 Name the new template Trees

11 Select the new template and set the following properties:

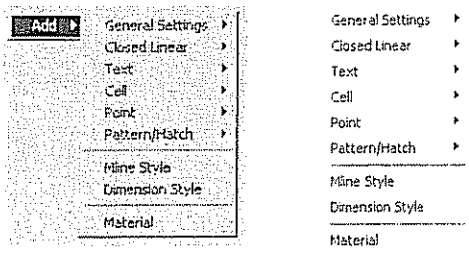
*Color*: 12

*Line Style*: 1

*Weight*: 1

## Additional template properties

Right click in the gray area below the existing properties to open the Add pop-up menu. Use it to add more properties to the selected template. These can be General Settings such as Level, Color, Line Style Attributes, Class etc. They can also be Closed Linear Settings such as fill type or color, text settings, cell settings, Multi-line styles or Dimension styles.




You can also right click on a template and select Add to add additional attribute fields for the template.

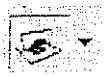
## Setting and locking templates

Element templates are activated using the Active Template tool in the Attributes tool bar. It provides a list of available templates and also serves as a toggle to lock new elements to the active template during placement. While element templates are similar to Settings Manager components, elements that are placed with a template locked are automatically updated when parameters in the element template are modified.

There is an important difference between setting and locking the active element template. In both cases elements will have properties that are defined in the template. But they will ultimately behave differently.

When you set the template by selecting one from the hierarchy tree, the active attribute settings change to the properties defined in the template. When you place an element, the element will have the template's properties but it is not locked to the template. If the template properties are changed and a library update is issued, these elements will not change.

When a template is locked, the active attribute settings change to the properties defined in the template and elements will have the template's properties. Elements are also associated with, or locked to, the template. If the template is stored in the active DGN file, these associated elements will update automatically when properties in their template are modified. If the template is from a DGNLIB you can use the DGNLIB UPDATE TEMPLATES key-in to synchronize properties. This is similar to text and dimension styles.



To lock a template, set the template by selecting one from the hierarchy tree then click the Active Element Template icon so that it is depressed.

→ **Exercise: Change template attributes**

1. Open \dgn\parking_lot1.dgn

   The elements in the file were placed locked to the *Design* > *Linear* Curb, Parking Pavement Striping and Warning Striping templates. As templates from a library file are used, they are copied into the active file.

2. Take note of the green curb attributes.

☞ **NOTE**: You can use the icons in the View Groups dialog box at the bottom of the MicroStation application window to move between all the models you have visited in a MicroStation session, regardless of the file in which the model resides.

3. Select Previous Model to return to \dgnlib\Bldg.dgnlib
4. In the Customize dialog box, expand Bldg.dgnlib
5. Expand the Design template group
6. Expand the Linear template group
7. Select the Curb template
8. Change the following General Settings:

   *Color*: 6

   *Weight*: 2

9. Right click in the Properties area and select *Add* > *General Settings* > *Line Style* from the pop-up menu
10. Set the Line Style to 2

11 Select *File* > *Save Settings*.

➔ **Exercise: Update elements locked to a template**

1 Open \dgn\parking_lot1.dgn.

Select Next Model to open it directly.

2 With the pointer in the view, press Enter to open the Key-in browser.

3 Key-in the following:

DGNLIB UPDATE TEMPLATES

4 Press Enter or click Run key-in in the Key-in browser.

The properties of the curb, which is locked to the template, update. If you select the Curb template in the Attributes tool bar, you will see that the properties assigned to it have changed.

## Updating elements using templates

If a template was used while placing elements and a user manually changes element symbology so that it doesn't match the template, you can issue a command to update the symbology. Select *Utilities* > *Update Selected Elements* in the Customize dialog box to update the symbology of all elements in a selection set that are associated with local templates. If an element that is not associated with a template is selected, its symbology will not change.

➔ **Exercise: Update changed elements**

1 Continuing in parking_lot1.dgn, expand the Element Selection tool settings.

Attribute tabs in the tool settings let you select elements by one or more attributes like level, color, style, weight, type, or class.

2 Select the Line Style tab.

3 Click on line style ----- 2 to select it.

The curb elements, which are line style 2, are selected.

4 In the Attributes tool bar, change the active line style to 0.

Now the line style attribute does not match the template.

5 In the tool settings, click Clear to release the selection set.

Clear switches to Select All.

6 Click Select All.

All elements are selected.

7 In the Customize dialog box, select *Utilities* > *Update Selected Elements*.

The changed curb elements are updated.

8 Click Clear to clear the selection set.

☞ NOTE: Select *Utilities* > *Refresh Local Element Templates* in the Customize dialog box to update the template list with element templates from DGNLIBs

## Key-ins

Use the key-in CUSTOMIZE DELETEALLDATA to delete all template data and all custom tool box, tool, task, and menu data from a DGN file. All elements that are associated with the templates being deleted will no longer be associated with the templates

Use the key-in CUSTOMIZE RELOAD to reload all template data and all custom tool box, tool, task, and menu data into a DGN file. Use this key-in if DGN libraries are updated and you want to reload data to make it available while working in MicroStation. Closing a DGN file and reopening it will produce the same result

## Creating tasks

➔ **Exercise: Create a task**

1 Open \dgnlib\Bldg.dgnlib

2 Click the Task List icon.

All the tasks defined by MS_DGNLIBLIST are listed along with the default 2D tasks, Drawing and Drawing Composition

3 In the Customize dialog box, select the Tools tab.

Tools, tool boxes, tasks and menus are defined on the Tools tab of the customize dialog box

If you are not working in a file that is identified in MS_DGNLIBLIST (*Workspace* > *Configuration*, Primary Search Paths category, DGN Library List) you will see a warning message. Tool, task and menu customization can be performed only in files that are configured DGN libraries.

4 Open the File menu.

Available DGNLIBs are listed on the File menu. If you attempt to access the Tools tab and see the warning message, you can go to the File menu and select a listed DGNLIB so you can use the tab.

☞ NOTE: Add the capability
_USTN_CAPABILITY <+CAPABILITY_UI_LOADFROMACTIVEFILE
to a user configuration file (.ucf) or project configuration file (.pcf) to allow access to the Tools tab while working in a DGN file that is not specified by a configuration variable. If this capability is set, you will see the custom tools, tasks, and menus from the open DGN file in addition to those in the configured DGN libraries.

## Personal DGNLIBs

When a user creates a new Interface in the MicroStation Manager, not only is a new ustn.r01 file created, a user specific DGNLIB is also created. The name of this DGNLIB is the same as the name of the user interface. Users can open this new DGNLIB and add custom tools, tasks and menus that are unique to them.

The Primary Search Path category, User Interface DGN Library List variable, MS_GUIDGNLIBLIST, includes the path to DGNLIBs in the current user interface folder $(_USTN_USERINTNAME)* dgnlib.

⚠ **IMPORTANT:** Users can copy other DGNLIBs to their user interface folder so that tools, tasks and menus from those files are also loaded. Tools, tasks and menus in the user interface folder will be the first ones loaded and will have precedence if duplicates exist in the DGNLIBs referenced by MS_GUIDGNLIBLIST.

## Adding existing tools to tasks

Once a task is created you can add existing tools or tools that you define in the Customize dialog box. You can use any MicroStation tool or any existing custom tools you have previously defined in an m01 file.

→ **Exercise: Compose a task containing tools from different tool boxes**

1. Continuing in Bldg.dgnlib, on the Tools tab of the Customize dialog box, expand User Tasks in the right frame.
2. Select the file name, next to the V8 icon.
3. Click New Task.

   The task list expands and a new task is added.
4. Name the new task Landscaping.

☞ **NOTE:** A right click menu for each task offers a Rename option as well as options for reordering, creating and deleting tasks.

5. In the left frame, expand Application Tools, then MicroStation.

   All MicroStation's tools are listed here.
6. Scroll to the Measure tools.
7. Drag the Measure tools to the Landscaping task in the right frame and drop them.

   You can add entire tool boxes or individual tools.
8. Scroll to the Polygons tools.
9. Drag these tools to the Landscaping task.

If you make a mistake, Undo works on these drag and drop operations

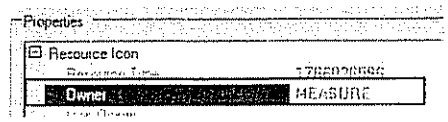
10 Scroll to the Modify tools.

11 Drag these tools to the Landscaping task

## Tool key-in syntax

When an Application tool is copied into a tool box the icon is copied into the current DGNLIB. When this happens, the connection to the original application that provided the command and icon is removed. This way you can use icons from MicroStation and change the command that is sent.

When you copied MicroStation's Measure tools to the Landscaping task, the owner of the original command for each tool was included in the Properties section of the Customize dialog box.




For example, in the Key-in browser the key-in DIMCREATE ELEMENT invokes the Element Dimensioning command. When using Customize, it would appear as [DIMCREATE] DIMCREATE ELEMENT.

[DIMCREATE] is the taskID, which is the MDL Task ID as in the *Utilities > MDL Applications* dialog box. If you want to make sure the original command is always used, include the [taskID] prefix. When you copy tools, it is always included.

The supported syntax for customize is:

[taskID_1;taskID_2] key-in_1;key-in_2 and so on

The number of taskIDs and key-ins do not have to match up. Each taskID in square brackets is loaded, if it is not already loaded, and then the semi-colon separated key-ins are sent to MicroStation for processing.

☞ **NOTE**: This key-in syntax is only for DGNLIB-based tools. It also affects menu items that specify a tool path.

If you want to activate a different command for a copied tool, you replace the entire command string.

Once you add a tool box to a task, you can edit the tools it contains.

## Editing tasks

### → Exercise: Refine the task

1. Continuing in Bldg.dgnlib, on the Tools tab of the Customize dialog box, expand the Measure tools in the Landscaping task.

   You will keep only the tools that are relevant to the landscaping task.

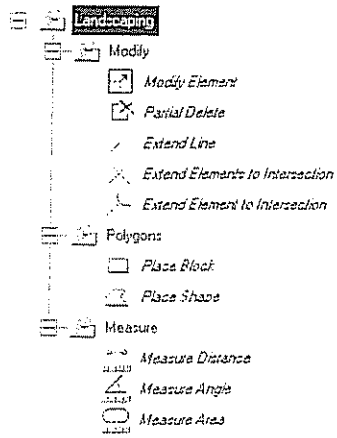
2. Select Measure Volume, right click and select Delete.

   You can select multiple tools or tasks and use the Customize dialog box Delete icon to delete them.

3. Select Measure Radius and Measure Length and click Delete.

4. Expand the Polygons tools and delete Place Regular Polygon and Place Orthogonal Shape.

5. Edit the Modify tools to only include the first five tools.




⚠ NOTE: Since tools are referenced into Tasks, changing a tool's the function can affect many tasks.

### → Exercise: Reorder the tasks

1. Continuing in Bldg.dgnlib, click the Task List icon.

   The Landscaping task is added to the task list.

2. Expand it and see that the tool boxes you added are available.

3. In the Customize dialog box, select the Landscaping task.

4. Use the Move Up arrow, or drag and drop, to move it under the Planning task.

   You can also reorder the tools within the task.

5 Arrange the tool boxes in the Landscaping task in the following order:

Polygons

Measure

Modify

6 Click the Task List icon.

7 Click the Landscaping task.

The reordered Landscaping tasks are added to the interface

## Use tasks to define a workflow

You can compose a series of tasks that help define a complete workflow.

➔ **Exercise: Compose a workflow**

1 Continuing in Bldg.dgnlib, in the Customize dialog box, select the Dimensioning tools from the MicroStation application tools in the left frame.

2 Drag them to the Bldg.dgnlib tasks and drop them.


The Dimensioning tools are now an overall task.

3 Use the up arrow icon, or drag and drop, to move them under the Planning task.

4 Reorder the tasks below Dimensioning as follows:

Floors

Walls

Roof

Electric

Plumbing

Lighting

Landscaping

Annotation

5 Select Bldg.dgnlib and click New Task

6 Name the task Printing

7 In the left frame, expand the MicroStation Standard tools

8 Drag the Print tool to the Printing task

## Adding custom tools

→ **Exercise: Create a custom tool**

1 Continuing in Bldg dgnlib, in the Customize dialog box, expand User Tools in the left frame

2 Select Bldg dgnlib

3 Click New Tool Box

4 Name the new tool box Plants

5 Select the new tool box and click New Tool

6 Name the new tool Place Trees

7 Select the new tool

8 In the Properties section of the Customize dialog box, in the Command Data section, remove null and enter the following in the Key-in input field:

PLACE REVCLOUD POINTS

9 Change the Balloon Text to Place Trees

10 In the General Settings section, click in the Icon input field, and then click the browse button on the right

In the Define Icon for Tool dialog box, you'll be choosing tools from the MicroStation application

11 Expand MicroStation

12 Scroll to the Cells tools and expand them

13 Select Place Active Cell Matrix and click OK

The icon displays in the icon field

You can choose to display a tool's icon or label, or both by setting the Tool Presentation

14 Set Tool Presentation to Icon Only

## Tool icons

In the Define Icon for Tool dialog box, the Look for icons in options let you select the source from which you want to select, import, or delete icons for custom tools

- Applications contains the icons listed under Application Tools in the Customize dialog box. It includes all MicroStation tools and MDL application tools
- Current Design File is the only source from which you can delete icons.
- Import Selected Icons is the source to use to import icon (ICO) files.
- Import Selected Bitmaps is the source to use to import bitmap (BMP) files.

The settings for `MS_ICONLIBRARYLIST`, `MS_ICONRSCLIST`, `_USTN_SYSTEM_GUIDGNLIBLIST` and `MS_GUIDGNLIBLIST` determine which icons appear when Applications is selected. You can select icons from all applications, including MicroStation tools and MDL application tools. You can also select icons from the current design file, selected icons (ICO files) and selected bitmaps (BMP files)

### Import/export

Use the key-in CUSTOMIZE EXPORT ICONS <path\directory\> to export icons from the open DGNLIB to a directory. You may want to export icons in order to edit them

☞ **NOTE:** Only the icons shown in the Define Icon for Tool dialog box when Look for icons in is set to Current Design File will be exported.

Use the key-in CUSTOMIZE IMPORT ICONS <path\directory\> to import icons from a directory to the open DGNLIB

⚠ **NOTE:** When importing icons, imported icon will replace existing icons of the same name.

*Notes:*

### General settings for user tools

The Tool Type options specify the behavior of the tool

- Standard makes the tool active until you select another tool.
- A Push Button will not start a new command and does not interrupt a current placement command. Use this to send immediate command key-ins. For example, the key-in CO=1;LV=Landscaping would set the active color and level.

Dimension options determine whether a tool will be available when working in 2D DGN files, 3D DGN files, or both.

## Adding advanced tools

Since you can use any MicroStation key-in as the command string, you can pre-determine tool settings or open documents. You can also link to a website.

→ **Exercise: Create advanced tools**

This exercise depends on the location of the file Lot_Design.txt. It is delivered in the data set \data folder. Place it in the C:\temp folder to follow the exercise.

1. Continuing in Bldg.dgnlib, in the left frame of the Customize dialog box, expand the Planning User Tools.
2. Select the Guidelines tool and look at the Key-in in the Command Data section of the dialog box.

   This tool links to a web page. You can use % to link to any document. For example, %C:\temp\CADstandards.doc
3. Select the Plants tool box.
4. Click New Tool.
5. Name the tool Parameters.
6. Select the tool.
7. In the Key-in field in the Command Data section, enter the key-in:
   ! C:\temp\Lot_Design.txt

   This opens the text document in the application associated with the .txt extension.
8. Set the following:

   *Balloon text*: Parameters

   *Icon*: MicroStation > Redline > Redline Display

   *Tool Presentation*: Icon only

Now you can add the custom tool box to a task.

→ **Exercise: Add tools to a task**

1. Continuing in Bldg.dgnlib, in the Customize dialog box, drag the Plants tool box to the Landscaping task in the right frame.
2. Click the Task List icon and expand the Landscaping task.

   The Plants tool box has been added to the task.

3 Click on Plants in the task list so that the Plants tools occupy the Task Navigation tool box

4 Click the Place Trees tool.

Tool settings change to reflect the command string you entered.

5 Click the Parameters tool

The document identified by the key-in opens in the application associated with the txt extension

6 Exit the application.

You can also create tools that open dialog boxes or perform repeated user actions

You can add tools that open dialog boxes to specific tasks

➔ **Exercise: Tools that open dialog boxes**

1 Continuing in Bldg.dgnlib, in the left frame of the Customize dialog box, expand the Primary Tools in the MicroStation Application tools.

2 Drag the References tool to the Walls task.

3 Click the Task List icon and select the Walls task.

The References tool is added to the task.

## Apply an element template to a tool

You can apply element templates to tools so that the attributes in the template are always invoked with the tool is used. You can import settings from existing Setting Manager resource files and to import and export element template definitions using XML files.

➔ **Exercise: Define attributes for a placement tool**

1 Continuing in Bldg.dgnlib, in the left frame of the Customize dialog box, select the Place Trees User Tool in the Plants tool box.

In the Command Data section, you can set the template path.

2 Click in the Template Path input field and navigate to the (Design > Symbols) Trees template. Double click the Trees template to apply it.

3 Open the task list and click the Landscaping tasks.

4 Select the Place Trees tool.

Note the change in the tool and active attributes settings.

### Additional command data settings for tools

The Associate Template setting sets the status of the Active Element Template tool in the Attributes tool bar when a tool is used

- When Always is selected, the icon is available.
- Never makes it unavailable
- Use Current Setting does not change the status of the icon. If the icon is available and a template is defined, elements that users place with the tool will be placed with the template settings

If you right click in the Associate Template field there is an Add Default Template option. If you set one, when the tool is used, the default template's properties are applied to the element. If a template property is specified in both templates, the associated template takes precedence.

## Managing tool settings

Another feature is the ability to control tool settings. Other options for customizing tools are also available

→ **Exercise: Add customization options to the Customize dialog box**

1. Continuing in Bldg.dgnlib, on the Tools tab of the Customize dialog box, expand the Fixtures User Tools.
2. Select the Place Pipe tool.
3. Right click in an empty area of the Properties section at the bottom of the Customize dialog box
4. Select Add and select Dialog Item Settings from the pop-up menu.

   A Dialog Item Settings field is added to the dialog box. Use this area to set tool settings parameters

To find out the available tool settings for a command you can use the key-in SET ITEM TOOLSETTINGS. To do so, invoke the tool in MicroStation and then issue the key-in. The options are listed in the right-most frame of the Key-in browser.

→ **Exercise: Pre-set tool settings**

1. Continuing in Bldg.dgnlib, in the Item Settings section of the Customize dialog box, expand Dialog Item Settings
2. Set the following:

   *Dialog Item Name*: ToolSettings.Join

   *Type*: Literal

*Value*: 1

This enables the Join Elements check box in the Place SmartLine tool settings

3 Right click on the Item Settings heading and select Dialog Item Settings

Additional dialog items can be specified this way.

4 Set the following for Dialog Item Settings(1):

*Dialog Item Name*: ToolSettings.vertextype

*Type*: Literal

*Value*: sharp

5 Add the Fixtures User Tools to the Plumbing tasks.

6 Make the Fixtures tasks the active tools in the Task Navigation tool box.

7 Select the Place Pipe tool (from Home, press W) and note the tool settings.

8 Select the default Drawing tasks from the task list so those tools occupy the Task Navigation tool box.

The Type option determines the type for the dialog item. It can be literal, as in the exercise, a distance stored in meters, an area stored in square meters, or a volume stored in cubic meters. The Value is the value for the Type. If the tool places a line that is constrained, one of the dialog items would be the line's length, which is Type distance. The Value would preset the length of the line.

## Additional tool properties

You can also access available tool properties if you right click on a new tool and select Add from the pop-up menu.


Expand the options on this menu to add design file settings such as the active snap mode or an active angle. Fence modes can be set. Use the Locks options so that the tool uses the graphic group lock or the annotation scale lock. You can also apply fence settings such as clip

or overlap. The command data sub-menu lets you add a field so you can define a default template.

## Migrating stg resources

Legacy .stg resources can be imported and be used as tools and templates. The settings file groups become individual tool boxes. Their components are tools that maintain all their specific settings. Each group also becomes a template, containing all attribute settings.

### → Exercise: Migrate existing customizations

1. Continuing in Bldg.dgnlib, in the Customize dialog box, select *File* > *Import* > *From Settings Manager.*
2. In the Select Settings File to Import dialog box, select \data\bldg.stg from the class data set.
3. Click Open.

   An Information dialog box informs you that the file was successfully imported.
4. Click OK.

   A new tool box named after the DGN file is added to the User Tools.
5. Right click on the Bldg.dgnlib tool box and select Rename.
6. Rename the tool box Building.
7. Expand the Building tool box and note the tool boxes listed.

   There is one for each Settings Manager Group.
8. Expand one of the tool boxes and select a tool.

   You can see any key-in associated with the tool, along with any other properties that were set for the component. The Template Path specifies the element template from which the attributes such as color and weight will come.
9. Drag the Building User Tools to the root level Bldg.dgnlib User Task and drop them.
10. Move the Building task under the Landscaping task.

    The new tools are ready for use.

### → Exercise: Additional settings imported from the Settings Manager

1. Continuing in Bldg.dgnlib, in the Customize dialog box, select the Templates tab.
2. Expand Bldg.dgnlib.
3. Expand the Annotation template group.
4. Expand the Text template group and select one of the templates.

Note the general attributes as well as the text overrides that were set for the component when created using the Settings Manager

5 Select *Element* > *Dimension Styles* and *Element* > *Multi-line Styles* from MicroStation's main menu bar

Dimension and Multi-line styles were also imported

## Importing an m01 file

To import a legacy .m01 file, first create an Interface folder for the .m01 file (for example, \Workspace\Interfaces\OldInterface) in Windows Explorer. Place the .m01 file there. Then open MicroStation using that interface

When you open the Customize dialog box, the customizations from the .m01 file will appear under the MicroStation Application tools. Work with them now just as you would default MicroStation Application tools

## Reporting on customizations

You can generate an HTML report on all the template, custom tool box, custom tool, task, and custom menu data in the open DGN file

→ **Exercise: Report on the customizations**

1 Continuing in Bldg.dgnlib, in the Customize dialog box, select *Utilities* > *Generate HTML Report*

2 Specify a name and location for the HTML file in the Define HTML Report File dialog box.

The default is to create a file named after the DGN file in the current folder

3 Click Save.

An HTML file opens. It contains information about all the template, custom tool box, custom tool, task and custom menu data in Bldg.dgnlib

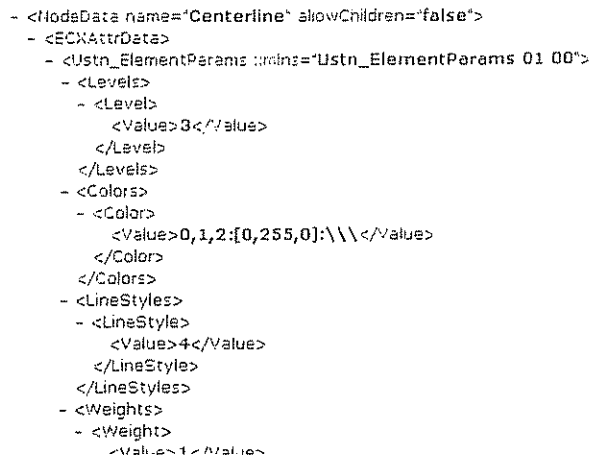
4 Close the HTML file

## Exporting and importing customizations to XML

You can import and export to XML files in order to edit tool boxes, tools and templates with an XML editing tool.

Once user tools and tasks have been created, select *File* > *Export* > *XML* in the Customize dialog box.

Select a location and name for the file.




*A portion of the XML file exported from Bldg.dgnlib*

## Managing customizations

The MS_GUITASKTREEROOT configuration variable specifies root tasks. Set this variable and then refresh the task list. Users will only see tasks that are under the root task in the task list.

➔ **Exercise: Define the root tasks a user can access**

1. Continuing in Bldg.dgnlib, on the Tools tab of the Customize dialog box, create a User Task for Bldg.dgnlib named Finalize.
2. Move it above the Printing task.
3. In the left frame, expand the Building User Tools.
4. Drag the Borders tools to the Finalize task.
5. In the left frame, select the MicroStation Application tools References tool box and drag it to the Finalize task.
6. Open the task list and note that the Finalize tasks are included.
7. Select *Workspace* > *Configuration*.
8. Create a new configuration variable named MS_GUITASKTREEROOT with the value Finalize.
9. Exit the dialog boxes, saving the changes.
10. *File* > *Close*.
11. Open Bldg.dgnlib and click the Task List icon.

    Only the Finalize tasks are available.

→ **Exercise: Reset the configuration variables**

1. Continuing in Bldg.dgnlib, open the Configuration dialog box.
2. Delete the MS_GUITASKTREEROOT variable
3. Exit the dialog box, accepting the changes
4. Select *File* > *Close*

# Working with Menus

You can edit and create menus on the Tools tab of the Customize dialog box.

## Creating menus

Select Menu from the Tasks/Menu option list above the right frame. Then use the tools provided to create new menus and menu items.

→ **Exercise: Create a menu**

1. Open Bldg.dgnlib.
2. Open the Customize dialog box
3. On the Tools tab, select Menu from the Tasks/Menu option list


4. Select Main Menu
5. Click New Menu.
6. Rename the new menu Building

   To insert a mnemonic, insert the tilde character before the character you want to be the accelerator
7. Place the cursor at the beginning of the word Building
8. Press Shift + ~ before the B in Building

   ~Building
9. Select the menu and click the Move Up arrow, or drag and drop, to move it above the Help menu.
10. Right click on the Building menu.
11. Select New Menu from the pop-up menu
12. Name the new menu Tools

## Adding tools to a menu

➔ **Exercise: Add tools to the menu**

1. Continuing in Bldg.dgnlib, in the left frame of the Tools tab in the Customize dialog box, expand User Tools.
2. Expand Bldg.dgnlib
3. Select the Planning tool box and drag it to the Tools sub-menu

   The tools are now accessible from the main menu bar.

   You can also create a menu entry that opens a tool box.
4. Right click on the Tools sub-menu entry and select New Menu Item
5. Rename the new menu item Modification.
6. In the Properties section of the dialog box, Command Data section, enter the key-in:

   CUSTOMIZE OPEN TOOLBOX MODIFY
7. Select *Building* > *Tools* > *Modification* to open the tool box.

## Menu items

➔ **Exercise: Add additional menu items**

1. Continuing in Bldg.dgnlib, in the right frame of the Customize dialog box, right click on the Building menu.
2. Select Add New Menu Separator
3. Right click on the Building menu and select New Menu Item from the pop-up menu
4. Name the new item Dimension Styles.
5. In the Properties section of the dialog box, Command Data section, enter the key-in:

   MDL KEYIN DIMSTYLE DIALOG DIMSTYLE OPEN

   The Dimension Styles dialog box can be opened from the custom menu.
6. Right click on the Building menu and select New Menu Item.
7. Rename the menu item Finalization.
8. Enter the key-in

   CUSTOMIZE OPEN TASK Finalize

   This entry opens the Finalize tasks that you created as a tool box.

### Additional menu properties

As with tools, the Dimension options determine whether a menu will be available when working in 2D DGN files, 3D DGN files, or both

The Shortcut field for new menu items lets you select shortcut keys to be used when selecting a menu item. If a shortcut is already used, it is dimmed in the list of options and is not available

## Screen Menus

You can also customize the MicroStation user interface by using screen menus. A screen menu is created as a design file and can contain menu blocks of varied shapes and sizes, just like a digitizing tablet menu. The difference is that a screen menu is displayed on screen in its own resizable window. Users click tools to select them. You can display and use up to five screen menus simultaneously

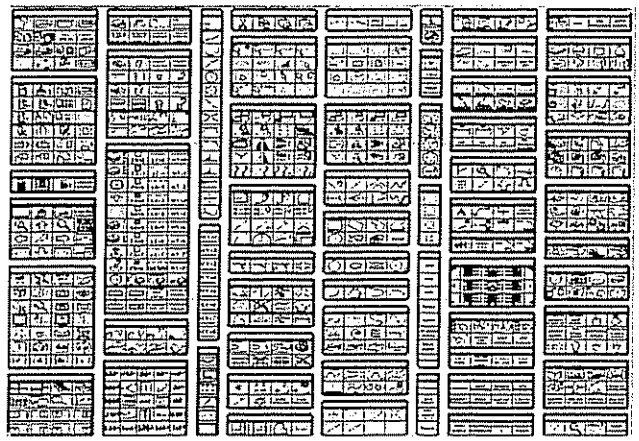
The procedure for drawing screen menus is like drawing digitizing tablet menus. See the Help topic *Setting Up Projects > Workspaces > Customizing the User Interface > Screen Menus* for customizing instructions

➔ **Exercise: Attach a screen menu**

1. Continuing in Bldg.dgnlib, open the Key-in browser
2. Enter the following and then press Enter or click Run Key-in:

   AM=v8menu.dgn,Command,s1

   The screen menu contained in the Command model from V8menu.dgn appears in a window entitled Screen Menu 1. Users click on the desired command to invoke it.



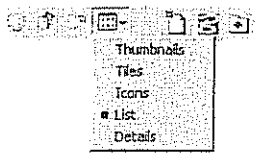
3. Close the screen menu.

# Dialog boxes

## File Selection Dialog Boxes

Windows style dialog boxes are used for file selection dialog boxes such as New, Open and Save As, and also the MicroStation Manager. The functionality you associate with native Windows file selection dialog boxes is available when using them. For example, you can right click on listed files to rename or delete them, create sub-folders, display file sizes, types and modification dates and change the file list sorting order. Double click on a file name to open the file.

In the Windows style file Open dialog box, the View Menu setting, which determines the way file names are displayed, persists across MicroStation sessions when using Windows XP. The options are Thumbnails, Tiles, Icons, List (the default), and Details.

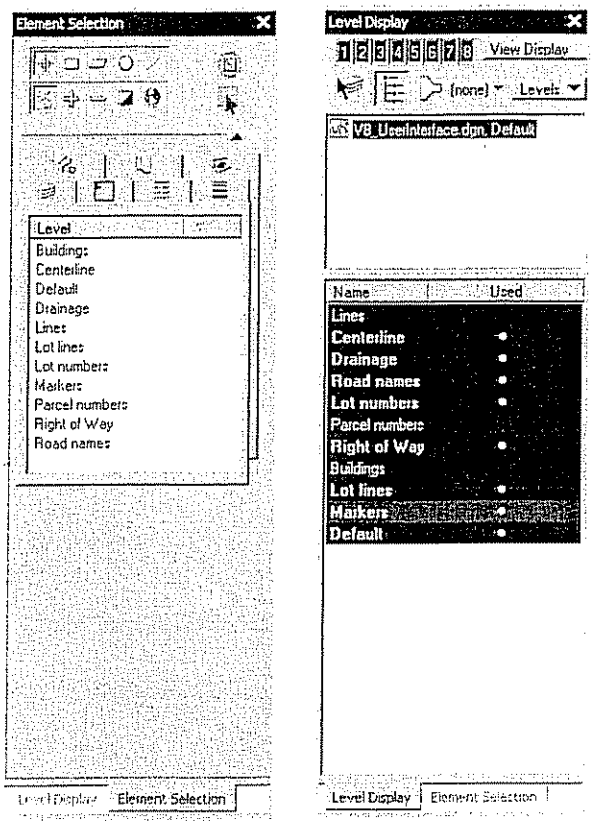



A Windows style dialog box can be temporarily disabled by pressing Shift + Esc while it is open. The Windows version of the dialog box closes and the MicroStation standard one appears.

Whether native Windows or MicroStation standard file selection dialog boxes are used is controlled by the user preference Use Windows File Open Dialogs, in the Look and Feel category of the *Workspace* > *Preferences* dialog box.

## Dockable dialog boxes

Many dialog boxes can be docked. They can be docked as tabs or as a horizontal or vertical panel next to another docked dialog box. Tabs can be torn off to become floating dialog boxes again.




*Element Selection tool settings and the Level Display dialog boxes docked as tabs*

As you drag the dialog box, an opaque box indicates how it will be docked. Select the title bar, drag to the side and watch the box as it changes size. To create tabs, drop one title bar on another title bar.

You can move many dialog boxes and the tool settings window outside of the MicroStation application window.

## Transparent dialog boxes

The Tool Settings window and non-modal dialog boxes can be made transparent so you can see more of a design.

User preferences related to transparent dialog boxes are set in the Look and Feel category of the Preferences dialog box. When All modeless dialogs use same transparency is disabled,

right click on the dialog box and select Transparency from the pop-up menu to set transparency for each individual dialog box.

The Transparent dialogs become opaque when receiving focus preference removes the transparency from transparent dialog boxes when you are entering data.

## Key-in Browser

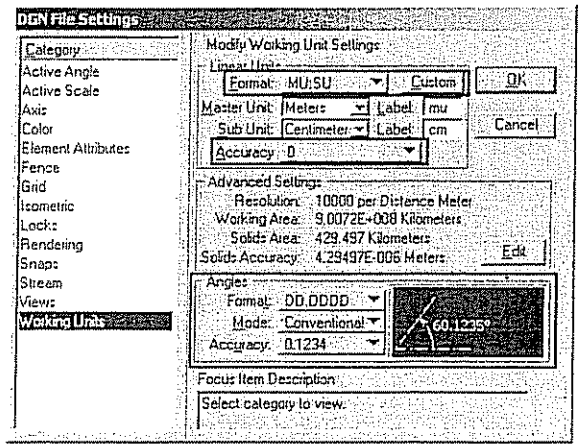
When the focus is home, pressing Enter opens the Key-in browser at the pointer location. To dismiss it, move the pointer away.

## NEWSESSION key-in

You can open a specified file and model in a new MicroStation session using the key in NEWSESSION [filename],[model_name].

## Working Units settings

In the DGN File Settings dialog box, the Working Units category has been reorganized. The controls from the Coordinate Readout category are included in the Working Units category.




## Drawing Scale window

You can use the dockable Drawing Scale window to change DGN file settings and on the fly Open it by selecting *Settings* > *Drawing Scale*

Use it to see, or modify, the current working units, the current annotation scale, the current ACS and its scale and to toggle the annotation scale and ACS locks.

The annotation scale options are particularly useful when creating sheets that have details at multiple scales

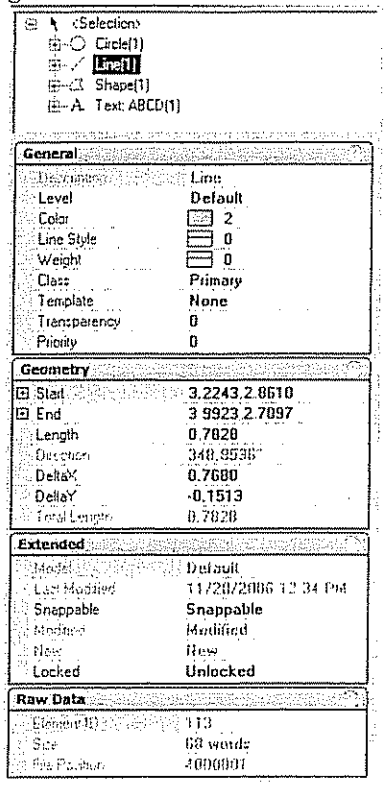
Right click in the Drawing Scale dialog box to toggle display of available options

☞ NOTE: The units that display in the Master Units and Sub Units option menus can be customized by editing the file units def. The scale factors that display in the annotation scale option menu can be customized by editing the file scales def

## Element Information dialog box

Selected elements are listed in the top frame. Information displayed in each section pertains to the element that is selected in the top frame. If you select the <Selection> entry you can view or modify properties for all selected elements.

Depending on the element types selected General, Geometry, Material, Text Formatting, Annotation Links, Image, Color and Attachment tabs, among others, may be available.




Right click on each section's title bar to add or remove fields. Right click on an individual field to hide the field

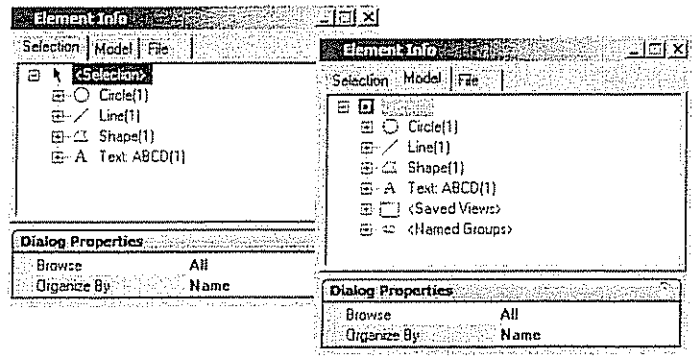
You can view and modify element properties such as color, weight and style or extended properties such as snappable and locked in the General section. You can modify keypoint

coordinates and orientation using the options in the Geometry section. If an element is linked, a Links section gives you access to information about the link. View or modify additional properties in the other available sections.

## Browse modes

Selection, Model or File browse modes are available. Selection mode is active by default. You can choose a single mode or you can display all three modes simultaneously on tabs.

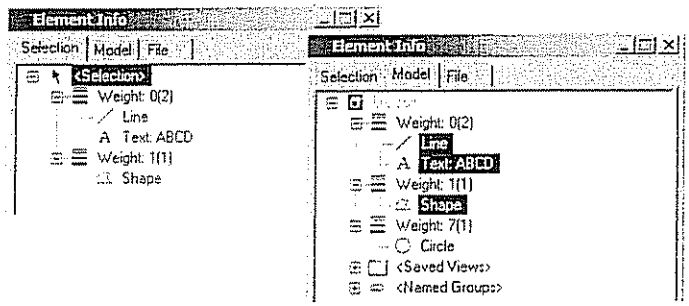
Right click <Selection> in the selection tree and select Dialog Properties. This adds a Dialog Properties section. You can set the Browse mode to File, Selection, Model or All.




*Browsing All (Selection, Model, and File) with elements organized by Name*
*Information about selected elements, Selection tab, on the left*
*Information about elements in the active model, Model tab, on the right*

Then, click on an element entry to see the element information about it.

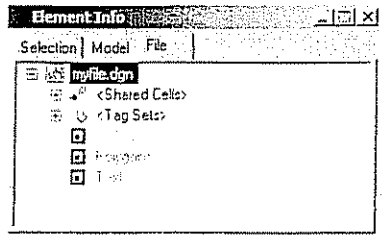
Organize selected elements by Name, Level, Color, Style, Weight.




*Browsing All, elements organized by Weight*
*Information about selected elements, on left*
*Information about elements in the active model, on right - selected elements are highlighted*

Right click on the top most entry in the tree at any time to switch modes or the method of organization. When you right click on the top most entry in the tree you can also select Attach to open the Reference Attachment dialog box.

When browsing by File, click on each model entry to obtain information about it. Right click on a model and select Make Active to switch to that model. Then, select elements in that model to obtain information.




*Browsing All*

### Shortcuts

A shortcut for opening the Element Information dialog box is to reset and press on an element and select Properties from the Reset pop-up menu.

To open an abbreviated version of the Element Information dialog box, the Quick Info dialog box, do the following. With any tool active, point at an element and press and hold the Alt key. Then, reset.

☞ **NOTE:** To open the Element Information dialog box from the previous edition, use the key-in ANALYZE ELEMENT

## The Active View

MicroStation has an active view that is indicated by a highlighted title bar. A view is made active by entering a data point within it, clicking its title bar, starting a tool from the view's view control tools, or right clicking within it. The active view is used by view controls like Fit View.

Previously, when a tool like that was selected from the View Control tool box rather than a view window's view controls, users were prompted to select the view on which they wanted to act. Now the active view is automatically acted upon when the view control is selected. There is no prompt to select a view.

# PopSet

PopSet lets the tool settings window hide automatically when a tool's function is executed. Toggle PopSet by clicking on the icon in the Primary Tools tool bar.

## Properties

Right click on the PopSet icon and select Properties to open the properties dialog box. If Auto-Position Tool Settings is enabled, tool settings will always redisplay centered on the pointer, or as close to the pointer as possible, near the tool you are selecting.

You can make the tool settings open close to the pointer on a one time basis by pressing Ctrl + Space. If you disable PopSet you can still invoke this behavior by enabling Allow Ctrl + Space When Disabled in the properties dialog box.

- You can change the number of seconds that elapse before PopSet hides the tool settings after a new tool is selected using the New Tool Delay field.
- The Hide Delay field specifies the number of seconds until PopSet hides the tool settings after the pointer is over a view.
- Hide border sets the size of the border, in pixels, around the tool settings window in which the presence of the pointer causes the tool settings to hide. If set to zero, the tool settings window will always be hidden when the pointer is removed.
- To restore PopSet's behavior from the previous edition, enable Auto-Position Tool Settings and set Hide Border to 0.

# Reset Pop-Up Menu

If you selected the default MicroStation behavior in the First Reset dialog box, place the pointer over an element and press and hold the reset button to open a shortcut menu that provides convenient access to tools for manipulating that element. Options change depending upon the element. There are also Cut/Copy/Paste options and Element Selection options. Select Properties to open the Element Information dialog box.

# 3 Project Explorer

Managing and organizing project content is made simpler by providing users with an index of their project-specific information. This logical, structured view of project content lets users easily navigate the project. Store project links in DGNLIBs.

If you have a MicroStation installation that includes the delivered examples you can follow along with the following exercise

→ **Exercise: Using link sets defined by MS_DGNLIBLIST**

1. Select *File* > *Close* to return to the MicroStation Manager.
2. Set the following:

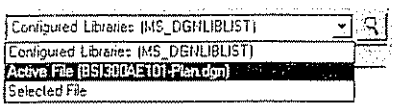
   *User*: examples

   *Project*: Building
3. Open BSI300AE101-Plan.dgn
4. Select *File* > *Project Explorer*.
5. In the Project Explorer, click Manage Link Sets

   In the Link Sets dialog box, the Link Set List Mode option menu indicates that you are seeing link sets in files that are defined by the MS_DGNLIBLIST configuration variable

   You can also choose to view those found in the active file or those in a file you select.
6. Select *Workspace* > *Configuration*.
7. In the Configuration dialog box, select the Primary Search Paths category.
8. Note the expansion of the DGN Library List variable (MS_DGNLIBLIST).

   This is where the DGNLIB that contains the link sets resides.
9. Click Cancel to exit the dialog box.
10. In the Link Sets dialog box, select Active File from the Link Set List Mode option menu



There are no link sets defined inside this file. They are all being read from DGNLIBs. Each example project contains a DGNLIB with example link sets.

11 Select *File* > *Close* to return to the MicroStation Manager.

12 Set the following:

*User*: Bentley Institute

*Project*: MSV8XMAdmin

## Storing project data

Project data includes design and sheet models contained within DGN and DWG files, as well as other file formats. It also includes supporting documents such as spreadsheets and links to PDFs and URLs.

When you are working in a DGN file you can open Project Explorer (*File* > *Project Explorer*) to see linked data. If link sets exist in the open DGN file or in the configured DGN libraries, they appear in the Project Explorer dialog box when you open it.

A link set is a group of links to files, models, references, saved views, and supporting documentation. Each link set is an independent object stored as non-graphical data in a DGN file or in a DGN library. The Link Set dialog box is where you add, copy, rename, delete, and import link sets.

You can create a link set for a project in the project's index model. Create folders for all resources, specifications, details, design work and sheets. Next, create links to the actual project data. Then use Project Explorer to associate the data links to text items in the index file. The index file can then be used to directly open project data or the link set can be opened in any file and users can use Project Explorer to navigate the project.

## Linked models, saved views and references

→ **Exercise: Exploring a project**

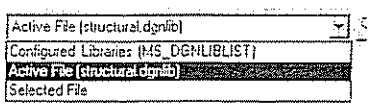
1 Open \dgnlib\structural.dgnlib.

2 Select *File* > *Project Explorer*.

3 In the Project Explorer, click Manage Link Sets.

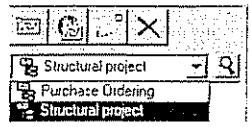
Note that the tools in both dialog boxes are grayed out.

4 In the Link Sets dialog box, select Active File from the Link Set List Mode option menu.



Now you can edit the project. When projects are read from DGNLIBs they cannot be modified.

5 In Project Explorer, select the Structural project from the available project list




6 Expand the Design work folder

7 Expand the Structural.dgn, Structural model link

Model link names include the file name followed by the model name.

8 Expand the Saved Views folder.

Each design link includes a Saved Views folder where any saved views that are present are listed and a References folder for references. Right click on a saved view or reference and select Open to redirect to the saved view or model. As saved views or references are added to a model, Project Explorer updates to reflect them.

9 Expand the Structural.dgn, Structural Composite model link.

10 Expand the References folder to see the linked references.

11 Right click on the link to the reference Ref-1, Structural.dgn, Foundation.

12 Select Open.

You are redirected to the referenced Structural Composite model in the file Structural.dgn.

☞ TIP: Since level masks are not saved for references you may want to create a saved view and link to it to preserve level status.

## Linked elements

When placing Detailing Symbols, users have the option to specify a link target that links the annotation to a file in a project.

→ **Exercise: Linked elements**

1 Continuing in Structural.dgn, select Previous Model to return to structural.dgnlib.

2 In Project Explorer, select the Structural project from the Link sets from list.

3 Expand the Details folder.

This folder contains links to detail models.

4 Right click on Structural_Proj.dgn, Metal deck section

5 Select Open.

The Metal deck section model in the file Structural_Proj.dgn opens

6 In the file, right click and press over the Detailing Symbol BEAM SIZES.

When the pointer passes over the annotation containing the link, you see a link icon. Pop-up information notes the link path.

7 Select *Follow Link > Beam sizes*.

The linked beam sizes schedule opens in Excel.

8 Exit Excel

→ **Exercise: Links to documents**

1 Select Previous Model to return to structural.dgnlib.

2 In Project Explorer, select the Structural project from the option list and expand the Specifications folder.

These are the linked support documents.

3 Expand the Base Plate schedule Excel link.

4 Right click on the worksheet 24 & above and select Open.

The Excel file opens to the specific worksheet.

Project Explorer supports links to office documents and even specific topics in them. When you add a link you can expand the item you are linking to and select a specific aspect to which you link.

5 Exit Excel

6 Expand the Height.doc Word link.

7 Expand the Headings folder.

These are all the Heading styles in the document.

8 Right click on Height 72 and select Open.

You are directed to the specific section in the Word document. You can create the link directly to this heading rather than linking to the entire document.

9 Exit Word.

10 In Project Explorer, Specifications folder, note the link to Height.doc, Height 72.

This is a direct link to that heading.

## Creating Projects

A project consists of link sets. You can access link sets that are stored in three locations.

- In Configured Libraries mode, link sets from all DGNLIBS identified by MS_DGNLIBLIST are shown. All users can use the data, but they cannot modify it.
- In Active File mode, you can build a link set only in the current file. No one else has access to the link set when you are in this mode.
- In Selected File mode, you can select a particular file from which to view link sets. In this mode anyone can modify a link set without being in the file.

Once link sets are created or selected, the Project Maintenance tools in the Project Explorer dialog box are used to create and delete entire projects.

Folders are used to organize projects. Create a hierarchy of folders within a project then create the links and set the order in which the links appear, dragging and dropping as with Windows Explorer. Use the New URL tool to create a link to a URL, MicroStation key-in, or e-mail address in the open link set.

The link stores links to files and models, but reference attachments and saved view definitions are extracted from the linked file. Links are static, so file location is important.

→ **Exercise: Create a link set**

1. Open \dgnlib\Building_Proj.dgnlib
2. In the Link Sets dialog box, Active File is selected in the Link Set List Mode option menu.

   None are listed because none exist in this file.

3. Click New Link Set.
4. In the Create New Link Set dialog box, enter the name Building project.
5. Click OK.

   The project is added to the file and you can add folders and links in Project Explorer.

→ **Exercise: Build a project**

1. Continuing in Building_Proj.dgnlib, in Project Explorer, click New Folder.
2. Rename the new folder Design.
3. Click New Folder again to create another top level folder.

   ☞ **NOTE:** Make sure no other folders are selected when creating a new top level folder to avoid creating sub-folders.

4. Rename this folder Sheets.

5. With the Sheets folder selected, click New Link.

When creating links you can select one or more files. To make a link portable across directories, projects, and networks you can enable the Save Relative Path check box. You can also click the Directory History icon to select a configuration variable whose definition points to a folder.

6 Enable the Save Relative Path check box.

7 Select \dgn\A300AE9-Overall.dgn and click Open.

8 In the Create Links dialog box, expand A300AE9-Overall.dgn.

9 Select the Print sheet model.

10 Click OK.

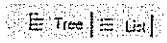
A link to the sheet model is added to the project.

11 Select the Design folder.

12 Click New Link.

13 Select the files conc.dgn, elec.dgn, equip.dgn, hvac.dgn and pipe.dgn and click Open.

You can use the List tab to change the view in the Create Links dialog box from a hierarchy tree to a list of all the linkable components contained in it, such as models, saved views and references or worksheets or headings.




Icons precede each available component to help you identify them more easily.

14 In the Create Links dialog box, click the List tab.

15 Select all the design models and click OK.

Links to the models populate the Design folder.

16 Drag and drop to reorder the links so all the Default models appear first in the list.

## Renumbering sheets

You can number a single sheet model, but if a folder contains multiple sheet models you can number all of them at once.

To renumber multiple sheets, right click and select Renumber to open the Set Sheet Number dialog box. Enter a number for the first sheet model in the Start Index field. Enter the number by which you want to increase each subsequent sheet number in the Increment field. Right-click the folder containing the sheet models and choose Validate from the pop-up menu.

Once you assign a number to a sheet model, the number appears after the sheet model's name in the Project Explorer dialog box.

9 Right click on the worksheet link to Sheet 1

10 Select Add Link to Element

11 Enter a data point on a horizontal section of pipe in the Front view.

The pop-up information now shows the path to the linked spreadsheet

12 Reset

→ **Exercise: Follow the link**

1 Continuing in pipe.dgn, right click and press over the section of pipe that you just linked

2 Select *Follow Link > pipe sizes.xls Sheet 1*

The spreadsheet opens

3 Exit Excel.

4 Close the Link Sets dialog box

### Deleting links from elements

To remove a link from an element, right click and press on it and select Properties from the pop-up menu. In the Links portion of the Element Info dialog box, right click and select Delete Link. Click the button to the right of a link's name to open the Properties dialog box, which lists the properties of the selected link.

### Link Properties

In the properties dialog box, the File Name property is the stored portable file name that can include a relative path or a configuration variable if one was set. The Full Path property shows the location where the file is located. If the file is not there, the link is broken and the full path field will be blank.

## Creating Models with Links

You can select existing models to link using Project Explorer, but you can also define links for models when you create them

→ **Exercise: Create a linked sheet model**

1 Continuing in pipe.dgn, open the Models dialog box

2 Create a new Model with the following parameters:

*Type*: Sheet : 2D

*Name*: sheet layout

*Sheet Number*: 8

*Size*: ISO A2

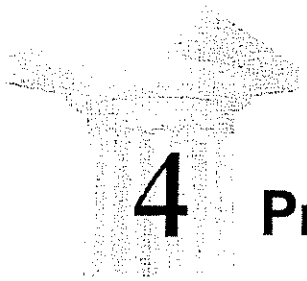
*Create Link*: Enabled and navigate to and select the \Sheets folder

☞ **NOTE**: A project must be active in Project Explorer to create a link.

3 Click OK.

4 In Project Explorer, look at the Sheets folder.

The pipe: sheet layout model is included in the project.



# 4 Project Explorer Lab

When you are working in a DGN file you can open Project Explorer to see all the data that is linked to a project. The Project Explorer and Link Sets dialog boxes can be docked as tabs, or as horizontal or vertical panels, to create more space. To follow a link, right click the link and select Open from the pop-up menu.

Remember that you can link to:

- Microsoft Word documents, including sections and bookmarks within the documents
- Microsoft Excel workbooks, including specific worksheets within the workbooks
- Adobe PDFs, including bookmarks within the file
- Web sites, MicroStation key-ins, and e-mail addresses
- Any other file type

## Create a Project Containing Data Set Files

When you complete the exercises in this lab, you will be able to use Project Explorer to navigate through the data set for the remainder of this course.

### Create the folder structure

→ Exercise: Create the folder structure

1. Open \dgnlib\MSV8XMAdmin2.dgnlib.
2. Open the Project Explorer.
3. Open the Link Sets dialog box.
4. Select Active File from the Link Set List Mode option menu.
5. Create a new link set entitled MSV8XMAdmin2.
6. In Project Explorer, create top level folders, named as follows, in the following order:

   Expanded Functionality

   Models

References

Raster

Design History

Google Earth Tools

☞ **NOTE:** You can drag and drop to reorder the folders

These folders represent the remaining chapters in the course guide.

*Notes:*

## Link the files

➔ **Exercise: Create links for the Expanded Functionality chapter**

1. Continuing in MSV8XMAdmin2.dgnlib, select the Expanded Functionality folder.
2. Click New Link 
3. In the Create Links dialog box, enable the Save Relative Path check box.
4. Navigate to the data set \dgn folder.
5. Select the following files:

   Dimensions.dgn

   field_report.dgn

   intersection.dgn

   layout.dgn

   manholes39.dgn

   namedfence.dgn

   parkside.dgn

   stairwell.dgn

   survey.dgn

   update_site.dgn

   zones.dgn
6. Click Open

7 In the Create Links dialog box, on the Tree tab, expand update_site.dgn

8 Select the Default model.

9 Expand survey.dgn

10 Press Ctrl and select the Default model.

11 Expand stairwell.dgn.

12 Press Ctrl and select the Core model

13 Expand parkside.dgn.

14 Press Ctrl and select the Default model.

15 Expand namedfence.dgn

16 Press Ctrl and select the Default and print layout models.

17 Expand each of the remaining files and select models as follows:

*manholes39.dgn*: Manholes [3] model

- *layout.dgn*: Walls model

*intersection.dgn*: Default model

*field_report.dgn*: Default model

*Dimensions.dgn*: entire design file

*zones.dgn*: Default model

18 Click OK.

These are the models you need to complete the exercises in the Expanded Functionality chapter.

You can create a Project Explorer link when you create a model and you can also impose a model-specific line style scale. Additional enhancements are a sheet number property for sheet models and the ability to navigate a history of the models you have visited.

→ **Exercise: Create links for the Models chapter**

1 Continuing in MSV8XMAdmin2.dgnlib, select the Models folder

2 Click New Link.

3 Select the following file:

parcels.dgn

4 Click Open

5 In the Create Links dialog box, on the Tree tab, expand the file and select the Global Scale and Use Annotation Scale models

6 Click OK.

Reference features include the ability to manipulate references as you would elements, using the standard manipulation tools. Attachment settings include options for selecting Saved Views and Named Fences, Named Groups, Revision (if Design History is used), and Global Line Style Scale. New reference display settings include Transparency, Priority and Plot as 3D (PDF).

→ **Exercise: Create links for the References chapter**

1. Continuing in MSV8XMAdmin2.dgnlib, select the References folder.
2. Click New Link.
3. Select the following files:

   division_plan.dgn

   REFPlan.dgn

   training_grid.dgn
4. Click Open.
5. In the Create Links dialog box, on the Tree tab, expand each file and select the following:

   *REFPlan.dgn*: entire design file

   *division_plan.dgn*: Default model

   *training_grid.dgn*: Ground Floor Sheet [1] model
6. Click OK.

The Raster Manager dialog box has a hierarchy tree in which the open DGN and its attached references are listed. A properties frame provides information about the selected attachment.

→ **Exercise: Create links for the Raster chapter**

1. Continuing in MSV8XMAdmin2.dgnlib, select the Raster folder.
2. Click New Link.
3. Select areaplan.dgn and contours.dgn.
4. Click Open.
5. In the Create Links dialog box, on the Tree tab, expand each file and select the following:

   *areaplan.dgn*: Default model

   *contours.dgn*: Model-1
6. Click OK.

Design history status is indicated by an icon in the status bar. You can set the design history revision number format for individual DGN files. You can also combine revisions, retire revisions and tag revisions

→ **Exercise: Create links for the Design History chapter**

1 Continuing in MSV8XMAdmin2.dgnlib, select the Design History folder.

2 Click New Link.

3 Select the following files:

city_layout.dgn

MidstateV_work.dgn

4 Click Open.

5 In the Create Links dialog box, on the Tree tab, select both design files

6 Click OK.

MicroStation's Google Earth tools let you export geometric data to the Google Earth application so that it can be viewed in the context of satellite data, aerial photography, maps and other geographical data

→ **Exercise: Create links for the Google Earth Tools chapter**

1 Continuing in MSV8XMAdmin2.dgnlib, select the Google Earth Tools folder.

2 Click New Link.

3 Select the following file:

placemark.dgn

4 Click Open.

5 In the Create Links dialog box, on the Tree tab, select the entire design file

6 Click OK.

## Set the Link Set List Mode to configured libraries

→ **Exercise: Set the mode back to Configured Libraries (MS_DGNLIBLIST)**

1 Continuing in MSV8XMAdmin2.dgnlib, open the Link Sets dialog box

2 Select Configured Libraries (MS_DGNLIBLIST) from the Link Set List Mode option menu

This gives you access to the data set project DGNLIB regardless of the file you open

3 Close the Link Sets dialog box.

4 In Project Explorer, select the MSV8XMAdmin project.

Now you can dock Project Explorer and navigate the data set project.

# 5 Expanded Functionality

## Color

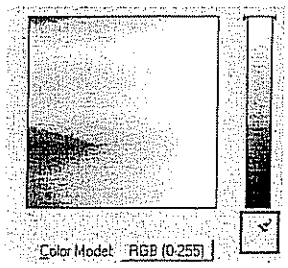
MicroStation V8 XM Edition offers PANTONE and RAL colors and gradient fills. In the Active Color dialog box you open from the Attributes tool bar, and other locations where you specify element color, tabs let you choose the type and specific color to use.

---

*Notes:*

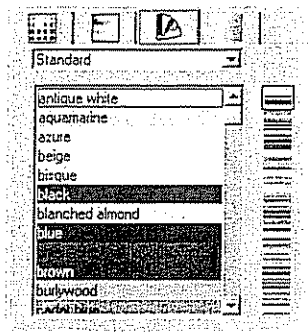
---

- The first tab is the default color tab, which lets you select a color from the attached color table
- The second tab is the True Color tab. Select a color by specifying true colors. Use the Color Model option menu to select between RGB (Red, Green Blue, 0-255 or 0–1), HSV (Hue, Saturation, Value) and CMY (Cyan, Magenta, Yellow).

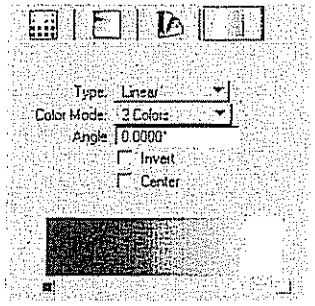



Click and drag the eye dropper icon to select and match any color visible on the screen, even from areas outside the MicroStation application window.

- The third tab is the Color Book tab. When a color from a color book is assigned to an element the book name and color name are stored in the element.




- The Gradient Fill tab is available when you set fill color and the fill type is opaque or outlined. A gradient fill takes multiple colors and interpolates them across the element surface. You can select colors by clicking the tiles below the bar.




Settings provide options to control the gradient. Set the type of gradient to Linear, Curved, Cylindrical, Spherical, or Hemispherical.

*Linear, cylindrical and spherical gradients*

Color Mode sets the number of points where you can change the color. These are called Keys. You can add keys by setting this to Multiple and clicking anywhere in the bar. To delete an additional key, select the box on the upper part of the key. It will turn blue. Then press the Delete key.

*Multiple Keys*

Invert reverses the start and end points of the gradient

Enable Center to center the gradient in the center of the element

You can apply gradient fills to closed elements directly or by applying an element template.

### Color books

Color books can be stored in DGNLIBs. A set of DGN libraries containing color books is delivered with MicroStation. Along with the Standard color book, the standard PANTONE and RAL color books are provided for communicating industry standard colors.

⚠ **NOTE:** The PANTONE and RAL color books are copyrighted materials. Neither the books nor the colors specified within the books can be renamed or modified.

You can create additional books using the *Settings* > *Color Books* Color Book Editor dialog box. Select *File* > *New* to name the custom color book, and then click Create Color to open the Modify Color dialog box where the color is defined.

## Viewing Enhancements

The View Attributes dialog box includes settings related to element, level, and reference transparency and display priority. Button assignments are expanded to allow a greater degree of customization. Mouse view controls provide easy view navigation.

### View attributes

Find the View Attributes tool in each view window's View Control tool box. The View Attributes dialog box includes settings related to element, level, and reference transparency and display priority. Rendering view attributes, such as Pattern and Bump Maps, are integrated into the View Attributes dialog box.

When you change a view attribute setting in the View Attributes dialog box the new setting is immediately applied to the selected View Number. To change settings for all views, enable the Apply To All check box first

### Rotating to the AccuDraw drawing plane

In situations where users need precision in rotating views, they can use the AccuDraw shortcut key-in <R> <V>, Rotate View, which lets you rotate the view to the current AccuDraw drawing plane orientation

## Function Keys

The default function key menu lets you easily navigate the task-based user interface and access frequently used tool boxes and dialog boxes

| | |
|---|---|
| F1 | help |
| F2 | task menu |
| F3 | inputmanager menu main |
| F4 | inputmanager currenttask |
| F5 | dialog viewsettings popup |
| F6 | dialog namedviews |
| F9 | dialog cmdbrowse popup |
| F10 | dialog toolsettings |
| F11 | accudraw dialog |
| F12 | inputmanager home |

Task Navigation tool box task list: <F2>

Main tool box: <F3>

Task Navigation tool box tools of the active task: <F4>

View Attributes dialog box: <F5>

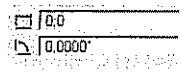
Tool Settings window: <F10>

AccuDraw window: <F11>

As with previous editions, you can customize function keys using the *Workspace* > *Function Keys* Function Keys dialog box.

# AccuDraw Enhancements

AccuDraw has increased configurability and there are additional shortcut key-ins In Polar mode the AccuDraw window's fields for distance and angle are labeled with icons rather than text.




When using polar coordinates, the Auto Focus Fields option on the Operation tab of the AccuDraw Settings dialog box lets you use the <A> and <D> AccuDraw shortcuts to set focus to the selected field and lock the current value.

If the setting is off, the <A> and <D> AccuDraw shortcuts lock the current value without affecting the focus.

## Display options

Additions to the display tab of the AccuDraw Settings dialog box let users customize the compass and the AccuDraw window.

### Configurable compass fill color

Set the AccuDraw compass fill color using the Fill option menu.

### Configurable window size

Adjust the width of the AccuDraw window using the Dialog Size option menu.

### Displaying coordinates

If Display Coordinates is enabled, drawing plane coordinates are displayed in pop-up information with the pointer.

## Shortcut key-ins

Shaded shortcuts are new to MicroStation V8 XM Edition. There are several that relate specifically to the ACS.

| | | |
|---|---|---|
| ? | Show Shortcuts | Opens the AccuDraw Shortcuts window |
| ~ | Bump Tool Setting | Move tool settings to the next value to set |
| A | Lock Angle | Toggles the lock status for the Angle value |
| B | Base Rotation | Rotates the drawing plane to the last non-content rotation, that is: Top, Front, Side, View, or Auxiliary. Select the shortcut again to return the drawing plane to its previous rotation |

| | | |
|---|---|---|
| C | Center Snap | Activates Center snap mode |
| D | Lock Distance | Toggles the lock status for the Distance value |
| E | Cycle Rotation | Rotates between three main planes: Top, Front, and Side (3D only) This also works when your original plane is an ACS or context rotation, so you do not have to use RX, RY to rotate to a 90 degree plane |
| Enter | Smart Lock | Smart Lock<br>• In Rectangular coordinates, locks X to 0 if the pointer is on the drawing plane y-axis or sets Y to 0 if the pointer is on the x-axis<br>• In Polar coordinates, locks Angle to 0°, 90°, -90°, or 180° if the pointer is on a drawing plane axis or otherwise locks Distance to its last entered value |
| F | Front Rotation | Rotates the drawing plane to align with the axes in a standard Front view |
| GA | Get ACS | Retrieve a saved ACS |
| GK | Go to Keyin | Opens or moves focus to the Key-in browser |
| GS | Go to Settings | Opens or moves focus to the AccuDraw Settings dialog box |
| GT | Go to Tool Settings | Moves focus to the tool settings window. |
| HA | AccuDraw on Hold | AccuDraw on Hold temporarily disables AccuDraw |
| HS | AccuSnap Toggle | AccuSnap Toggle toggles the state of AccuSnap off or on |
| HU | AccuSnap Suspend | AccuSnap Suspend stops AccuSnap until the next tool is selected |
| I | Intersect Snap | Activate the Intersect snap |
| K | Snap Divisor | Opens the Keypoint Snap Divisor settings box to set the Snap Divisor for Keypoint snapping |
| LA | Lock ACS | Toggles ACS plane lock. |
| LI | Lock Index | Locks the current index state If an axis or distance is not indexed, <L> disables indexing. On the other hand, if an axis or distance is indexed, <L> locks indexing. The effect is temporary, lasting only until you enter another data point or run the shortcut again |
| LP | Lock Grid Plane | Toggles ACS grid plane lock, which toggles the ACS plane and ACS plane snap locks, and the grid view attribute for all views |
| LS | Lock Plane Snap | Toggles ACS plane snap lock |
| LZ | Lock Sticky Z | Toggles Sticky Z Lock. When used in conjunction with ACS Plane Snap Lock, it force a series of snap points to lie on the active ACS' XY plane (Z=0) |
| M | Point Keyin (multi) | Opens the data point Key-in settings dialog box for entering multiple data points |
| N | Nearest Snap | Activate the Nearest snap |
| O | Set Origin | Moves the drawing plane origin to the current pointer position |
| P | Point Keyin (single) | Opens the data Point Key-in settings box for entering a single data point |
| Q | Quit AccuDraw | Deactivate AccuDraw |
| RA | Rotate ACS | Used to permanently rotate the drawing plane Because it rotates the current ACS, this rotation remains active after the current command terminates |
| RC | Rotate Current | Rotates the drawing plane to the current ACS. |
| RE | Rotate Element | You can define AccuDraw rotation by selecting an element. Tool settings let you choose to move the origin or update the current ACS as well |
| RQ | Rotate Quick | Used to quickly and temporarily rotate the drawing plane |
| RV | Rotate View | Rotate View puts the view into a dynamic rotation mode |
| RX | Rotate about X | Rotates the drawing plane 90° about its x-axis |
| RY | Rotate about Y | Rotates the drawing plane 90° about its y-axis |

| | | |
|---|---|---|
| R Z | Rotate about Z | Rotates the drawing plane 90° about its z-axis |
| S | Side Rotation | Rotates the drawing plane to align with the axes in a standard Right (side) view |
| Space | Change Mode | Toggles between Rectangular and Polar coordinates |
| T | Top Rotation | Rotates the drawing plane to align with the axes in a standard Top view |
| V | View Rotation | Rotates the drawing plane to align with the view axes |
| WA | Write to ACS | Saves the drawing plane alignment as an ACS |
| X | Lock X | Toggles the lock status for the X value |
| Y | Lock Y | Toggles the lock status for the Y value |
| Z | Lock Z | Toggles the lock status for the Z value |

# The Fence

## Copy/Move Fence Contents to New Design File

This tool lets you copy or move the contents of a fence to a new DGN or DWG file. The file is given a name in the format <filename_model>. Select a different file name by clicking the magnifying glass.

Two modes define how contents are processed. Select Copy to copy the fence contents to the new file. The original elements remain in the active model. Select Move to move the fence contents to the new file. Fence contents will be deleted from the active model.

If you enable Switch to generated file the current file is closed and the new file is opened after processing the fence.

☞ **NOTE:** You can still use the key-ins FENCE FILE (FF=) and FENCE SEPARATE (SF=).

## Named Fences

Named fences let you store and recall fences with names you define. A separate list of named fences is stored for each model. Expand the Place Fence tool settings to see the list of saved fences for the active model.

The fences are stored as regular elements that can be manipulated with any of the modification tools. When a named fence is selected, the fence element highlights.

Named fences can be used with the tools that use elements to define clip areas or volumes such as clip volumes, masks and reference file boundaries.

## Creating Named Fences

Use Create Named Fence from Current Fence tool in the Place Fence tool settings to create a new named fence

→ **Exercise: Create a named fence**

1. Open parkside.dgn, Default model
2. Select Place Fence (2 + 1) and expand the tool settings

   Named fences already exist in this file.
3. Click on named fence Section II.

4. Click Activate Named Fence.

   The area defined by the named fence is fenced.
5. Select *File* > *Print* to open the Print dialog box.

   When a named fence is active the area to print is automatically set to Fence in the print dialog box and the active named fence will be printed.
6. Double click on named fence Section III in the tool settings.

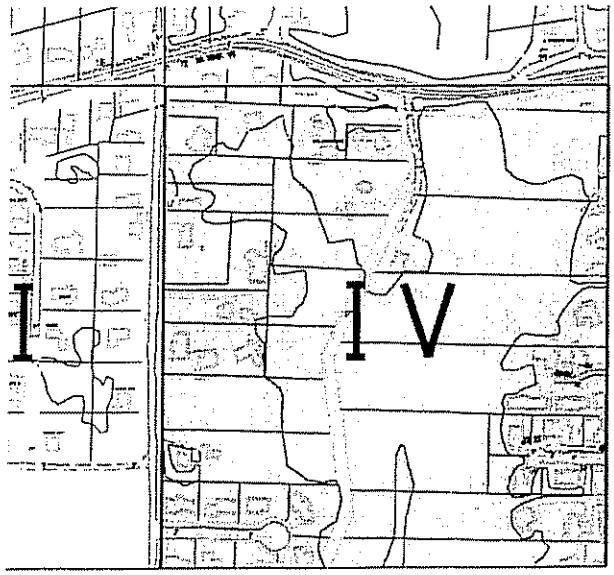
   The print preview changes.

7. Close the Print dialog box.
8. Select Place Fence to dismiss the fence.
9. Set the following Place Fence tool settings:

   *Fence Type*: Block

   *Fence Mode*: Inside

10 Use diagonal corners of the grid surrounding Section IV to create a fence




☞ **NOTE:** Enable the *Settings* > *Snaps* > *AccuSnap* setting Enable for Fence Create so you can use AccuSnap during fence placement.

Note that the grid and the grid designations are in a reference. Elements from attached references will be included in named fences if references are attached with Live Nesting enabled.

11 Click Create Named Fence from Active Fence.

12 Name the fence Section IV.

13 Select Place Fence to dismiss the fence.

14 Open the Level Display dialog box and turn off display of the level Grid in the reference (parkside.dgn, Grid).

You can control display of named fence outlines using the display option in the tool settings.

15 Click the Display check box for each named fence in the tool settings.

The boundaries of all named fences display. Use this to locate named fences when many exist in the same file.

## References

Elements from attached references are included in named fences if references are attached with Live Nesting enabled.

You can select a named fence to attach as a reference just as you can select a specific model or saved view. Attaching a reference from a named fence creates an attachment with all levels on If you need to control display, apply the named fence as a clip volume and then save and attach as a saved view.

→ **Exercise: Attach named fences as references**

1 Open namedfence.dgn, print layout model.

2 Open the References dialog box.

3 Click Attach Reference.

4 Attach parkside.dgn, interactively, with the following attachment settings:

*Model*: Default

*Logical Name*: Section III

*Orientation* > *Named Fences*: Section III

*Scale*: 1:1200

*Live Nesting*: Enabled

5 Enter a data point on the left side of the sheet to place the reference.

6 Click Attach Reference.

7 Attach parkside.dgn with the following attachment settings:

*Model*: Default

*Logical Name*: Section IV

*Orientation* > *Named Fences*: Section IV

*Scale*: 1:1200

*Live Nesting*: Enabled

8 Enter a data point on the right side of the sheet to place the reference.

All fenced elements are visible in the sheet.

## Fence boundaries

When you select a named fence for attachment the Clip Boundary Element option becomes available in the Attachment Settings dialog box. It also becomes available if you select a saved view that includes a clip boundary. This option lets you choose whether a clip boundary element is copied into the master file or associated directly to the clip boundary element in the reference.

- Copy to Master copies the reference boundary to the master file. The boundary is not associative and it can only be modified directly in the master file. This is the default setting.

You can select the copied boundary of a referenced named fence with Element Selection and resize or move it. The original boundary does not change if the boundary element in the reference is resized.

- Associate to Saved View associates the clip boundary directly to the boundary element in the reference's view. The clip boundary will automatically reflect any changes to the boundary element in the reference.

### Clip volumes and masks

Use named fences with Clip Volumes and Clip Masks much the same way as you do standard fences. Clip boundaries can be applied to a reference file from a named fence by selecting the Named Fence method.

→ **Exercise: Use a named fence as a clipping element**

1. Continuing in namedfence.dgn, open the Default model.
2. In the References dialog box, click Attach Reference.
3. Attach parkside.dgn with the following attachment settings:

   *Model*: Default

   *Orientation*: Coincident

   *Scale*: 1:1

4. Fit View by clicking the view control or double clicking the mouse wheel.
5. In the References dialog box, click Clip Reference with the following tool settings:

   *Method*: Named Fence

   *Use References Dialog List*: Enabled

   *Named Fence*: Section II

6. Enter a data point to accept the clip boundary.
7. Fit View.

## Levels Enhancements

Enhancements to levels let you select specific levels or filters to import into the active design. Levels also support transparency and priority.

## Moving elements between levels

Right click on a level name in the Level Manager dialog box and select Remap Elements to move elements from one level, or several levels, to a different level.

When you select the menu item, the Remap Elements to Level dialog box appears so you can make the change. The selected level, or levels, are listed as the source. Select the destination level for elements that are on the source levels from the Destination option list.

## Level and filter import

You can selectively control the levels or filters that are imported. If you only want to add certain levels to a DGN or DGNLIB, select *Level* > *Import*. You can select the specific levels or filters you want to add to the file from the Level/Filter Import dialog box. The level definition is imported directly into the file.

## Working with level libraries

The Modified column in the Level Manager shows whether a level has been modified. A bullet appears if one or more of the active file's level attributes or properties differ from the library source level. Pop-up information listing the attribute or property that is out-of-synch appears when the pointer is over the modified icon.

☞ **NOTE:** Properties are not synchronized unless they are specified by `MS_LEVEL_SYNC_ATTRIBUTE_LIST`.

The column indicates if an attachment level is also out-of-sync with the attachment source. Set `MS_LEVEL_DO_NOT_SYNCHRONIZE_ATTACHMENT_LEVELS_TO_DGNLIB` if you do not want to synchronize the attachment level with the attachment source.

The name of the level library a level is derived from is listed in the Library column.

## Transparency and priority

Set transparency and priority so elements obscured by other elements can be seen.

→ **Exercise: Assign priority and transparency**

1. Open zones.dgn. Default model.
2. Click the View Attributes tool to open the dialog box.

3. Enable the Transparency check box.
4. Open the Level Manager.

5 Right click on a column heading and enable display of the Priority column.

6 Right click on a column heading and enable display of the Transparency column

7 Select the zones level.

8 Click in the Priority column for the level.

9 Set the priority for the zones level to 200.

The zone ID's become visible because the level they are on has the highest priority in the file

10 Select the zone boundaries level.

11 Click in the Transparency column for the level.

12 Set the transparency for the level to 30.

The elements behind the filled boundaries become visible.

To boost display of other elements, set their priority somewhere in between.

13 Select the roads level.

14 Set the priority for the roads level to 100.

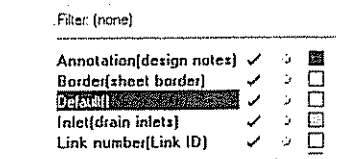
The roads become more visible.

## Reference levels

- Identify reference levels easily using the File column. This makes it easier to control settings for reference levels. Right click to add the column.
- The Modified column also indicates if a reference attachment level is out-of-sync with the attachment source.
- The display state of attachment levels remains consistent regardless of how they are changed in the source file. You no longer need to use the REFERENCE FILECHANGED key-in to make display states consistent
- MS_LEVEL_EDIT_NESTED_ATTACHMENT_LEVELS lets you edit the attributes of levels in nested reference attachments if it is defined

### Level option menu

The configuration variable MS_LEVEL_DISPLAY_FORMAT can be used to define the values a user sees in the level display option menu in the Attributes tool box. The default setting is N, showing the name. Set to D to use the description. More than one value can be used.



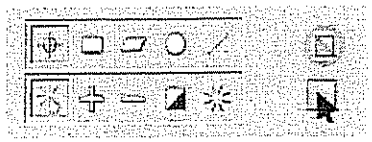

*Names and descriptions shown in the option menu*

The configuration variable MS_LEVEL_PICKER_WIDTH specifies the width, in pixels, of the Level option menu.

## Element Selection

The Element Selection tool's selection methods let you select by individual element or using a block, shape circle or line. The modes let you add, subtract or invert selection of elements or to select and clear all.

Use the Individual method and the New mode so the tool works like traditional Element Selection.



### Drag and drop operations

In previous editions you could move elements that had been selected with the Element Selection tool by dragging and dropping them. You can now perform additional drag and drop operations with selected elements.

#### Copy

To copy selected elements rather than moving them, drag the selected element while pressing and holding the Ctrl key. When you move selected elements, a box follows the pointer. When you copy selected elements, a plus sign is added to the box. You can use this technique to copy elements to another DGN file if the file is open in another instance of MicroStation.

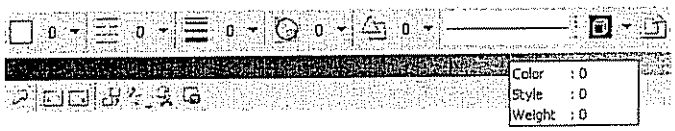
### Named Groups

To add the selected elements to a named group, drag the elements to the specific named group in the Named Groups dialog box and drop them on that group.

### Attributes

To change an active attribute setting to match the corresponding property of a selected element, drag the selected element into the Attributes tool bar and drop it on the icon for that setting. To set the active line weight, users select an element, drag it to the Attributes tool bar and drop it on the active line weight icon.

To change all of the active attribute settings, drop the element on the Symbology Preview window in the Attributes tool bar.





Right click and select Symbology Preview to add it to the Attributes tool bar.

You can do this with multiple selected elements, but only if all the elements have the same value for the property or properties.

Use this technique with elements in the active model or referenced elements. You can only drag to set the active level or set the active line style to a custom line style if the selected element is in the active model.

## Element rotation

Use options in the Geometry section of the Element Information dialog box to check and change the rotation of an element. Use Element Selection to select an element and click Element Info. There are editable fields in the Geometry section.

## Wrapping text

You can use the Alt key to switch between the usual scale handles and wrap handles that are available for text elements. Using the round handles, you can wrap text


Once text is wrapped, the text is confined. If text is edited so that it exceeds the size limit, the next word drops to the next line. Once wrapped, text will remain wrapped

## Selecting edit handles

With the Individual method and New mode, element handles are shown if you select a single element or multiple elements using Ctrl + click. When Disable Edit Handles is enabled, edit handles are not shown for selected elements.

☞ **NOTE**: Element handles are not shown when you select by dragging a rectangle or use the Block, Shape, Circle, or Line selection methods

If you enable Select Edit Handles after elements are selected, edit handles will appear on elements in the selection set and the Block, Shape, Circle, or Line selection methods will select the handles rather than the elements. Disable Edit Handles must be disabled to use this.

→ **Exercise: Selecting handles**

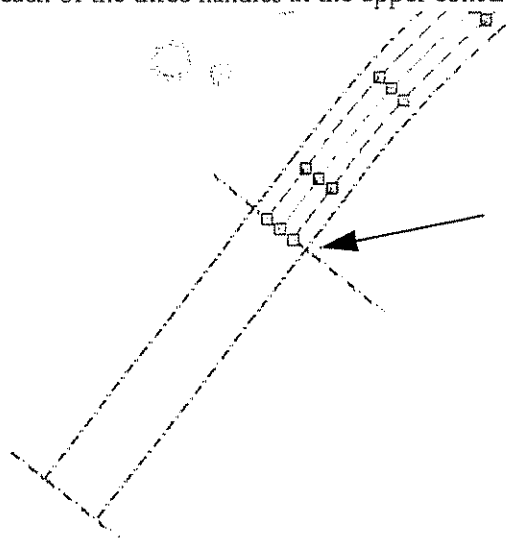
1. Open survey.dgn, Default model.
2. Select Element Selection
3. Expand the tool settings.
4. On the Level tab, click on the following levels to select the elements on those levels:

   Prop Alignment

   Roadway Shoulder
5. In the tool settings, enable Select Edit Handles.

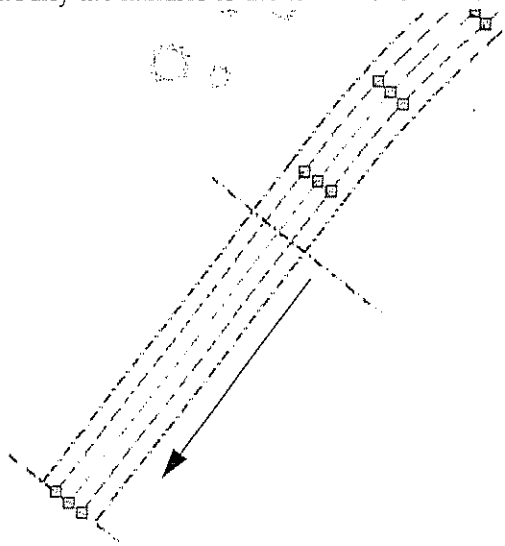
   In the status bar you can see that nine elements are selected.
6. Press and hold the Ctrl key

7 Click on each of the three handles at the upper construction limit line.



The handles s change color.

8 Drag to modify the handles to the lower construction limit line.



Only the elements that are part of the secondary selection set are extended

9 Disable Select Edit Handles.

The secondary selection set is disabled, but the original is still active.

☞ TIP: You can also hold the Shift + Ctrl keys on the keyboard and then drag an overlap rectangle to select elements.

## Reviewing and editing

Attribute tabs in the tool settings let you select elements by one or more attributes like level, color, style, weight, type, or class. When you select elements graphically using Element Selection, the attributes of elements included in the set are a highlighted group at the top of each tab.

*Top row, left to right. Element Type, Element Class and Element Template tabs*
*Bottom row, Level, Color, Style and Weight tabs*

You can add to the set in each tab by clicking attributes that are not highlighted. If an element with that attribute exists, the element will be included in the set. You can remove elements that have specific attributes from a set the same way. Switch tabs to add or eliminate elements with other attributes.

→ **Exercise: Add and remove set members by attribute**

1. Continuing in survey.dgn, on the Level tab in the Element Selection tool settings, click on the Boundary RW level to select it.

   The right of way lines are added to the selection set.

2. Select the Color tab.
3. Click on the color 71ByLevel.

   The blue roadway shoulder elements are removed from the set.

4. Select the Line Style tab.
5. Scroll down to style 3 and click it.

   The blue roadway shoulder elements are added back into the set.

6. In the tool settings, click Clear to release the selection set.

# Text

## RSC to TrueType font conversion

In previous releases RSC fonts were replaced with a TrueType font. Now when text uses an RSC font, the font information is extracted and converted to a TrueType font format where the information is temporarily saved and loaded into the font table for MicroStation to use to properly display the characters. It is unloaded when you exit MicroStation.

## Macro support in the Word Processor

Actions captured in the Word Processor can be recorded as a MicroStation BASIC macro

## Text style remapping

Right click on a text style name in the Text Styles dialog box and select Remap Elements to change the text style of all text elements having one text style to another text style

When you select the menu item, the Remap Elements to Text Style dialog box appears so you can make the change. The selected text style is listed as the source. Select the destination style from the Destination option list

## Text Fields

As you place or edit text you can insert fields that derive content from the attributes of an element, the properties of a model or the properties of a file. Insert text fields using the Word Processor text editor.

### Field properties

Fields based on element attributes are updated to reflect changes whenever a change to the element causes the attribute to change. If a text field includes the area of a closed element, the text will be updated automatically to reflect any modifications to the element. Fields based on file or model properties are updated when the file is opened.

→ **Exercise: Add a file property field**

1. In manholes39.dgn, open the Manholes model.
2. Select Edit Text (A + 3).
3. Click on the string FILE NAME: on the left side of the title block.
4. In the Word Processor text editor, click at the end of the string so the cursor appears there.

   This is where the field will be inserted.
5. Right click.
6. Select *Insert Field* > *File Properties* from the pop-up menu.
7. In the Fields Editor dialog box, select File Name.
8. In the File Name Format area, set Path to False.

   Setting the path to false excludes this information from the text field. You can also toggle display of the root file name, showing only the extension, or exclude the file's

extension. You can choose the case in which you want the field to display. A preview of the field contents is shown at the bottom left of the dialog box.

9 Click OK.

10 Enter a data point in the file to complete the edit.

The string now reflects the file name.

11 Select *File* > *Save Settings*.

→ **Exercise: Change file properties**

1 Continuing in manholes39.dgn, select *File* > *Close*.

2 In the MicroStation Manager, right click on manholes39.dgn and select Rename.

3 Change the file name to manholes_RC-39.dgn.

4 Reopen the file.

5 In the Key-in browser, enter the following:

FIELD UPDATE ALL

6 Press Enter or click Run Key-in.

All fields are updated.

A field can appear anywhere within a text string and can span multiple words or lines within multi-line text.

## Background

In order to distinguish fields from text that is entered directly, fields are shown with a light gray background. There is a user preference to display fields without it.

→ **Exercise: Element properties**

1 Open update_site.dgn, Default model.

The area of the building is indicated in the text field.

2 Select Scale (3 + 3) with the following tool setting:

*X and Y Scale*: .5

3 Enter a data point on the building and then one to accept.

The field updates to reflect the new element properties.

4 Select *Settings* > *Drawing Scale*.

5 Change the Master Units to Meters.

6 In the Key-in browser, enter FIELD UPDATE ALL and press Enter.

The field updates to reflect the unit format.

7 Select *Workspace* > *Preferences*

8 Select the Text category and enable the Hide Field Background check box

9 Click OK.

10 Select *File* > *Save Settings*.

The next time you open the model the field will update to the new setting.

11 Select Previous Model

12 Select Next Model

You return to the site plan and the background has been removed.

➔ **Exercise: Copy field data**

1 Launch Excel.

2 Open field_report.dgn, Default model.

3 On the Level tab of the Element Selection tool settings, select the building area level

Elements on that level are selected.

4 Select *Edit* > *Copy*.

5 In Excel, select Edit > Paste.

The building area data is copied into the spreadsheet

6 Exit Excel.

☞ **NOTE:** Fields in MicroStation and AutoCAD are similar. A MicroStation field will be saved to DWG format as long as the underlying field property exists within AutoCAD.

## Editing fields

The Word Processor text editor is the only style of text editor in which you can insert and edit fields

## Associate a field to new element

Use the Reassign Field option on the Word Processor text editor's right click menu to reassign a field from one element to another element.

Edit a field to get it into the text editor, then right click and select Reassign Field. Identify the new element and then accept

### Inserting and updating null fields

You can insert a field associated with a property whose value is NULL (or, blank) Insert the field with "####" as a placeholder. When the value of the property is set and the field is updated, the field text reflects the new value.

Enable Update Fields Automatically in the Model Properties dialog box to update fields automatically when the DGN file that contains the model is opened.

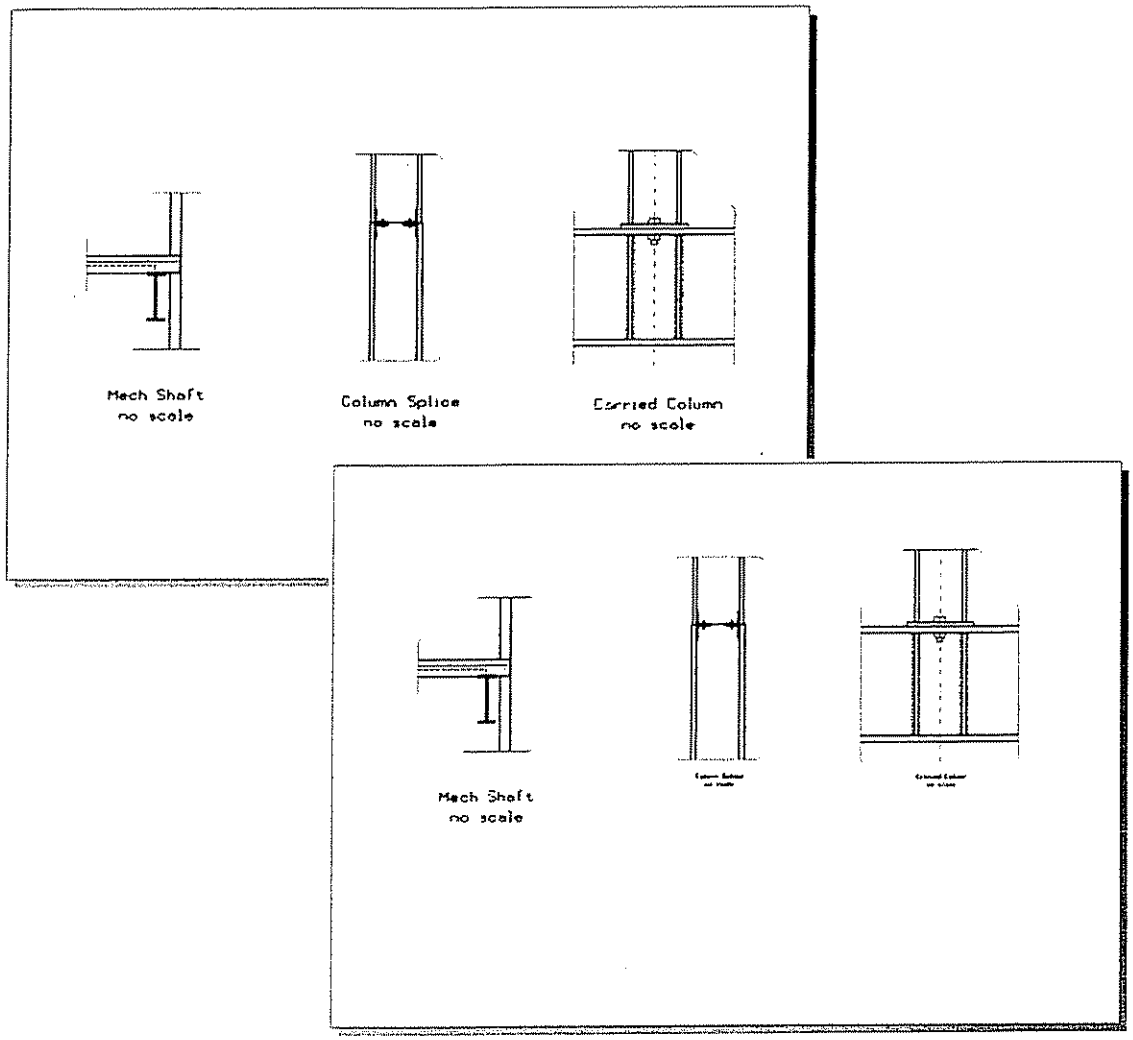
### Annotation scale displays the logical name

When you insert a field derived from a model's annotation scale the logical name of the scale will displays instead of the raw scale value.


*'Full Size 1=1' fills the field rather than "1.0"*

### Tags support annotation scale

Tags support annotation scale As a result, when there is a change in a model's annotation scale, the tags in the update to the new annotation scale.




*Tag at left was placed with the Annotation Scale lock on*
*The model's annotation scale was changed from Full Scale 1 1 to 1 2 5*

The Annotation Scale lock in the Place Text tool settings controls this.

## Dimensioning

The Dimension styles dialog box has been reorganized to offer easier access to dimension settings

## Dimension Styles dialog box

The dialog box contains a hierarchy tree of all dimension styles. Icons in the hierarchy tree indicate whether a style is derived from a library or is part of the active file.

*The top icon indicates the style is derived from a library*
*The bottom icon indicates that a style is part of the active design*

Library styles that are present in the active design and are consistent with those in the library are marked with a check mark. Styles that are not consistent are indicated with a modified icon.

**NOTE**: The Text Styles dialog box also uses these icon indicators

The Style menu offers options that are also available as icons, plus a rename option. Use options on the View menu to toggle the preview window and the style list.

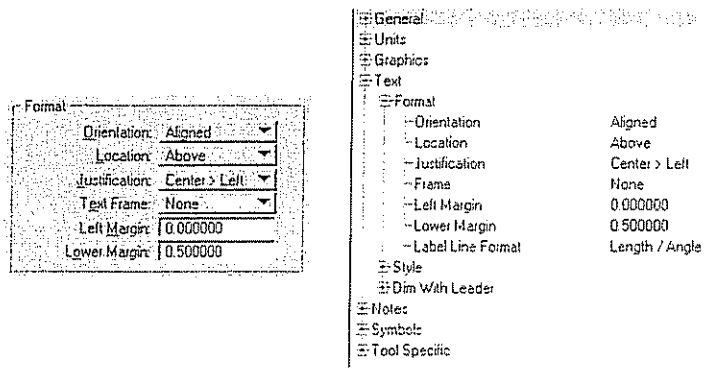
## Dimension style remapping

The Remap Elements function allows you to change the dimension style of all elements having one dimension style to another dimension style. Access this function by right clicking on a style name in the Dimension Styles dialog box and selecting Remap Elements from the menu.

## Dimension settings

The dialog box has tabs for setting geometry, units, text and symbology settings. Tool tips for individual settings explain the setting's function.

There is also an Advanced tab that includes all controls for dimension styles. On this tab you can compare two dimension styles and review their differences.




*Settings in the Format section on the Text tab and settings on the Advanced tab*

→ Exercise: Compare two dimension styles

1 Open Dimensions dgn.

2 Select *Element* > *Dimension Styles* to open the Dimension Styles dialog box.

3 Select the Advanced tab.

4 On the Advanced tab, set the Mode to Comparison.

5 Press the Ctrl key and select the local dimension styles M Dimension and mm Dimension.

The attribute categories in which the two styles differ are listed at the top.

6 Expand each category to view the style comparisons.

As you expand the categories you see a column for each selected dimension style and the comparison is noted.

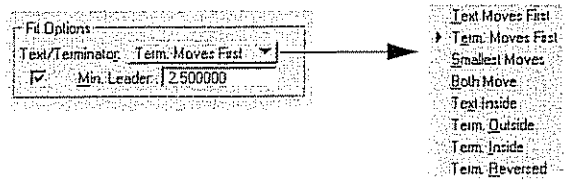
If you select Differences mode, only the differences between the styles are listed.

You can also compare or check differences for a dimension style in the open DGN file with the DGNLIB version by enabling Compare with library.

## New options for geometry

On the Geometry tab there are new fit options for text and terminators. The fit options only apply to linear dimensions.

The Text/Terminator setting determines how the dimension will fit based upon the size of the text, the size and type of terminator or a combination of both. You can force text to remain inside or force terminators to be placed inside or outside.




The move settings determine whether text or terminators take precedence.

The Min. Leader setting sets the space, in units of text width, between extension lines and dimension text.

There is also an option in the Dimension with Leader section to generate leaders automatically. Set the Mode to Automatic to automatically place a leader when one is required. You do not have to move the dimension text to create the leader.

### → Exercise: Automatic leader lines

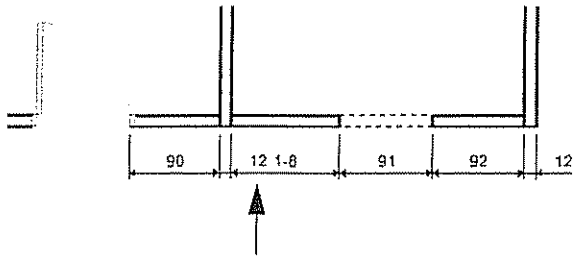
1 Open layout dgn, Walls model.

2 Select Dimension Linear (F + 2) with the following tool setting:

*Style*: Allow Leader

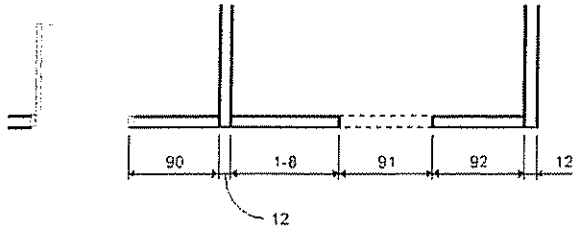
3 Dimension from the right side of the building to the doorway.

The second wall width dimension requires a leader.




4 Select Modify (7 + 1)

5 Select the dimension text (12) and move it below the dimension chain.




The text style allows leaders, so one is created when the text is moved.

6 Select Dimension Linear (F + 2) with the following tool setting:

*Style*: Auto leader

This text style creates leaders automatically.

7 Dimension the rest of the building.

Leaders are now added automatically where they are required.

8 With the Auto leader style selected in the Dimension Styles dialog box, in the Fit Options section of the Geometry tab, change Text/Terminator to Text inside.

9 Click Save Style.

10 Click Yes to All in the Alert dialog box.

The dimension text that was placed using the Automatic Dimension With Leader option updates, moving inside the dimension.

11 In the Dimension Styles dialog box, change Text/Terminator to Term Reversed.

12 Click Save Style.

13 Click Yes to All in the Alert dialog box.

Terminators are added inside the dimension and the text moves to accommodate them.

## Advanced options

### Tool specific dimension settings

The Tool Specific section on the Advanced tab has settings that affect individual dimensioning tools. Expand the listed tools to see the options. Set left and right terminators, extension and leader lines and stacking. Add arc accent symbols, prefix or suffix, a center mark and set text orientation. Use the Chord option to place arc dimension extension lines non-radially.

➔ **Exercise: Change advanced settings**

1 Open stairwell.dgn, Core model.

2 In the Dimension Styles dialog box, copy the ordinates dimension style.

3 Right click and rename the new style ordinates n.

4 Press Tab.

5 Select the Advanced tab.

6 Set the Mode to Edit.

7 Expand the Tool Specific options.

8 Expand the Ordinate options.

9 Enable Decrement in Reverse Direction.

Enable Decrement in Reverse Direction so ordinate values to the left of the origin point will be less than the origin.

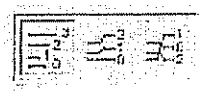
10 Click Save Style.

➔ **Exercise: Use the styles**

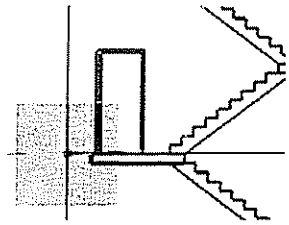
1 Continuing in stairwell.dgn, select Dimension Ordinates (F + 4) with the following tool setting:

*Style*: ordinates

This sets the tool settings to Alignment View, Location Automatic and Mode Ordinate Unstacked.

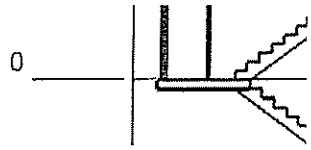


2 AccuSnap to the floor at location 1 and enter a data point.



3 Move the pointer upward and enter a data point to indicate the direction in which you will be dimensioning.

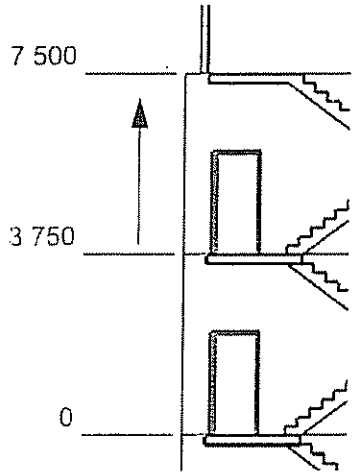
4 Enter a data point to the left of location 1 to establish the end of the dimension.



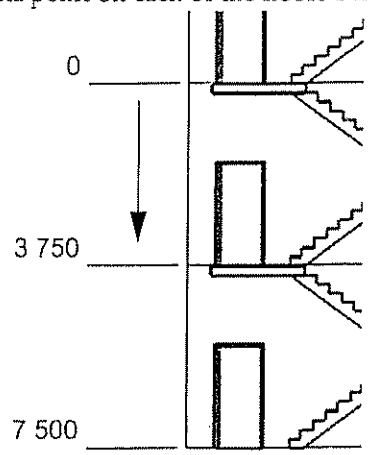

This is the origin

5 Snap to the floor above and enter a data point.

6 Enter a data point on each floor above to dimension the stairwell.



7 Then, enter a data point on each of the floors below the origin, ending at the bottom.




8 Reset.

9 In the tool settings, change the Style to ordinates n.

The tool settings change accordingly. The Decrement in Reverse Direction option is already set. Expand the tool settings to see this.

10 On the other side of the stairwell, snap to the floor at location 2.

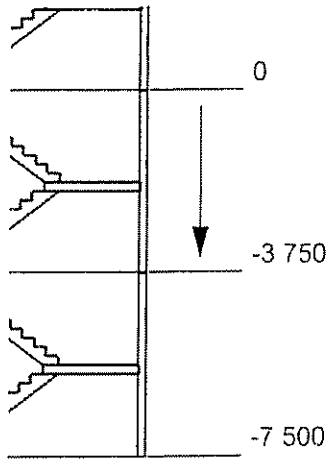
11 Enter a data point.

12 Move the pointer upward and enter a data point to indicate the direction in which you will be dimensioning.

13 Enter a data point to position the dimension.

14 Enter a data point on each floor above the origin to dimension this side.

15 Enter a data point on each of the floors below the origin on this side, ending at the bottom.




These dimensions are now negative numbers.

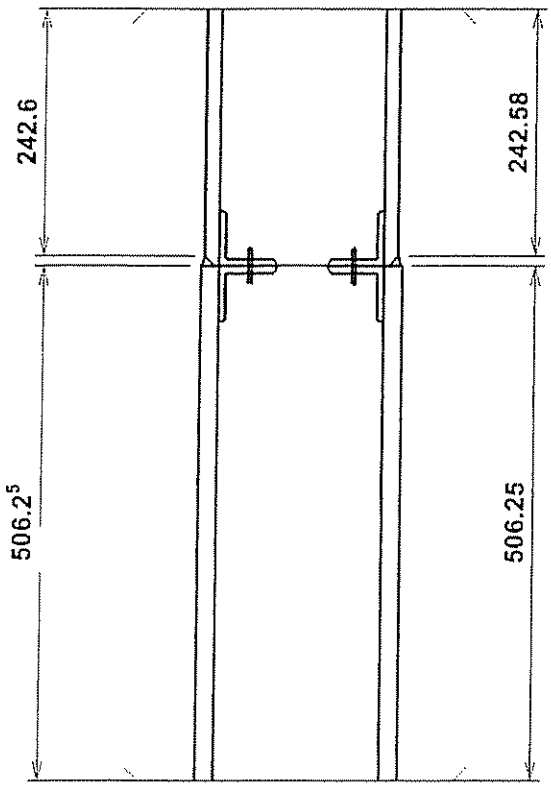
16 Reset

### DIN dimensioning

DIN Dimensioning properties, such as superscript and rounding, are included in the Units category on the Advanced tab.

If you enable Superscript, the least significant digit is displayed as superscript. If Superscript Character is enabled the superscript number uses a resource character. If not, the superscript number is supplied by the active font.

Enable Rounding to round to the closest half unit. 0 is not displayed.




*Dimensions with DIN properties are used on the left*
*Here, superscript is supplied by the active font*

### Angular dimension fit options

Previously the Fit Options in the Graphics category of the Advanced tab applied only to linear dimensions. They now apply to angular dimensions as well.

Enable the Extended Dim Line Under Text fit option so the dimension line under angular dimension text is extended when the text is pushed to the outside.

Non-Stacked Fraction Space

In the Units section of the Advanced tab, this property controls whether dimension text is placed with a space between a fraction and a unit symbol. By default the space is included. To prevent the space from being included, turn this option off

Show Sign for Zero

In the General section of the Advanced tab, this property lets you to turn on the sign symbol (+/–) when dimension tolerance is zero

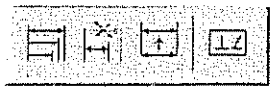
### Styles for note placement

If you are creating dimension styles to be used with note placement, when the Dimensions view attribute is off the entire note will not display. The attribute no longer affects only the dimension leader.

You can enable the Frame Scale option on the Text tab of the Dimension Styles dialog box to set the size of a text frame. If you do set this setting, the frame will not resize dynamically if the text changes.

### Dimension tools

Users can open the miscellaneous dimension tool box by selecting *Tools* > *Tool Boxes* and then enabling the Misc Dimensions check box in the Tool Boxes dialog box. Open the tool box containing other dimensioning tools such as Dimension Angle from X-Axis, Perpendicular to Points and radial dimensioning by enabling the Dimension Tools check box.



Dimensioning tools from previous versions that do not appear in tool boxes can still be accessed by key-in.

## Cells

Enhancements let users directly attach entire folders that contain libraries and let you apply annotation scale to cells.

## Cell Libraries

You can attach all the cell libraries that are in a folder by selecting *File* > *Attach Folder* in the Cell Library dialog box. You can attach V7 DGN files, 3D Studio (.3DS), or DXF files.

You can also attach and place the model stored in an OBJ file as a cell. OBJ is an open geometry definition file format that is available in various software applications

*Notes:*

When a cell library is attached, right click on a cell in the Cell Library dialog box and select Open for Editing from the pop-up menu to directly open the model that contains the geometry.

## Annotation scale for cells

Annotation scale applies to cells. When you change the active model's annotation scale, annotation cells in the model are automatically scaled by the new factor.

The Place Active Cell tool is used to place annotation cells. The tool settings have an Annotation Scale lock similar to the one for the text and dimensioning tools. When users make a cell active for placement a cell that can be placed as an annotation cell, this lock is enabled.

**To make an existing cell an annotation cell:**

1. Open the library that contains the cell as a DGN file.
2. In the Models dialog box, select the cell model and click the Edit Model Properties icon.
3. In the Model Properties dialog box, turn on Can be placed as a cell and Can be placed as an annotation cell.
4. Model Properties dialog box with added Cell Properties.
5. Click OK

This topic is covered in detail in conjunction with model properties.

### Cell index

A cell index contains all of the models in the active DGN file that have the Can be placed as cell option enabled.

Find the Place Cell Index tool in the Cells tool box. Tool settings let you set the size of the box in which each cell appears. The size is based on the active text style.

You can also set the number of cells per row and you can choose whether or not to display grid lines, similar to showing grid lines in spreadsheet applications. You can include cell names and descriptions. The Insertion Points option displays the cell origin.

A cell index can be used as a screen menu if the Grid Lines option is enabled.

## Multi-Lines

### Remapping Multi-line styles

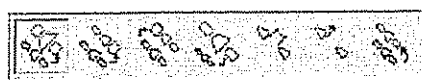
You can remap style of all multi-lines having one style by right clicking on a style name in the Multi-Line Styles dialog box and selecting Remap Elements. In the Remap Multi-line Elements dialog box, the selected multi-line is designated as the source and you select the destination style from the Destination options.

## Line Styles

There are enhancements related to modifying custom line style attributes and scaling line styles.

### Line style modification

The Modify Line Style Attributes tool, from the Change Attributes tasks, lets users modify custom line style attributes by entering a precise value or by modifying the attribute interactively in the view. Use the icons in the tool settings to select the attribute to modify.



*Modify Width, Start or End width, Scale, Dash or Gap scale or Shift*

➔ **Exercise: Make line styles legible dynamically**

1 Open intersection dgn, Default model

Some of the electric line style's characters overlap another line style

2 Select Modify Line Style Attributes (5 + 4) with the following tool settings:

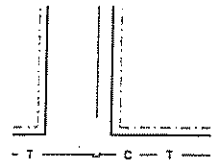
*Shift icon*: Enabled

*Shift check box*: Enabled and set to 30.0

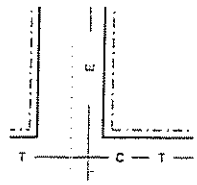
The Shift check box is available when the Shift icon is selected. Enable it and enter the shift distance, relative to the beginning of the element. Results depend on the Absolute setting.

If the Absolute check box is enabled, the value represents the actual shift distance. If Absolute is disabled, the value represents the amount to modify the existing shift distance.

3 Identify one of the red electric lines with a data point



4 Enter a data point to accept.



The style shifts.

5 Disable the Shift check box.

6 Enter a data point on the other red electric line.

7 Move the pointer to dynamically reposition the character.

8 Enter a data point.

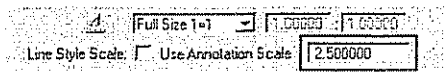
## True width

If this option is enabled, the line style width is not affected by a change in line style scale. The line style scale can be modified using the Modify Line Style Attributes tool, as well as by the global line style scale, using the ACTIVE LINESTYLE SCALE key-in.

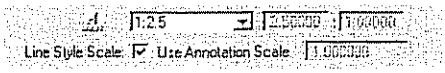
For example, if you set width to 2.0 and the scale is 3.0, a line with True Width enabled will be 2.0 working units wide, while a line with True Width disabled will be 6.0 working units wide.

### Model-based line style scale

Every model can have a global line style scale that is applied to all line styles within the model.




You can also set the global line style scale to be the same as the annotation scale.




If you change the global line style scale for the model, all line styles will be scaled by that amount. If you choose to apply the annotation scale, that scale will be applied to all line styles. This is useful for styles that must retain a relationship to sheet size. This topic is discussed in conjunction with models

## Standards Checker

When using the Standards Checker to check element templates, you can check all element template properties. You also can add elements that fail the standards check to a named group

### Element template properties

When defining standards checks for element templates, you can select any or all of the properties stored in an element template in the Element Template Checker Settings dialog box.

In the Checks to Perform section, enable Check Local Templates to check the open DGN file's local element templates against the templates defined in DGN libraries.

Enable Check Elements to check all elements in the open DGN file against the local templates with which they are associated

Then, in the Properties to Check section, enable the check box for any or all of the properties stored in an element template.

### Isolate non-standard elements in named groups

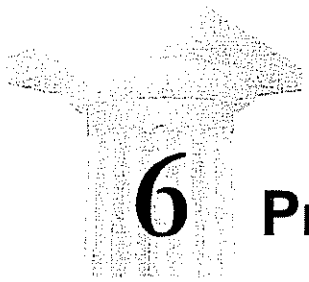
When running the Standards Checker to check element templates, you can add all elements that fail the standards check to a named group. After the Standards Checker runs, open the Named Groups dialog box to see the of the check.

The default name for the named group is Nonstandard Elements. The Nonstandard Elements group is a list of templates and the number of elements that failed the standard checks against each template. If you want to keep track of the results of your standards checks, enter a different name each time you perform a standards check. If you do not enter a different name the Nonstandard Elements group is overwritten when you rerun the Standards Checker.

☞ **NOTE:** If you enable the Named Group check box and Interactive and fix all errors when they occur in interactive mode are also enabled, a named group will not be created

## Multiple Redline Support

When you select the Attach Redline File tool, the Display Redline Files dialog box appears. This dialog box lists the files identified by the configuration variable RDL_DIR. Users can select any or all of the listed redline files to be displayed.



# 6 Printing

The Print dialog box is enhanced and printer driver development keeps pace with evolving technology

## INI files

The format of saved configuration, INI, files has changed. Configuration files written by previous editions of MicroStation remain valid, but once a configuration file is written by MicroStation V8 XM Edition it will not be usable with previous editions

Enhancements to the print engine let you create prints that are a mix of raster and vector data and you can also apply transparency

## Rasterized Printing

*Rasterized printing recognizes transparency*
*The Print previews show an element without transparency behind an element with transparency*
*The image on the left is a preview with the Rasterized setting off, on the right the Rasterized setting is on*

The functionality from the ripwin32 drivers is included in Rasterized printing

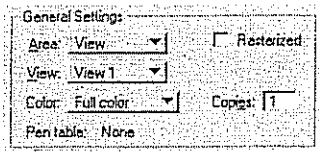
You can output a print as a single raster image or as a mix of vector and raster data. Rasterized printing works by generating a display list from a model, then rendering that display list into raster tiles or bands before writing them to the plot file. The printer driver file determines whether tiles or bands are used.

The size of the tiles or bands is important to performance. The larger the tile, the faster the plot, but more memory is used. Tile sizes are also limited by the capabilities and available

memory of the video card. A system's display settings must also be set to use 24-bit color, true color.

### Rasterized option

Use the Rasterized setting in the General Settings section of the Print dialog box to toggle the option.




- If all view modes that will be printed are not rendered, you can toggle the Rasterized option.
- If the active view's mode is one of the rendered modes, or if any reference presentations are anything other than wireframe or wiremesh, the mode is set to Rendered and the Rasterized setting is not available.

This setting can also be set with the key-in PRINT RASTERIZED <OFF | ON>.

### Transparency

There is a Transparency print attribute in the Print Attributes dialog box that is similar to the Transparency view attribute. You can print partial transparency with any printer driver capable of printing in rasterized mode. To do so, turn on the Rasterized check box in the Print dialog box.

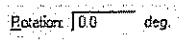
## Enhancements to the Print Dialog Box

The MicroStation Print in Progress dialog box displays print status when you send printed output directly to a printer. This dialog box allows you to cancel the print job. For rasterized and rendered prints, a progress bar shows the rasterization process.

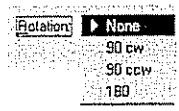
### Non-orthogonal rotation

Use the Rotation field in the Print dialog box to specify any rotation from 0 to 360 degrees for prints that are not rendered and do not contain a camera definition. To enable non-

orthogonal rotation, disable Hide advanced layout controls in the Print dialog box's *Settings* > *Preferences* Print Preferences dialog box




If Hide advanced layout controls is enabled, the Rotation control is an option menu rather than a field

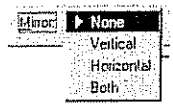



This can also be set with the key-in PRINT ROTATION <rotation_in_degrees>

☞ **NOTE**: You can remove the Preferences item from the Settings menu by setting the MS_PLTDLG_DISABLE_PREFERENCES_DIALOG configuration variable

## Mirroring

Another advanced option is the Mirror option menu. You can mirror printed output about the x- and y-axis.




Or, use the key-ins PRINT XMIRROR <OFF | ON> and PRINT YMIRROR <OFF | ON>

## Print destination

A print's destination can be set in the MicroStation Print dialog box instead of the Windows Print dialog box. Select from Send to printer, Create plot file, or Create metafile.

- When printing with a Bentley printer driver, Create plot file is the only available choice. If the .plt file is configured to write directly to an LPT port, this is the same as Create plot file. If you want Create plot file to be the default, change the default_outFile record in the .plt file.
- Send to printer is available only when using a Windows printer driver. The print is sent to the selected printer, using the selected printer driver.
- Create metafile is available only when using a Windows printer driver. This option creates a Windows enhanced metafile (.emf). If you want Create metafile to be the default, change the Model record in the .plt file to model = sysprnmetafile.

This can be set with the key-in PRINT DESTINATION <DEVICE | METAFILE | PLOTFILE>

### The Full option

When you are using the Windows printer you can enable the Full check box to maximize the portion of the sheet that is used. When you are printing to an 8.5 x 11 sheet, the maximum print size may be only 8 x 10.5. If full sheet is enabled, the maximum print size will be 8.5 x 11. Some geometry may be clipped by the printer if it falls into the area around the edge of the paper that can't be printed by the printer.

To enable the Full option all the time, add the following to the plt file:

sysprinter /fullsheet

### Raster options

The *Settings* > *Raster Options* dialog box shows the printer resolution in dots per inch and the raster resolution that results from the specified raster quality factor.

## Printing Preferences

Many print settings that were previously only available using configuration variables are now stored in the user preference file and can be changed in the Print Preferences dialog box.

One preference, Thumbnail preview time-out, controls the period of time that the thumbnail preview paints. When the Print dialog box first opens, the thumbnail preview paints for 10 seconds before stopping to allow the rest of the dialog box to refresh. If the print preview is not complete within that time period, a message appears in the status bar. Change the amount of time using this setting. The preference Show print status dialog determines whether users see the Print status dialog box at print time.

## Preference configuration variables

The configuration variables are still honored and, if defined, they override the user preference When a configuration variable setting is in effect, the corresponding control in the Preferences dialog box is disabled

| | | |
|---|---|---|
| Allow paper size editing | MS_PLTDLG_ALLOW_FORM_ SIZE_EDIT | If enabled, the size of the selected form can be modified in the print dialog box Not valid for system printers |
| Hide advanced layout controls | MS_PLTDLG_SHOW_BASIC_LAYOUT_ CONTROLS | If enabled, the arbitrary angle rotation edit field and mirror options are not in the print dialog box |
| Show print status dialog | MS_PLT_SHOW_PRINT_STATUS | Toggles display of the Print Status dialog when printing |
| Enable auto rotation | MS_PLT_ENABLE_AUTO_ROTATE | If disabled, rotation is not automatically changed to achieve a best fit Only applies to Bentley drivers |
| Enable auto orientation | MS_PLT_ENABLE_AUTO_ORIENT | If disabled, paper orientation is not automatically changed to achieve a best fit Only applies to system printers |
| Enable scale preservation | MS_PLT_ENABLE_PRESERVE_SCALE | If disabled. the current print scale is not preserved when a new view, fence, or paper size is selected |
| Enable scale clipping | MS_PLT_ENABLE_SCALE_CLIPPING | If disabled. the print fence or sheet size is not reduced in order to accommodate the user or sheet specified scale factor |
| Honor sheet definition | MS_PLT_HONOR_SHEET_INFO | Prevents sheet attributes stored in the model fro being applied when creating a print description If a sheet definition is present, the plot area defaults to Sheet and the boundary is set from the sheet If this is disabled. it is as if there is no sheet definition present |
| Honor sheet layout | MS_PLT_SET_LAYOUT_FROM_SHEET | If disabled. layout is not automatically set when a sheet definition is loaded (and the current print mode is sheet) By default, the sheet layout information is honored |
| Honor sheet plot style table | MS_PLT_SET_PLOT_STYLE_TABLE_ FROM_SHEET | By default, any plot style table (CTB or STB) specified in the sheet definition is automatically attached to the plot If disabled. sheet plot style tables are ignored |
| Set units from sheet | MS_PLT_SET_UNITS_FROM_SHEET | If disabled. units are not automatically set from the sheet definition when the current print area mode is sheet Other sheet attributes are honored |

| | | |
|---|---|---|
| Use sheet instead of fence | MS_PLT_AREA_PRIORITY | If enabled, sheet definitions in the model take priority over the active fence. New fences are ignored when the print area mode is sheet. This is the default setting. If this variable is not set, the active fence takes priority over sheet definitions |
| Default form scale priority | MS_PLT_FORM_SCALE_PRIORITY | If enabled, the default form scale specified in the plt file is re-applied whenever the paper size changes. By default, the current print scale is preserved |
| Maximize on new plot area | MS_PLT_MAX_ON_NEW_AREA | If enabled, the print size is automatically maximized when the print area is changed, including when a view number is selected or a fence is placed. By default, the current print scale is preserved |
| Fit with raster references | MS_PLT_FIT_RASTER_REFS | If enabled, raster references are included when computing the design range for the Fit print area modes. By default, it they are not |
| Auto fit view | MS_PLT_AUTO_FIT_VIEW | If set to a value other than None, the print area mode is automatically set to 'Fit Master' or 'Fit All' when first invoked (and a fence or sheet is not defined). Otherwise, the print area mode is set to View. |
| Preview accurate rotation | MS_PLTDLG_SHOW_ACCURATE_PREVIEW_ROTATION | If disabled, preview always shows the print as if it had no rotation. The paper orientation display can be swapped to accomplish this. Only meaningful for Bentley printer drivers when the print rotation is 90 or 270 degrees |
| Thumbnail preview timeout | MS_PLT_THUMBNAIL_PREVIEW_TIME OUT | Specifies the maximum number of seconds to spend updating the print dialog thumbnail preview |
| Apply color mode to raster | MS_PLT_APPLY_COLOR_MODE_TO_RASTER | If disabled, the print engine does not apply the color mode specified on the print dialog to raster data |
| Use view background color when rendering | MS_PLT_USE_VIEW_BACKGROUND_COLOR_FOR_RENDER | If enabled, the print engine does not change the background color for the print when rendering |

# Pen Table Enhancements

When creating printed output, a pen table tests for the presence of specific types of elements and related element characteristics. If these elements are detected, the pen table will modify, enhance, or eliminate these elements or their characteristics depending on the intended output.

There are several enhancements to pen table-related functionality

## AutoCAD interoperability

### DWG plot style tables

MicroStation checks to see whether an AutoCAD plot style table (CTB or STB) is specified in a DWG file. If a plot style table is present and enabled, by default MicroStation converts it into a memory-resident MicroStation pen table and attaches it to the print.

### CTB color mapping

When converting a CTB file into a MicroStation pen table, AutoCAD color numbers 1 through 254 are mapped to MicroStation colors 1 through 254. However, the CTB file has an additional assignment for AutoCAD color number 255. Since MicroStation users expect colors 0 and 7 to be pure white when working with DWG files, MicroStation V8 XM Edition pen table processing ignores the CTB color 255 mapping and makes pen map colors 0 and 7 the same, with output assignments taken from color 7.

☞ **NOTE:** If you map pen colors or weights, the Export CTB File option on the Modify Pen Table dialog box's File menu becomes active and you can save as CTB.

## Modify Pen Table: Element Selection Criteria

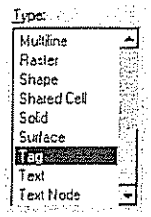
### Level regular expression

You can use regular expressions to select levels. For example, if you type a * in the Level regular expression text box, the pen table section will match every level beginning with a.


The comparisons are not case sensitive. If a pen table contains a list of levels and a regular expression, all must match the element level name for the pen table section's output actions to be applied

### Tag element type

Tags have been added to the list of element types available. Previously you could not select tags as part of your element selection criteria.




In the Pen Table Options dialog box, you can specify whether tag elements should be treated individually or as a group.

☞ **NOTE:** When reading a pen table created in earlier editions of MicroStation, the Explode tags check box is selected by default. This ensures compatibility between the two editions.

## Modify Pen Table: Element Output Actions

### Transparency

Pen table transparency is supported for any printer driver capable of printing in rasterized mode. If it is used when printing in non-rasterized mode, the transparency values have no effect. Find the check box on the Element Output Actions tab.

### Priority

This lets you assign different priorities to individual components of a shared cell.

Pen table priority is 2D only, just as for elements. It does not have any effect for printing 3D files. Priority is implemented for printing 3D files through Z depth, so the pen table is no longer required to make multiple passes through the element list.

## Modify Pen Table: Pen Table Options

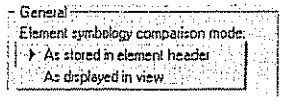
This dialog box is used to control pen table options. Click the Pen Table Options button on the Element Selection Criteria tab to open it.

### Level symbology

The Element symbology comparison mode setting affects only the way in which the input criteria treats level symbology. There are two modes.

- As stored in element header means that the element header symbology is matched against the input criteria

- As displayed in view means the view symbology is matched against the input criteria.




The pen table output actions are always applied, regardless of whether level symbology is enabled

### Applying multiple sections to elements

You can set a pen table to apply more than one section to an element.

If Match multiple element sections is enabled the sections will be selected and applied in descending order, starting at the top of the list and working down

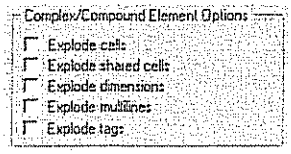
- If the pen table turns blue elements cyan, then a later section makes cyan elements dashed, the elements will be dashed.

If this setting is disabled, once a section has been selected by its input criteria and its output actions are applied, pen table processing on that element stops.

- If the pen table turns blue elements cyan, then a later section makes cyan elements dashed, the originally blue elements will not be dashed

### Complex and compound elements

Use options to control whether pen table processing will treat cells, shared cells, dimensions, multi-lines or tags as single units or as individual elements




When treating as a single unit:

- Only the complex/compound header is processed by the pen table. All of its children inherit any output actions applied to the header.

When treating as individual elements:

- The complex/compound header is ignored by the pen table.
- Complex chains and complex shapes are always treated as single units
- Individual elements cannot be processed by the pen table more than once

☞ NOTE: When reading a pen table created in earlier editions of MicroStation, the Explode tags check box is selected by default. This ensures compatibility between the two editions as, previously, tag elements were always exploded

# Drivers

Due to the new display subsystem, fewer printer drivers are supported. In addition, some delivered PLT files have been consolidated. See the online help topic What's New > What's New in MicroStation V8 XM Edition > Printing Enhancements for a complete list.

## New printer driver configuration file format

The .plt printer driver configuration file format has been superseded by the XML-based .pltcfg format. Legacy .plt files are still supported, so two sets of default printer driver configuration files are delivered.

Both sets of printer driver configuration files are stored in the .\Workspace\System\Plotdrv folder. All dialog boxes in which you choose a printer driver show files with both extensions. You can open and view both types of files in the Print dialog box, the Batch Print dialog box, and the Printer Driver Configuration dialog box.

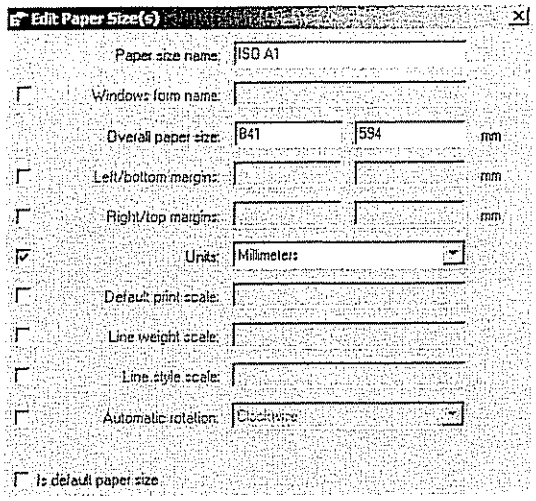
When you open a .plt file for editing, MicroStation opens it in Notepad. When you open a .pltcfg file for editing, MicroStation opens it in the Printer Driver Configuration editor.

⚠ **NOTE:** Migration to .pltcfg files is strongly encouraged. The currently delivered .plt files will be removed in a future release.

## Printer Driver Configuration editor

The Printer Driver Configuration editor allows you to add and edit .pltcfg printer driver configuration files, which are stored in XML format. Select *File > Edit Printer Driver Configuration* in the Print dialog box to open it.

When defining symbology, you can edit more than one option at a time by selecting while using the Ctrl key. After names are selected, click Edit to open a dialog box where you set desired values.




*The Edit Paper Size(s) dialog box opens when you select paper sizes on the Paper Sizes tab and click Edit*

On some tabs you can click Add to add an individual paper sizes, fonts or programs to the file or you can click Remove to remove individual entries.

### General tab

This tab shows the selected printer driver configuration file's name and location and the type of printer driver for which the file is intended. There is also a text field in which you can enter notes.

### Base Properties tab

This tab has settings that are used to edit properties defined for the selected printer driver. The categories that are included, as well as the properties within the categories, depend on which printer driver is selected. Click the downward arrows to expand categories.

- General properties, such as automatic centering, line cap and join, number of copies and the default output mode are set in the General category.
- Depending upon the type of driver that is selected, you will see a Windows Printer or Driver Properties category. Set properties related to the type of driver, such as the default printer and orientation for Windows drivers or properties related to specific non-Windows drivers.
- There are also categories for border print properties (on or off, content of border text, height, fence outline) and raster printing (on or off, quality, brightness, contrast, grayscale).
- The Printer Communication category includes the printer communication properties.

These properties are available only for the PostScript printer driver. They are the communication properties used to generate the print file and send it to the printer. Generally the default properties are sufficient. However, if the printer is used with other software that requires different communication properties, you can use the Printer Communication properties to meet those requirements

☞ **NOTE:** If you find zingers, incomplete, or no printed output at all, make sure the communication properties of the printer driver configuration file match the printer setup.

- Advanced section contents let you set the advanced properties that are in printer driver configuration files. Contents depend on which printer driver was selected.

### Paper Sizes tab

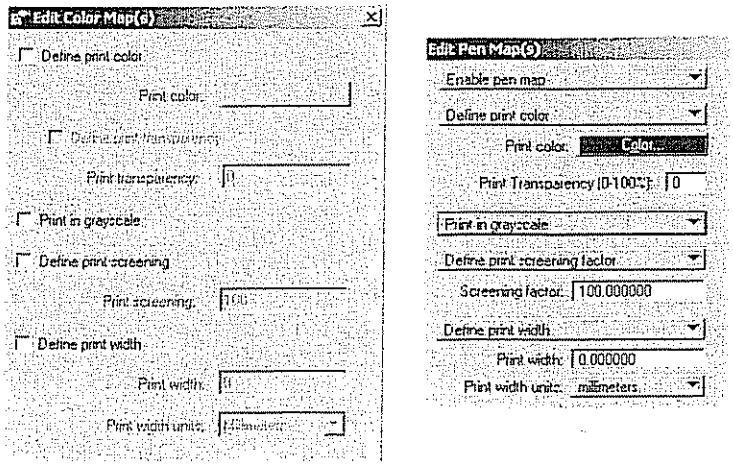
This tab has settings that are used to edit, add, remove and reorder the paper sizes defined for the selected printer driver.

### Color Maps tab

This tab has settings that are used to edit the color maps defined for the selected printer driver. You also can remove all existing color maps.

Enable the Define maps from design color to print symbology option to define design-color-to-print-symbology. If this option is disabled, all existing color maps will be removed.

☞ **TIP:** This functionality, as well as symbology mapping for weights, is also available using pen tables. One advantage to defining print symbology in a pen table is that one pen table can be shared by multiple printer driver configuration files.




*Color mapping, left from the Printer Driver Configuration editor, and in a pen table*

### Weight Maps tab

This tab has settings that are used to edit the weight maps defined for the selected printer driver configuration file. You also can remove all existing weight maps.

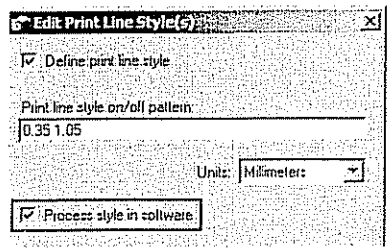
Enable the Define maps from design weight to print width option to define design-weight-to-print-width assignments. If this option is disabled, all existing weight maps will be removed.

### Line Styles tab

This tab has settings that are used to edit the print line style on/off patterns defined for the selected printer driver.

Enable the Define print line style patterns option to assign on/off patterns in paper units for each MicroStation line style index. If this option is disabled, all existing line style patterns will be removed.

You can indicate how each pattern should be applied, either by the printer or by software inside MicroStation, using the Process style in software option.




*Process style by software inside MicroStation enabled*

### Font Maps tab

This tab has settings that are used to edit, add, remove, and reorder the design-font-to-print-font maps defined for the selected printer driver.

Enable the Define maps from design fonts to hardware (or Windows or TrueType) fonts option to map MicroStation resource fonts, AutoCAD SHX font, and Windows TrueType fonts to printer fonts. If this option is disabled, all existing font maps will be removed.

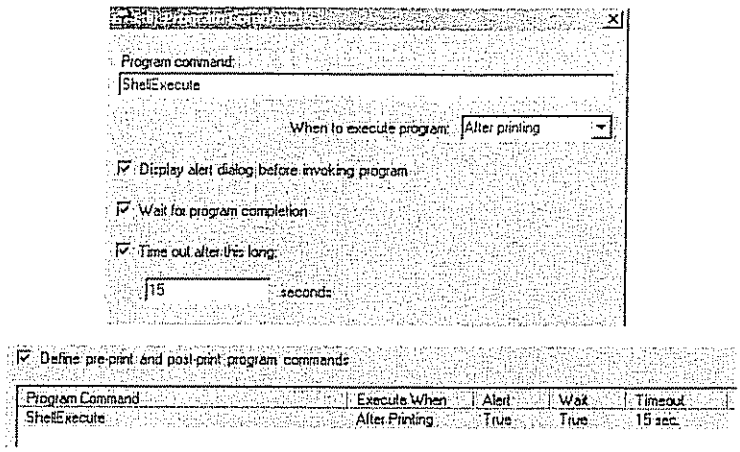
This functionality is available only for the Windows and PostScript printer drivers.

☞ **NOTE:** Note that defining font maps may result in text having a different appearance on the print than it does in MicroStation.

### Programs tab

This tab has settings that are used to edit, add, remove and reorder operating system commands defined for the selected printer driver.

Enable the Define pre-print and post-print program commands option to define operating system commands to be run either before or after a print.




*Adding a program command*

If the option is disabled, all existing program commands will be removed

## Printer driver file enhancements

The CHANGE_PEN record is no longer supported, and is ignored if present in the PLT file.

### ANSI and ISO paper sizes

Both ISO and ANSI paper sizes can be defined simultaneously in a PLT file. Each delivered PLT file contains a single resolution line, defined in inverted DPI, which is not tied to the SIZE records. Each SIZE record contains a units qualifier that indicates how the form size and offset should be interpreted. For example:

size=(1189,841) /units=mm /name="ISO A0"

For legacy PLT files where the SIZE records do not contain a units qualifier, the resolution units are used instead. As before, PLT files should not contain multiple resolution records.

### Paper size-specific line weight and line style scales

You can control line weight and line style scaling on an individual paper size basis by specifying one of the following qualifiers for the SIZE record:

/weightScale=<scale>: scales the widths defined in the WEIGHT_STROKES record.

/styleScale=<scale>: scales the pattern lengths defined in the STYLES record.

/penScale=<scale>: sets both line weightScale and line styleScale.

Each qualifier takes a value greater than zero, with 1.0 indicating no scaling.

So, if WEIGHT_STROKES is set correctly for one paper size, when creating a half-size plot the output widths would be too wide. Rather than create a new half-size PLT file, you could add:

/weightScale=0.5 to the half size paper size definition.

### System printer paper sizes

The MicroStation V8 XM Edition system printer driver supports SIZE records in the PLT file. When printing to drivers that support application-defined paper sizes, you can set up the PLT SIZE records without regard to the paper sizes published by the drivers. You are still restricted to the driver's non-printable margins. You cannot override them.

Since many drivers do not support these definitions, the PLT SIZE records serve to filter and rename the Windows paper sizes. They can also be used to specify per-paper-size weight and line style scale factors. For more information, refer to the section in the delivered printer.plt file that begins as follows.

; If uncommented, the custom paper size definitions below replace the

; paper size list obtained from Windows printer driver

You can disable this feature by removing or commenting out the 10 SIZE records that follow the narrative

### Default line join and caps

The DEFAULT_LINEJOIN and DEFAULT_LINECAP records take the place of the LINEJOIN and LINECAP records, even though the old records are still supported. While the legacy records require numeric values that are tied to the plotter language the driver writes, the new records use keywords to indicate the types of caps and joins desired. Note that not all caps and joins are valid for every device. Refer to the PLT file for the list of valid choices.

### Rasterized output mode

Use the OUTPUT_MODE PLT record to specify a driver-specific default setting for the Rasterized check box in the Print dialog box. You can also decide whether the setting is a preference or not. If it is, users can change it after the driver loads. If it is a requirement, the check box is disabled.

The syntax is output_mode = < force_rasterized | prefer_rasterized | force_nonrasterized | prefer_nonrasterized >.

You cannot use OUTPUT_MODE to override an output mode enforced by the driver itself, such as LORIP and rasterized mode, or a rendering mode requiring rasterization

### Optimize raster color depth

When printing in rasterized mode, all output is in true color unless optimized into 256 colors More time is required for optimized color plotting, but it produces more compact plot files for typical drawings. This setting also affects how raster data in non-rasterized mode is handled.

Optimization is enabled by default in the appropriate printer drivers but can be changed by editing the OPTIMIZE_RASTER_COLOR_DEPTH PLT record.

; If true, RGB raster is converted to a color palette when possible

; Note that this generally results in smaller plot files, at the

; expense of plot processing time and memory requirements

optimize_raster_color_depth = true

### Raster parameters

While most of the legacy PLT records related to raster plotting are still supported, they have all been consolidated into a single record, RASTER_PARAMETERS, in the delivered PLT files

raster_parameters /quality=<quality_value>

/contrast=<contrast_value>

/brightness=<brightness_value>

/grayscale=<grayscale_value>

/ignore=<ignore_value>

Quality_value is the ratio of device resolution to raster resolution, as a percentage. /quality=100 means that raster data should plot at the device resolution. Setting /quality=50 results in raster data plotted at half the available resolution, which is good if plot file size is more of a concern than output quality.

In place of /quality, you can substitute /dpi=<DPI_value>. DPI_value is the desired raster output resolution in dots per inch. Use of /quality is preferred in most cases since, in addition to being easier to calculate, it will automatically track any changes that might be made to device resolution.

- Contrast_value is the raster contrast in the range -100–100, even numbers only, where 0 is neutral

- Brightness_value is the raster brightness in the range -100–100, even numbers only, where 0 is neutral
- Grayscale_value is either 0 or 1. If 1, all raster data is printed in grayscale
- Ignore_value is either 0 or 1. If 1, no raster data is printed

### LORIP drivers

The delivered LORIP driver files, jpeg.plt, and png.plt make use of an %include statement to consolidate many of their common settings. The same as with the PostScript prolog files, you will need to copy this include file along with its parent PLT files to your custom MS_PLTR directory. Refer to the comments in the header section of lorip_common.inc.

The delivered file lorip_common.inc contains a CmdName record that lets you create raster offline files whose sizes are equal to the sheet size. Plot origins are correctly reflected inside the image data.

; Uncomment the line below to create raster file sizes equal to the sheet size

; instead of the plot area size. Note that this line should be commented out when

; using this driver with Bentley Publisher.

;CmdName /appname="lorip" /command="fullSheet" /qualifier="ON"

### TIFF and CALS printer drivers

These are specialized printer drivers that replace the generic LORIP driver for producing TIFF and CALS raster print files.

- TIFFDRIVER can write both monochrome and true color TIFF files. It generates output one scan line at a time, rather than storing the entire print in memory as LORIP does. You can use larger output sizes and resolutions than using the LORIP driver.

  The delivered tiff.plt has been rewritten to use TIFFDRIVER instead of the LORIP driver. Several TIFF-specific properties (compression type, photometric flag, document name, document description, page name, and artist name) are now available. If you want to take advantage of functionality you must switch to the new tiff.plt file.

  ☞ **NOTE:** Using tiff.plt files from previous editions of MicroStation will continue to work, even though they reference the LORIP driver, because the LORIP driver is still included in the product.
- CALSDRIVER still requires a complete print frame buffer in memory, but it is compressed much better than the LORIP RGB memory frame buffer.

### PDF driver

There have been enhancements to the PDF driver. For example, the outFile qualifiers have been updated so you can control how files are numbered. File size can be smaller because the color table can be reduced when using fewer colors. There are enhancements for level output.

The default PDF Version record in the delivered pdf.plt printer driver configuration file has been changed from Acrobat 6 (PDF 1.5)/Viewable in Acrobat 5 to Acrobat 6 (PDF 1.5).

## Batch Print

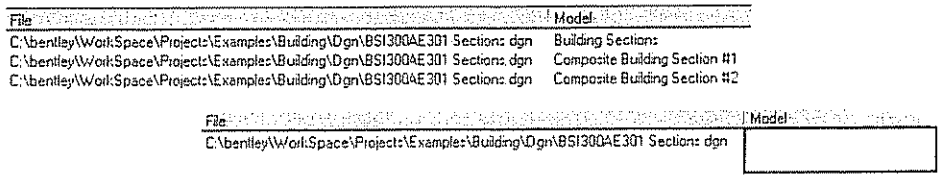
The format of Batch Print specification (.SPC) files is changed for the V8 XM Edition. Specification files written by previous editions of MicroStation remain valid, but once a specification file is written by the V8 XM Edition, it will not be usable with previous editions.

### Batch Print preferences dialog box

Many Batch Print job creation settings that were previously available through configuration variables are stored in the user preference file and can be set in the Batch Print - Preferences dialog box. Select *File* > *Preferences* in the Batch Print dialog box to open it.

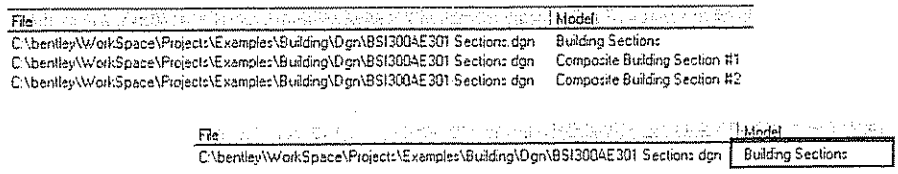
The configuration variables are still honored and any that are defined will override the preferences. Preferences for which an override is in effect are disabled in the Batch Print - Preferences dialog box.

- Enable Add filename only to add one file name per DGN file, rather than multiple entries for each model to the job set. (MS_BATCHPRINT_ADD_ALL_MODELS)




*Add filename only disabled, top, and enabled, bottom - no models listed*

- Enable Add sheet models only to add only the sheet models that are in a DGN to the job set. (MS_BATCHPRINT_ADD_ONLY_SHEET_MODELS)




*The Building Sections model is the only Sheet model in the DGN*

- Enable Add design models only to add only the design models that are in a DGN to the job set (MS_BATCHPRINT_ADD_ONLY_DESIGN_MODELS)

| File | Model |
|---|---|
| C:\bentley\WorkSpace\Projects\Examples\Building\Dgn\BSI300AE301 Sections.dgn | Building Sections |
| C:\bentley\WorkSpace\Projects\Examples\Building\Dgn\BSI300AE301 Sections.dgn | Composite Building Section #1 |
| C:\bentley\WorkSpace\Projects\Examples\Building\Dgn\BSI300AE301 Sections.dgn | Composite Building Section #2 |

| File | Model |
|---|---|
| C:\bentley\WorkSpace\Projects\Examples\Building\Dgn\BSI300AE301-Sections.dgn | Composite Building Section #1 |
| C:\bentley\WorkSpace\Projects\Examples\Building\Dgn\BSI300AE301-Sections.dgn | Composite Building Section #2 |

*Both Composite Building Section models are Design models in the DGN*

Enable Open design files in read-only mode so Batch Print opens design files in read-only mode to prevent any inadvertent modifications to the files (MS_BATCHPRINT_NO_READONLY)

If the variable is undefined, the read-only preference is enabled the first time Batch Print runs.

## Defined paper sizes allowed in system printer specification

You can define PLT and PLTCFG-defined paper sizes in the system printer specification file You can also use the plot file output and post-processing options previously only available with Bentley printer drivers

When using Batch Print with a system printer, it is strongly recommended that you create a version of printer.plt for each system printer you will use and specify the desired Windows printer name in each specification file using the sysprinter /name qualifier. This lets Batch Print present the list of paper sizes that are appropriate for system printer you will use. If you use the generic printer.plt without an embedded Windows printer name, Batch Print obtains the paper size list from the default Windows printer

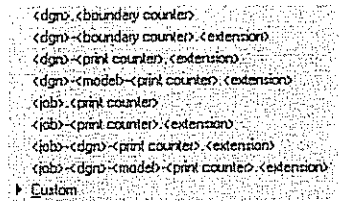
## Additional Batch Print filename formats

The following commonly used batch print filename formats have been added to the list of available formats in the Print Filename Format dialog box that you open from the Output and Post Processing section of the Printer Properties dialog box

<dgn>-<print counter> <extension>

<dgn>-<model>-<print counter> <extension>

<job>-<dgn>-<model>-<print counter> <extension>



# 7 Enhancements To Models

## History Navigation

During a MicroStation session you use various models and those models may reside in multiple DGN files. Use the icons in the View Groups dialog box to move between all the models you have visited, regardless of the file in which the model resides.


The first two icons, Previous Model and Next Model, enable you to navigate backward and forward sequentially through the models you have visited.

Clicking the downward arrow next to the third icon, All Models Visited, produces a list of the entire model history, so you can reactivate any model you have visited during the current session. The file name is listed first, the model name follows.

When you select a model that resides in a different file, that file is opened automatically.

Pressing Shift or Alt as you select a model affects the configuration of the view windows in that model.

- Using no key causes the selected model to open with the views as they were last left in the current session.
- Press the Shift key to open the selected model with the views as they were the last time that *File* > *Save Settings* was selected in that model.
- Press Alt to open the selected model with the views as they are in the current model.

*Notes:*

# Additional Model Properties

When you create a new model there are additional attributes that you can specify.

## Ref Logical name

You can specify a reference logical name for the model. This identifies the model when it is attached to another model as a reference.

## Line Style Scale

Models can have a global line style scale factor that is applied to all line styles within the model.

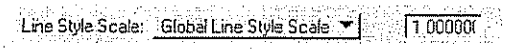
If you change the global line style scale for the model, all line styles will be scaled by that amount. If you choose to apply the annotation scale, that scale will be applied to all line styles. This is useful for styles that must retain a relationship to sheet size.

→ **Exercise: Apply model line style scale**

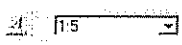
1. Open parcels.dgn, Global Scale model.

2. In the Models dialog box, right click on the Global Scale model and select properties.

   In the Model Properties dialog box you can see that this model's global line style scale is set to 1.




3. Change the annotation scale for the model to 1:5.



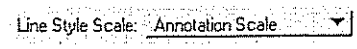

4. Click OK.
5. Click Yes in the Alert dialog box.

   The parcel numbers, which were placed with the annotation scale lock on, scale. However, the custom line styles are not affected.

6. Open the Use Annotation Scale model.

7 Open the Model Properties dialog box for this model.

You can see that this model's global line style scale is set to use the annotation scale.




8 Change the annotation scale for the model to 1:2.5

9 Click OK.

10 Click Yes in the Alert dialog box.

The parcel numbers and the custom line styles scale.

☞ **NOTE:** Settings in the Reference Attachment Settings dialog box let you choose to scale line styles in a reference by the global line style scale of the active or referenced model. You can also choose not to use either.

## Project index links

Enable Create Link so you can manage the model using Project Explorer. When the check box is enabled you can select from folders in available projects. This links the model to a project in Project Explorer.

☞ **NOTE:** There must be an active project in order to create a link.

## Automatic field updates

The Update Field Automatically check box lets you choose to update fields automatically when the DGN file that contains the model is opened. In seed files this is off by default for design models and on by default for sheet models.

How fields are updated is controlled by the MS_AUTO_UPDATE_FIELDS configuration variable.

- If not set or if set to FOLLOWMODELFLAG, the model's Update Fields flag will be followed.
- If set to ALWAYS, the fields will always be kept up to date.
- If set to NEVER, the fields will never be updated.

## Numbering sheet models

Sheet models have a Sheet Number property. This makes it easy to put sheet models in order for presentation or printing. Remember that sheet numbers are shown in Project Explorer.

## Annotation Cells

When creating a model that will be placed as a cell you can make it respect annotation scale. Any text or cells that you place with the annotation scale lock enabled in the tool settings will automatically be scaled by that amount.

For example, if you are creating a 1m = 200m scale drawing, any cell that you place would have to be 200 times larger than normal so that it prints at the correct size. With annotation scale set to 200:1, you don't have to worry about calculating the size of the cell. If you enable the Annotation Scale lock and place a 5mm cell, it will be placed in the sheet model as 1,000mm high, but when printed at 1:200 scale it will be scaled to 5mm high.

### → Exercise: Create the sheet

1. Create a new 2D design file.
2.  In the Models dialog box, click Create a new model
3. Create a new sheet model with the following parameters:

   *Type*: Sheet : 2D

   *Name*: Annotation scale test

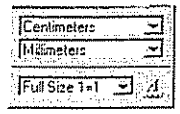
   *Sheet Number*: 1

   *Annotation Scale*: Full Size 1=1

   *Display Sheet Layout*: Enabled

   *Size*: ISO A1
4. Select *Settings* > *Drawing Scale*.
5. Set the master units for this model to centimeters

   
   
6. Select *File* > *Save Settings*.

### → Exercise: Work with annotation scale

1. Continuing in the file, select *Element* > *Cells*.
2. In the Cell Library dialog box, select *File* > *Attach File* and attach \dgn\Sheet5-1.dgn.

   Now you will place a cell without using annotation scale.

   The Place Active Cell tool's Annotation Scale lock tool tip indicates the active model's annotation scale and the status of the annotation scale lock. When you make an annotation cell active this icon is available, indicating that you can choose to apply the model's annotation scale to the cell you are placing.

3 Select the Wall cell in the Cell Library dialog box

The icon in the annotation scale column indicates that this model was created with Can be Placed as an Annotation Cell enabled.

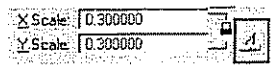
4 Click Placement.

5 Select Place Active Cell with the following tool settings:

*Active Angle*: 0

*X & Y Scale*: 0.30

*Annotation Scale*: Disabled (not depressed)




*True Scale*: Enabled

6 Place the Wall cell on the left side of the sheet

7 Reset.

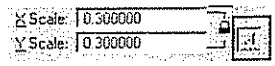
Now place the same cell with annotation scale enabled

8 Place the Wall cell on the right side of the sheet, with the following tool settings:

*Active Angle*: 0

*X & Y Scale*: 0.30

*Annotation Scale*: Enabled




*True Scale*: Enabled

Since annotation scale can also be applied to text, you will label the sheet. Label the first cell using text without annotation scale.

☞ **NOTE:** Set the annotation scale lock before entering text in the text editor.

➔ **Exercise: Place text with and without annotation scale**

1 Continuing in the file, select Place Text (A + 1) with the following tool settings:

*Method*: By Origin

*Active Angle*: 0

*Height and Width*: 2.000

*Annotation Scale*: Disabled

2 Enter Shaft Wall in the text editor and place it under the detail on the left side of the sheet.

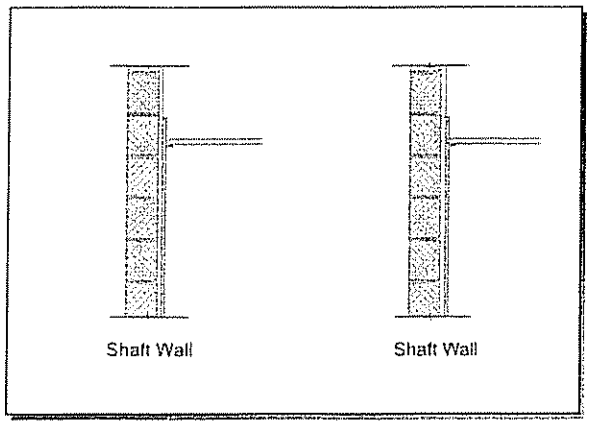
3 Reset

Next, label the other cell using text with annotation scale

4 Change the following Place Text tool setting:

*Annotation Scale*: Enabled

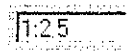
5 Enter Shaft Wall in the text editor and place it under the detail on the right side of the sheet




6 Reset

### → Exercise: Change the model's annotation scale

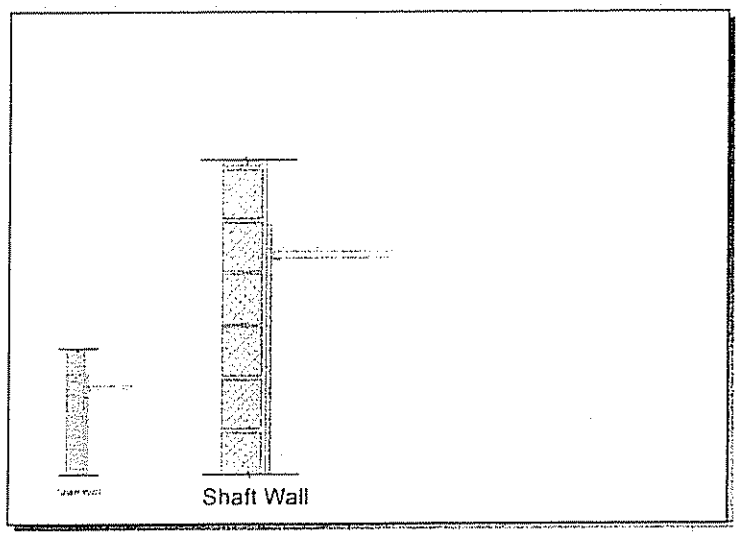
1 Continuing in the design file, in the Drawing Scale dialog box, change the annotation scale to 1:2 5.




2 Click Yes in the Alert dialog box.

3 Fit View.

The cell and text placed with annotation scale will scale along with the model.




If an annotation cell is using annotation scale, text and dimensions that are part of the cell will also use the same scale.

**To make an existing cell an annotation cell:**

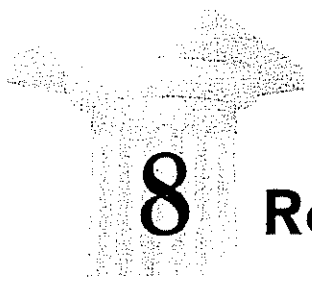
1. Open the library that contains the cell as a DGN file.
2. In the Models dialog box, select the cell model and click the Edit Model Properties icon.
3. In the Model Properties dialog box, enable Can be placed as a cell and Can be placed as an annotation cell.
4. Click OK.

You can toggle the annotation scale lock for previously placed annotation cells using the key-ins ANNOTATIONSCALE ADD and ANNOTATIONSCALE REMOVE. If a selection set is active, the key-ins apply only to selected annotation cells. If there is no selection set, all annotation cells in the model are included. The key-ins are useful if a cell is placed with the Annotation Scale lock toggled to the wrong state.

Use the key-in ANNOTATIONSCALE CHANGE <value> to change the annotation scale of selected or all annotation cells.

## Annotation model identification

There is a column in the Models dialog box to help you identify annotation cells. To enable its display, right click a column heading and enable Is Annotation Cell.



# 8 References

New reference features include the ability to manipulate references using the standard manipulation tools, just as you would elements. Attachment settings include options for selecting Saved Views and Named Fences, Named Groups, Revision for Design History and setting Global Line Style Scale. New reference display settings include transparency and priority. You have the ability to print as 3D when outputting to PDF

## Information About References

Information about references is displayed in the body of the References dialog box in columns that correspond to the available attachment settings. Additional columns are as follows.

- The Status column indicates whether a reference has been modified by another user since the session began. If a design history revision is attached, this column indicates that the attachment is an historic version.

  Use Reload Reference to update reference status

- The transparency column shows the degree of transparency for the reference. Click on the column to set transparency.

- The priority column shows the reference's priority. Click on the column to set priority. Higher priority is displayed on top.

- Treat Attachment as Element for Manipulation makes a reference like a design file element. Regular MicroStation tools can be used to manipulate or modify it. You can also place a fence and then use fence tools. This setting can also be set in the *Settings* > *Attachment Settings* dialog box.
  For attachments prior to the MicroStation V8 XM Edition, enable Boundary Display in the View Attributes dialog box. You then use the reference boundary as the element by which to manipulate a reference.

  ☞ NOTE: Set the Manipulate as Element Reference user preference to apply this setting to all attachments.

- The Named Group column lists the named group used to limit the elements displayed in the reference

- The Revision column lets you choose the revision used for the reference if Design History is initialized for the file
- Plot as 3D (PDF) is used with the PDF printer driver only. When the PDF file is viewed in Acrobat 7, the document will have a 3D view with controls that let you rotate, zoom in and out, and walk through the model, as well as running any animation.

→ **Exercise: Transparency and priority**

1 Open division_plan.dgn, Default model.

2 In the View Attributes dialog box, enable the Transparency check box.

3 Open the References dialog box.

4 Right click on a column heading and enable display of the Priority column.

5 Right click on a column heading and enable display of the Transparency column.

6 Select dp_railroad.dgn.

7 Click in the Priority column for the file.

8 Set the priority to 5.

The railroad file elements display on top of the elements in the other references.

9 Select dp_zips.dgn.

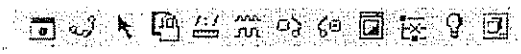
10 Click in the Transparency column.

11 Set the transparency to 40.

The elements in other references can be seen through the filled shapes.

## Reference Attachment Settings

The options that were available in the Attachment Options dialog box are included as toggles in the Reference Attachment Settings dialog box. The toggles are the same as those in the References dialog box.



| Toggle | Description |
|---|---|
| Display | Display or do not display the reference |
| Snap | Controls whether you can snap to reference elements |
| Locate | Controls ability to select reference elements |
| Treat Attachment as Element for Manipulation | Lets you treat a reference like a design file element. You can the use regular tools to modify the reference |

| | |
|---|---|
| True Scale | Indicates whether reference was attached with true scale enabled so that master and reference measurement units are reconciled |
| Scale Line Styles | Indicates whether reference was attached with the ability to apply a global line style scale factor to every line style |
| Clip Back | Indicates if back clipping was applied |
| Clip Front | Indicates if front clipping was applied |
| Display Raster Refs | Indicates whether or not raster references display |
| Ignore Attachment when Live Nesting | Indicates if this attachment will or will not (on) be displayed when the active model is referenced with live nesting |
| Use Lights | Indicates if source lighting cells in the reference will be considered (on) |
| Plot as 3D (PDF) | When the PDF printer driver is used, the reference is plotted as 3D data in Universal 3D (U3D) format |

## Orientation options

You can choose to reference the contents of Saved Views and Named Fences. In those categories, you can select from a standard view to apply to the view attachment instead of the rotation stored with the saved view or named fence.

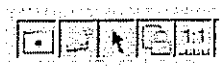
➔ **Exercise: Attach a named fence**

1. Open REFPlan.dgn
2. Open the PRINT SHEET model.
3. In the References dialog box, click Attach Reference
4. Attach REFPlanContours.dgn, with the following attachment settings:

   *Model*: Default

   *Orientation* > *Named Fences*: A2

   *Toggles*: Display, Snap Locate, Treat Attachment as Element for Manipulation, True Scale

   *Scale*: 1:1000

   *Live Nesting*: Enabled
5. Enter a data point to place the reference in the file
6. Right click and press and select Move from the pop-up menu
7. Enter a data point to select the referenced named fence

8 Place the reference in grid A2

When you attach a named fence you can use the Modify tool or Element Selection handles to modify it. You can use the Manipulation tools or options on the Reset pop-up menu to manipulate it.

Remember that when Treat Attachment as Element for Manipulation is enabled you can use regular MicroStation tools to modify any reference attachment.

➔ **Exercise: Attach additional named fences**

1 Continuing in Open REFPlan.dgn, attach REFPlanContours.dgn:

*Orientation* > *Named Fences*: A3

2 Place the reference in grid A3.

3 Attach REFPlanContours.dgn:

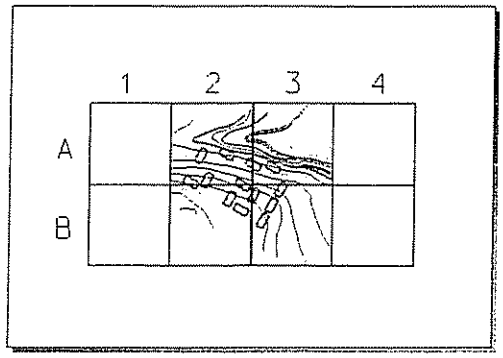
*Orientation* > *Named Fences*: B2

4 Place the reference in grid B2

5 Attach REFPlanContours.dgn:

*Orientation* > *Named Fences*: B3

6 Place the reference in grid B3.




➔ **Exercise: Attach saved views**

1 Open training_grid.dgn. Ground Floor model.

2 In the References dialog box, attach plan.dgn with the following attachment settings:

*Model*: Sheet Border

*Orientation*: Coincident

*Scale*: 1:1

3 Attach plan.dgn with the following attachment settings:

*Model*: Ground Floor All

*Orientation* > *Saved Views*: interior walls

*Scale*: 0.5:1.0

4 Enter a data point to place the reference on the left side of the sheet.

5 Attach plan.dgn with the following attachment settings:

*Model*: Ground Floor All

*Orientation* > *Saved Views*: interior doors

*Scale*: 0.5:1.0

6 Enter a data point to place the reference on the right side of the sheet.

**Saved view clip boundaries**

If you attach a reference that has a saved view that includes a clip boundary, the Clip Boundary Element options control whether the clip boundary element is copied into the master file or if it is associated to the clip boundary element in the reference's saved view.

**Nested reference levels in saved views**

Note that saved views now store the state of levels, whether on of off, for nested references as well as for direct attachments

## Named groups

Use the Named Group option to identify a named group to use to limit the elements displayed in the reference. You can select a named group during attachment or change the setting after a reference is attached in the *Settings* > *Attachment* dialog box.

→ **Exercise: Determine display using a named group**

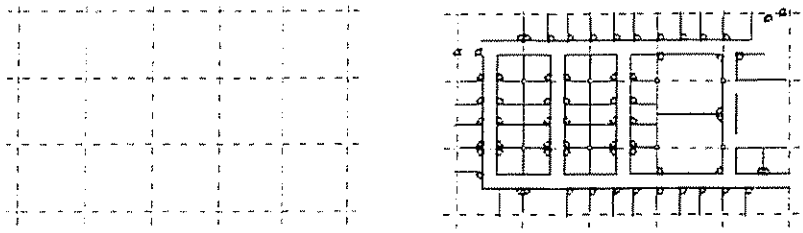
1 Continuing in training_grid.dgn, in the References dialog box, right click on a column heading and add the Named Group column.

2 In the References dialog box, select plan.dgn, Logical name interior walls.

3 Right click and select Settings from the pop-up menu.

4 From the Named Group option list in the Attachment Settings dialog box, select grid.

5 Click OK



Display for the referenced saved view is limited to the elements in the named group. The group name is indicated in the Named Group column.

To reset display that was filtered by a named group, select the empty entry in the Named Group option list.

## Design History revisions

The Revision option list lets you choose the revision to reference if Design History is initialized for the reference.

## Overrides

The overrides options for nested references let you control display, locate, snap, raster reference display, and level display for sets of nested references.

- Allow will create level and display overrides as required. This is the default behavior in version 8.5.2 and earlier. All references that were attached before MicroStation V8 XM Edition will have this setting.
- Always saves the level and view display state for every nested attachment. This gives maximum controllability because it locks the settings for all nested attachments and they change only if the user specifically changes them.
- Never will not ever create overrides for any nested references. The nested references are shown the same as when the reference is opened as the master file.

☞ **NOTE:** This can also be set in the MS_REF_DEFAULTSETTINGS configuration variable using nestOverride=allow, nestOverride=always and nestOverride=never.

## New Level Display

This setting determines whether a reference displays newly created levels. It also applies to new levels in nested references.

Select from Always, Never and Use MS_REF_NEWLEVELDISPLAY Configuration Variable. Use Always so new levels are always displayed or Never so they are never displayed

The Use MS_REF_NEWLEVELDISPLAY option displays new levels according to the MS_REF_NEWLEVELDISPLAY configuration variable. Set to 1, MicroStation will display new levels. By default, new levels are not displayed

If the configuration variable is set, it takes precedence over the user preference

☞ **NOTE:** Controlling level display is only possible when both master and reference are in the V8 format.

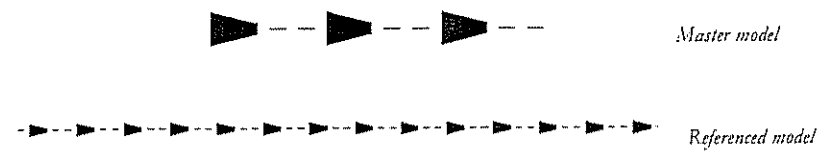
These options can also be set in the Preferences dialog box, Reference category,

## Global LineStyle scale

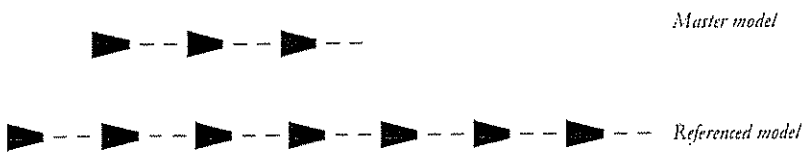
Each model can have a global line style scale that is applied to all the line styles in the model. You can apply the line style scale of the master model, the referenced model, both, or neither to line styles in a reference.

In the following examples the master model's line style scale is 2.5. The referenced model's line style scale is 10.

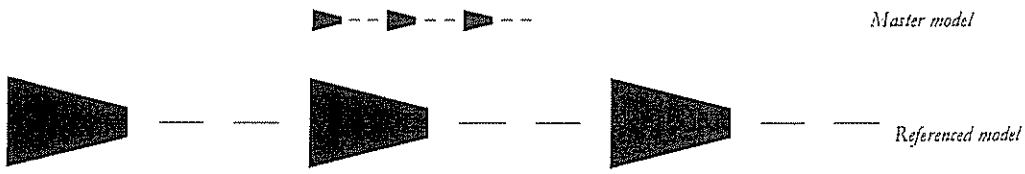
- If you select None, the referenced line style is not scaled



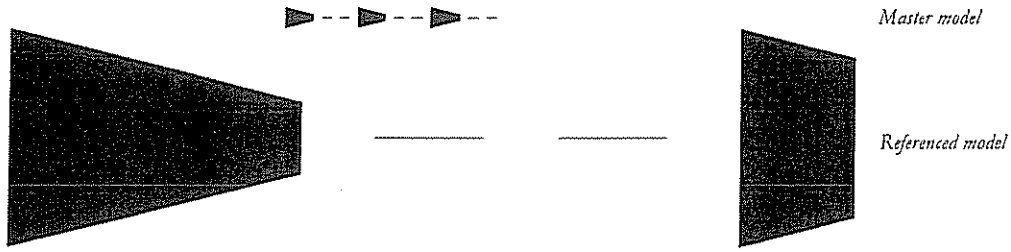

- If you select Master, the active model's global line style scale is used to scale the line style



- If you select Reference, the referenced model's global line style scale is used.




- If you select Master * Reference, the active model's global line style scale is multiplied by the referenced model's global line style scale to scale the line style. This will factor out an absolute ratio.




## Reference Boundary

The Move Reference tool has a Move Boundary with Reference option. If a reference has clip boundaries or masks, this setting lets you define whether the reference boundaries or masks move with the reference, or if they remain static while the reference moves over them.

## Reference Key-ins

Many reference attachment settings, such as display, snap, and locate can be modified with the new REFERENCE SET key-ins. This can simplify the task of modifying the settings on a group of references and gives you the option of using a batch process.

For most of the references operations, there is a key-in alternative that you can use when required. You can use the key-ins to do the following.

- Attach and detach references
- Modify reference attributes

- Merge references

See the Help topic Managing References and Raster Images > Working with Attached References > References key-ins > Reference settings key-ins for a complete list.

# Reference Exchange

Commands for attaching and detaching references, as well as manipulation commands, are available on the pop-up menu that appears when you right click on a reference in the References dialog box.

You can also launch a new MicroStation session or open another file using this menu.

➔ **Exercise: Redirect to a reference**

1. Continuing in training_grid.dgn, right click on a reference in the References dialog box.
2. Select Exchange from the pop-up menu.

   The reference becomes the active file.

When you Exchange to an attached model, the elements from the reference are displayed in the same position within the views as you saw before you initiated the exchange.

You can also select Exchange from the Reset pop-up menu when you right click and press with the pointer over reference graphics in the file. If you select Edit Reference from the menu, the file will open in another instance of MicroStation so it can be edited.

# Reference Preferences

Options in the Preferences dialog box's Reference category let you customize

## Attachment preferences

Default reference parameters can be specified either by setting the configuration variable MS_REF_DEFAULTSETTINGS or by setting them in the Reference section of the Preferences dialog box. The configuration variable takes precedence. If a particular attachment setting is specified in the configuration variable, the corresponding user preference is disabled.

The settings that can be controlled by MS_REF_DEFAULTSETTINGS are set by "settingname=value" pairs, delimited by commas

| Settingname | Value |
|---|---|
| display= | 1\|0 |
| snap= | 1\|0 |
| locate= | 1\|0 |
| treatAsElement= | 1\|0 |
| trueScale= | 1\|0 |
| scaleLineStyles= | 1\|0 |
| displayRasterRefs= | 1\|0 |
| ignoreWhenNesting | 1\|0 |
| useLights= | 1\|0 |
| plotAs3D | 1\|0 |
| saveRelativePath= | 1\|0 |
| nestDepth | nnn |
| nestMode | copy\|live\|none |
| attachMethod= | coincident\|world |
| displayBoundary= | 1\|0 |
| newLevelDisplay= | fromconfig\|always\|never |
| nestOverride= | allow\|always\|never |

By default, all elements in a reference highlight when the reference is manipulated. If MS_REF_DONTHILITEFORMANIP is set to any value, this highlighting is disabled. This can speed up reference manipulations.

If MS_REF_DEFAULTATTACHDIRECTORY is set, the reference attachment file dialog box defaults to this directory rather than the directory of the last attached reference

## Other preference options

- Remap Colors on Copy uses colors with the closest color match from the master file's color table when copying elements
- If you enable Allow Editing of Self References you can modify self-attached reference elements and the changes will be incrementally displayed.
- Copy Levels During Copy determines how levels are handled when copying from references.

  If Not Found means that levels will be copied from the reference only if they are not found, or if a level with the same name is not found

  If Overrides Exist means that levels will be copied from the reference if the level does not exist, or if the settings for the level are different than those of the attachment.

  Select Always so levels can be copied even if an identical level exists within the active model.

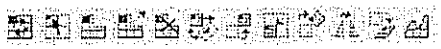
# 9 Raster Files

The Raster Manager dialog box has been updated and raster file handling has been significantly enhanced

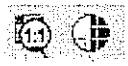
## Raster Manager Dialog Box

The Raster Manager dialog box has a menu frame in which the active DGN file and its attached references are listed in a hierarchy tree. The properties frame provides information about the selected attachment. The configuration of these frames is controlled through items on the View menu.

Icons are available for manipulation.



Use the Actual Resolution icon to quickly display images at 1:1 resolution pixel for pixel on the screen. Use the Contrast/Brightness icon to adjust these properties on the fly.



### Additional file information

- In 2D, the Plane column shows the plane on which a raster is displayed. Double click in the column to change this setting in the Plane dialog box. The options are background, foreground or the design plane. Using these settings you can layer raster and vector data.

  Users can use the Plane options on the View menu to limit the raster attachments listed in the dialog box to those found on the background, design or foreground plane.

- The Display Priority column, also visible only in 2D, shows the display priority value for raster attachments. Double click in the column to change this setting.

Right click on column headings to add more columns.

- Add the Level column to see the level to which a raster is assigned. Click in the column to change the level.

☞ NOTE: You can snap to Rasters using AccuSnap.

### Additions to the Settings menu

#### Cache Manager

Use this utility to manage raster image cache files generated on your hard drive. To open it, select *Settings* > *Cache Manager* in the Raster Manager dialog box

You can choose when and how to delete cached image files and you can specify the amount of disk space they use. You can also specify a cache files location. Set the settings and click Run Now to run interactively.

#### Binary enhancement

If a view is zoomed out far enough that it causes loss of detail in the display of binary raster attachments, enable *Settings* > *Enhance Binary* to enhance their display, similar to a bold foreground.

## Raster Manager Preferences

There are user preferences that affect the display of raster images. Since they are stored in the user preference file, they do not need to be modified every time an image is attached

- Enabling Ignore Locate Interiors means that a raster attachment can only be selected by its border. If it is disabled, the attachment can be located with a data point in the interior.
- You can set a default display plane for reference attachments.
- Set Default Raster Attributes if raster files must always be placed on a certain level, or using a certain style or weight for a border.

### Attachment level

A raster attachment is automatically assigned to the active level if no default level is specified in the user preferences. Raster attachments are treated as standard elements with regard to level operations such as display, freeze, lock, plot and viewport freeze

# Additional Attachment Settings

## Monochrome options

You can select the foreground color and transparent background of a monochrome raster in the Attach Raster Reference dialog box. The raster preview reflects the foreground color selected.

## Additional supported formats

- Raster Manager supports many raster formats, including Erdas IMG, DOQ, WMS, CLR, LRD, MPF, RST, DIM, FIL, GIF and others.
- You can attach or create JPG 2000 files using Raster Manager.
- You can create ECW files using Raster Manager.

## Attaching PDF files

PDF attachments are view only.

➔ **Exercise: Create and attach a PDF**

1. In contours.dgn, open Model-1.
2. Select *File* > *Print* to open the Print dialog box.
3. In the Printer and Paper Size section, select Bentley Driver.
4. Select pdf.plt and click Open.

5. Click Print.
6. Save the print as contours.pdf, to a location that you will remember.
7. Close the Print dialog box.
8. In areaplan.dgn, open the Default model.
9. Select *File* > *Raster Manager*.

10. In the Raster Manager dialog box, click Attach.
11. Attach contours.pdf with the following attachment setting:

    *Place Interactively*: Disabled

12. Click Open.

    The PDF is attached, in the Background plane.

Raster Manager supports the Adobe PDF multi-page format. If a PDF has multiple pages, there is an option list in the Attach dialog box that lets you select the page to attach.

## Element Info Menu

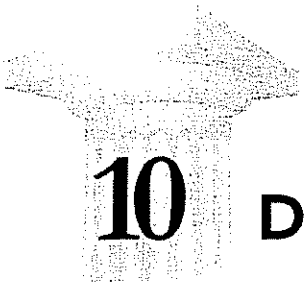
The Attachment Settings from previous versions can be found in the Element Info dialog box that opens when you double click on a raster attachment in the Raster Manager.

## Configuration

There is a new category, Raster, in the Configuration dialog box. This category of variables is available to control Raster files.

## Remote raster references

To attach a remote raster reference, key-in DIALOG REFERENCE ATTACHURL to open the Select Remote Raster Image to Attach dialog box. In the URL field, enter the path to the remote reference.



# 10 Design History

A new icon in the status bar indicates if a file has design history. If design history is not initialized, the icon is dimmed. It becomes active when design history is initialized. If design history is initialized and there are uncommitted changes, a crayon is superimposed on the icon's scroll.

Right clicking on the icon opens a design history shortcuts menu.

## Configuration

MS_DESIGN_HISTORY supports the new design history functionality.

- Tag, enabled by default, lets you use tags to name revisions
- Changedesc, disabled by default, lets you change the author and description of a previously recorded revision.
- Combine, disabled by default, lets you delete a range of revisions and replace them with a single net revision.
- Retire, disabled by default, lets you delete all revisions from the start of history to a selected revision
- Autoupgrade determines whether you are prompted to confirm when upgrading previous design history data to the MicroStation V8 XM Edition design history format. By default, users will be prompted.

☞ **TIP**: Set and lock MS_DESIGN_HISTORY at the site, project, or system level to prevent users from changing the settings.

# Set Revision Number Format

Revision numbers are listed as <major revision number> <minor revision number> by default. MS_DESIGN_HISTORY_REVISION_NUMBER_FORMAT lets you change the format of the revision numbers

The key-in HISTORY MANAGE SET REVISIONFORMAT <format> also sets or removes custom revision number formatting on a file by file basis

```
2F 1 1
2F 1 2
2F 1 3
2F 1 4
2F 1 5
```

*HISTORY MANAGE SET REVISIONFORMAT 2F*

If you do not specify a value for <format>, custom formatting is removed from the current file

⚠ **NOTE:** A custom revision number format will override the format set in the MS_DESIGN_HISTORY_REVISION_NUMBERFORMAT variable.

If the custom revision number format is removed from a file, formatting is controlled by the configuration variable if it is set. If no custom formatting is specified in the file or the configuration variable, then the default #.# formatting is used.

## View the formatting

The key-in HISTORY MANAGE SHOW REVISIONFORMAT shows the revision number formatting that will be used for design history. It shows one of the following.

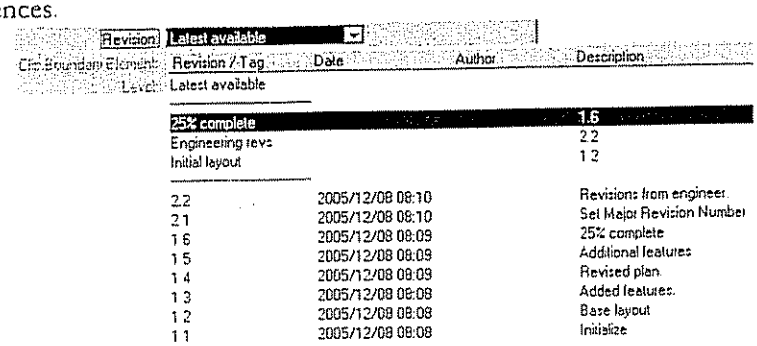
- A custom format defined for the file.
- The custom format defined in MS_DESIGN_HISTORY_REVISION_NUMBERFORMAT.
- A message indicating that no custom formatting applies to revision numbers and the default #.# formatting will be used.

# Revision Properties

You can change the author and description of a previously recorded revision using the Revision Properties dialog box. By default, this is disabled by MS_DESIGN_HISTORY. To enable changes, set changedesc and changeauthor to 1. Then make the changes in the Revision Properties dialog box and click OK.

# Tagging Revisions

You have the option to name revisions using tags. The tags identify a particular revision using a descriptive name rather than a random revision number. For example, revision 1.8 may have been committed when a project was 25% complete. Creating a tag for that revision that is named "25% complete" identifies it more clearly. Design History tags can then be attached as references.




*Attaching a tagged revision as a reference*

Create the tags in the Design History Tags dialog box. Select *Utilities* > *Design History* > *Tags* to open it. Once a tag is created, click in the Value column to associate the tag to a specific revision. The Tags column in the Design History dialog box shows tags that refer to each revision.

# Reviewing Element Change History

You can review the change history for an element by selecting the element in the Element Changes dialog box and clicking the Show History icon.

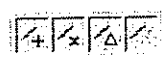
Like the Isolate icon in the Design History dialog box, the Show History icon changes the operating mode of the Design History dialog box to show an individual element's history. After you are done using Show History, click Isolate history by fence or selection to restore the Design History dialog box to its normal mode.

➔ **Exercise: Isolate the history of a single element**

1. Open MidstateV_work.dgn, taking ownership
2. Select *Tools* > *Design History* to open the Design History tool box

3. Select Show design history

4. Make sure that Use color-coding to show changes is enabled in the Design History dialog box. Enable all the Show elements icons.



5 Select each of the revisions listed.

Observe the colorization of elements in the design, showing how the elements were manipulated during the session

6 Select revision 1.3.

The elements that made up the parking area are shown in red.

7 Double click on revision 1.3 or highlight it and select the Show elements changed in selected revisions tool

The Element Changes dialog box appears, listing each of the elements that were affected in the revision, along with details about the changes.

As you select each individual entry, that element will be the only element shown in the design with color coding

8 Select the Line String entry.

9 In the Element Changes dialog box, click the Show history tool

The revisions that affect the line string are active in the Design History dialog box. All other revisions are dimmed.

10 Select revision 1.2.

11 Click Show elements changed in selected revision.

Information about how the element was changed in the specific revision is shown in the Element Changes dialog box

☞ **NOTE**: The appropriate color-coding must be enabled to see the activity.

You can review the revisions that affected a particular element using these tools, since only the revisions that affect the element are available. This is useful for reviewing the changes to an element leading up to its deletion.

12 Click Isolate history by fence or selection in the Design History dialog box

Information for the entire revision is listed in the Element Changes dialog box and all the elements involved in the revision are shown color coded

☞ **NOTE**: You can check an element's attributes using the Element Information tool that is available in the Element changes dialog box

13 Close the Element Changes dialog box

### → Exercise: Isolate history using a selection set

1 Continuing in MidstateV_work.dgn, use Element Selection to select one of the lines that make up the road behind Bldg. 3 and also one of the plants behind Bldg. 3.

2 Click Isolate history by fence or selection.

3 Enter a data point in the view to accept.

The Design History dialog box title bar indicates that you are isolating a selection set. Only the revisions that affected the elements are available. Color coding will only be displayed in the design for the selected elements

4 Turn off the filter by clicking Isolate history by fence or selection again.

The complete list of revisions is active.

5 Clear the selection set.

6 Select revision 1.2.

### Printing revision markup

If you print while there are revisions selected in the Design History dialog box, the highlighting and color coding associated with those revisions will be printed.

→ **Exercise: Preview printed color coding**

1 Continuing in MidstateV_work.dgn, Fit View.

2 Select *File* > *Print*.

The preview in the Print dialog box shows the color coding. Design history can only be printed only from the Print dialog box.

3 In the Print dialog box, with Bentley Driver selected, select pdf.plt and click Open.

4 Click Print and save the file to a location that is easy to find.

5 Navigate to the PDF and open it.

The color coding is seen in the PDF.

6 Exit Acrobat.

7 Close the Print dialog box.

## Audit Trail

The audit trail is a record of design history management actions, such as initialize, combine and retire. Each entry in the audit trail contains the type of action, a timestamp and the user's name.

→ **Exercise: Set the configuration variable**

1 Open city_layout.dgn, taking ownership.

2 Open the Configuration dialog box.

3 Select the Design History category

4 Select the Design History capabilities variable (MS_DESIGN_HISTORY)

5 Edit the value so that you can combine revisions

combine=1

6 Exit the dialog boxes, accepting the changes

7 Select *File* > *Exit* to exit MicroStation

→ **Exercise: Create an audit trail**

1 Launch MicroStation and open city_layout.dgn.

2 Select *Utilities* > *Design History* > *Combine*

☞ **NOTE**: You Initialize design history, Retire revisions (delete all revisions from the start of history to a selected revision), Delete Design History (delete the entire Design History) and set a major revision numbers using options on the Design History menu.

3 In the Choose Revisions dialog box, select revisions 1.2 through 1.4.

4 Click OK.

5 In the Combined Revision Description dialog box, remove the individual descriptions and enter the following description:

Completed city area layout

6 Click OK.

7 Click Yes in the Information dialog box.

Revision 1.4 now includes the changes for all three revisions and uses the new description.

| | | | | |
|---|---|---|---|---|
| 1.1 | city_layout.dgn | 2006/03/09 13:35 | Bentley Institute | Initialized design history |
| 1.4 | city_layout.dgn | 2006/03/09 13:37 | Bentley Institute | Completed city area layout |
| 2.1 | city_layout.dgn | 2006/03/09 13:38 | Bentley Institute | Set Major Revision Number |
| 2.2 | city_layout.dgn | 2006/03/09 13:38 | Bentley Institute | Defined central district |
| 2.3 | city_layout.dgn | 2006/03/09 13:39 | Bentley Institute | Defined borough boundaries |

8 Select *Utilities* > *Design History* > *Audit Trail*

The initialization and the combine operation are noted in the dialog box.

☞ **NOTE**: An audit trail is automatically deleted when the design history is removed.

If you want to reset the Design History capabilities variable, complete the following exercise

➔ **Exercise: Reset the variable**

1. Continuing in city_layout.dg, open the Configuration dialog box and delete `MS_DESIGN_HISTORY`
2. Exit the dialog boxes, accepting the changes.
3. Select *File* > *Exit*.

# 11 File Protection

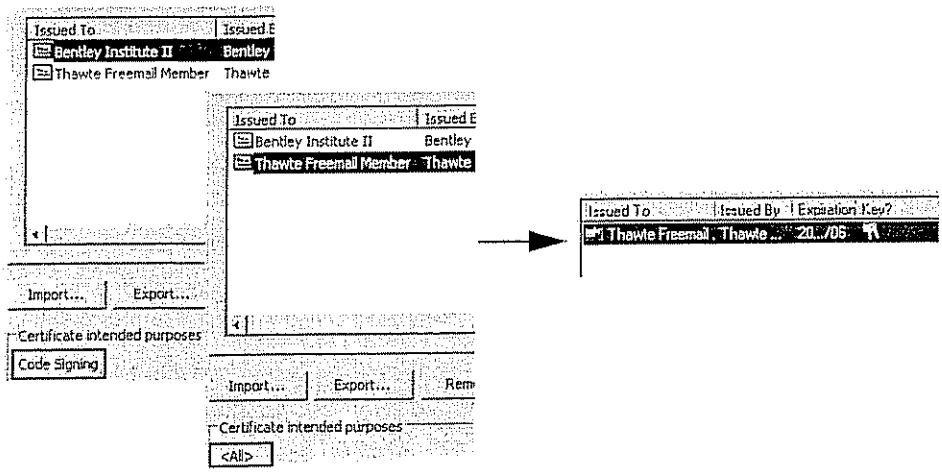
MicroStation saves not only information about a signer, but also information about who issued the signer's certificate. By saving the entire chain of certificates leading from the signer back to the trusted root, enough information is available for any system to verify a signature regardless of the intermediate certificate authorities it recognizes.

## Enhanced Security

File protection enhancements improve security and flexibility.

### Screening certificates

Certificates are screened to ensure that they meet their intended purpose. Only valid certificates are presented for you to select.




*Two certificates are present on the system but each has a different intended purpose. Only one certificate is offered when the Author is protecting a file.*

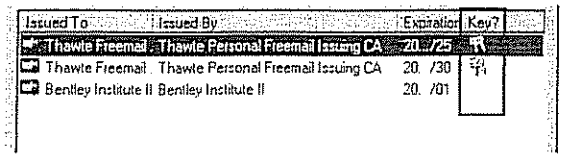
Previously, when you were prompted to select a certificate to protect a file or add a digital signature, all certificates where presented. This enhancement applies to digital signature creation and file protection

### Key information

Typically, an individual protecting a file uses a certificate for which they have the private key They then supply the corresponding public key to the recipients

When you obtain a digital certificate from a certificate authority, your system creates two keys; one public, which can be published and is posted to the certificate authority's repository, and one private which is stored on your system. The certificate authority does not have access to the private key. It is generated locally on your system and is never transmitted to them

There is a Key? column in the File Protection and Digital Rights dialog boxes. When you are prompted to select a certificate, this column indicates whether or not the certificate includes the private key.




### Restricted applications

MicroStation loads only digital rights-compliant applications in a file that has limited rights A compliant application checks for digital rights and does not perform any unauthorized functions, such as printing, exporting, or modifying if those are restricted.

Bentley has certified the applications that are delivered with MicroStation, but Bentley cannot certify applications developed by others Many applications will be compliant because they do not perform restricted functions Other applications have to be changed to become compliant. So, rather than trying to prevent illegal operations, MicroStation does not load a non-compliant application when less than unlimited rights are granted.

In the Digital Rights dialog box, the Restricted Apps setting from previous editions will now only be enabled if the Export right is denied. When the Export right is denied, only rights-compliant applications can be used

## Configuration

MicroStation V8 XM Edition uses a stronger key-generation algorithm than the one used in MicroStation V8 2004 Edition. Although both algorithms are industry standard, a version of

MicroStation V8 2004 Edition can not open a file that was protected by MicroStation V8 XM Edition using the stronger key-generation algorithm

You can direct MicroStation V8 XM Edition to use the previous algorithm by setting the MS_PROTECTION_V8_COMPATIBILITY configuration variable. The default is 0 which does not limit encryption strength

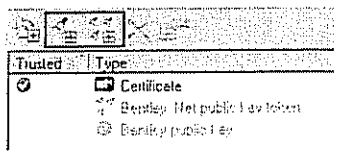
Set Limit encryption strength, in the Protection category, as follows.

- Set it to 1 if you want to protect files and create licenses in a way that V8.1 and V8 2004 Edition can open.
- Set it to 0 if you want to use stronger encryption, producing protected files that V8 1 and V8 2004 Edition cannot open.

## .NET assemblies

The owner of a DGN file can not only identify trusted digital certificates but also trusted .NET assemblies. This lets you use .NET add-ins, VBA, for example, with protected DGN files without undermining digital rights checking.

Use the tools in the *File* > *Protection* > *Applications* Trusted Applications dialog box to add trusted signing certificates and .NET assemblies.



# 12 Database Interface

You can interface with an external database using Oracle, OLE DB and ODBC connections and also through the Bentley Universal Database Connection (BUDBC)

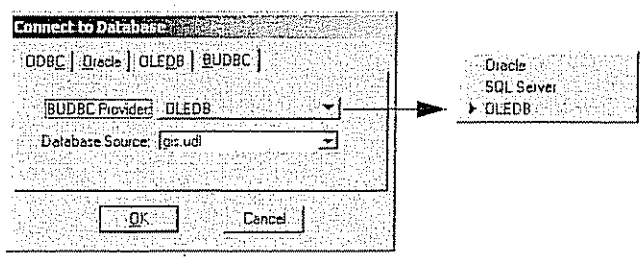
## Bentley Universal Database Connection

BUDBC provides the functionality MicroStation needs to query and manipulate data in a database. BUDBC is also an interface. It is used with ProjectWise Managed Tables, a database connection to the ProjectWise server. Through this connection you can access and store MicroStation database attributes in the ProjectWise database.

The MS_LINKTYPE value for BUDBC linkages is BUDBC. The database linkage ID is BUDBC_ID 0x5834 22580.

### Connection types

There are three types of BUDBC connections




- OLEDB, which will take a connection string from a .UDL file.
- SQL Server, which requires the following connection string:

  Password=pwuser;Persist Security Info=True;

  UserID=pwuser
- Oracle, which requires the following connection string:

  Password=mantabs;Persist Security Info=True;

  UserID=mantabs;Data Source=pwora9i

## Connecting

The DLL is written in C# so you must register the DLL with the system using the .Net application regasm.exe. This application can usually be found at:

C:\WINDOWS\Microsoft.NET\Framework\v1.1.4322

To use regasm.exe, use the following key-in from the command prompt in the <MicroStation folder>\mdlsys\asneeded folder:

C:\<MicroStation folder>\mdlsys\asneeded\>
C:\WINDOWS\Microsoft.NET\Framework\v1.1.4322\regasm.exe BUDBCConnection.dll

This command will register the C# DLL and allow MicroStation and MicroStation VBA to access the objects and methods in the DLL. To un-register the DLL use can use the /u option with regasm.exe.

### GIS.UDL OLEDB data source

To use the GIS.UDL OLEDB data source you must first connect to it using the OLEDB connection. The reason for this is that the OLEDB connection updates the path in the UDL file to accurately reflect the location of the GIS.MDB file on the system. Once the connection is established using the OLEDB connection, the BUDBC connection can use the same UDL file to connect to the delivered GIS database.

### Oracle

The BUDBC connection for Oracle is based on the Oracle Data Provider for Oracle 10g. To use this connection you must install the Oracle 10g Data Provider as part of the Oracle Client. For additional information on the Oracle Data Provider, visit the Oracle web site.

## Configuration variables

MS_DBBUDBCDATEFORMAT

Format of date fields returned from the database. For example %B %d, %Y will return dates in the format of (September 14, 2006). Note that the comma "," was added and displayed as part of the format. Spaces also matter.

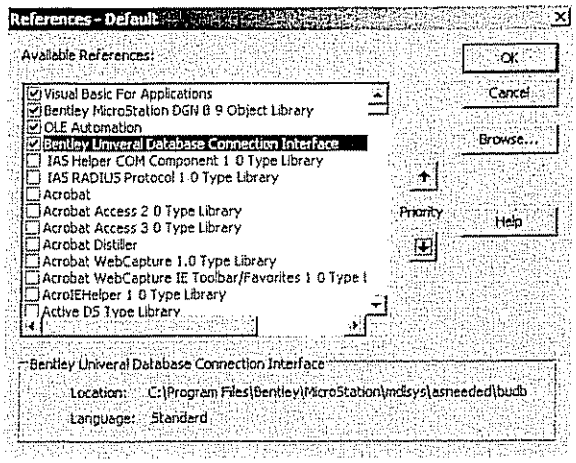
MS_BUDBCMAXDATA

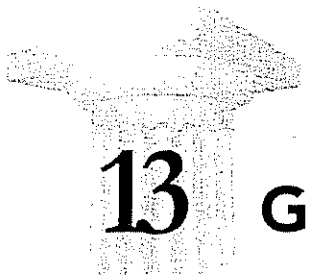
Limits the amount of data returned from database columns which have virtually unlimited space. These columns would be MEMO columns in Microsoft Access and LONG columns in Oracle. The default value of this variable is 1024

## Sharing the database connection

BUDBC provides the ability to share the same database connection between MicroStation, MDL and VBA. The BUDBCConnection dll has the type library embedded in it

You need to reference the Bentley Universal Database Connection Interface in the Visual Basic Editor to use any of its methods. In the Visual Basic Editor, select *Tools* > *References* > *Bentley Universal Database Connection Interface*.





# 13 Google Earth Tools

The Google Earth environment provides you with an interface to planet Earth.

## What it is

You can view and navigate 2D and 3D models of projects in the context of the Google Earth environment. Through this connection, MicroStation users can publish DGN and DWG models which can be viewed and navigated in the context of the geographic imagery with associated content.

MicroStation files placed in the Google Earth environment can contain links to more detailed data that can be reviewed locally, turning the Google Earth environment into a graphical delivery system for project information. This information can be provided in a variety of formats, including Excel spreadsheets, Word and PDF documents, additional DGN and DWG files, and URLs. All types of project information can be shared through the Google Earth interface.

## How it works

You export geometric data so that it can be viewed in the context of satellite data, aerial photography, maps and other geographical data. You then get an aerial view of geometry and geography. However, the Google Earth environment is not intended to be a detailed CAD viewer.

While the Google Earth environment is designed and optimized for spatially large designs, it is not intended for visualizing geometric detail. Including excessive detail will quickly exceed the current capacity. It is important to select and export only the geometry that is valuable.

MicroStation provides data to the Google Earth application as KML documents, an XML based data structure for creating and sharing geographic data. MicroStation geometry exported to KML retains the reference and level structure that is defined for a model. This lets you selectively control the display of individual levels or references. Saved views are also saved to KML so that they can be used to navigate to views of interest.

# Defining Geographic Location

In order to accurately define the geographic location of a model when exporting, you must provide the model's location and its orientation. There are three methods you can use to do this

- Use the MicroStation GeoExtension applications and their associated projection capabilities to handle geographic projections.
- Use a single placemark monument to define the location of a known point in the model and then use the DEFINE NORTH key-in to indicate the orientation.

  In order to use this method, the geometry must be drawn accurately and the working units must be set correctly so that the size of the geometry is known.
- Place two or more placemark monuments to provide the complete projection transform (location, orientation, and scale).

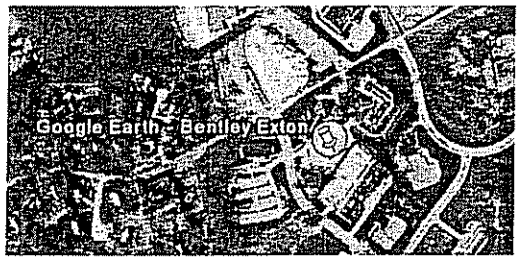
  This method is useful when accurate scale and orientation information is not known and an approximate projection is sufficient.

## Defining a placemark monument

These are used to associate a geographical location from a Google Earth environment placemark file to a monument point in a model. First you must create a placemark file in the Google Earth application and save it as a KML file.

**To create a KML file:**

1. Launch the Google Earth application.
2. Create a placemark.




3. Right click on the placemark and select Save As from the pop-up menu.
4. Save the file as Type .kml.
5. Click Save.

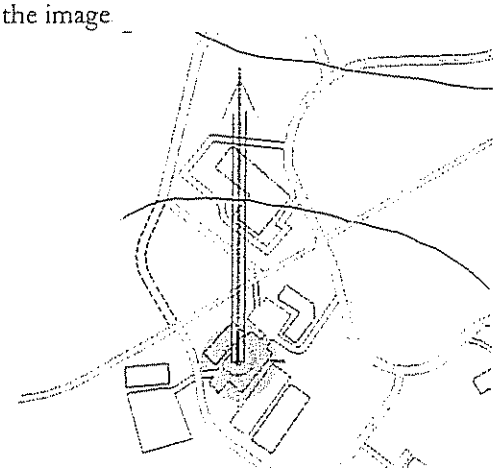
Placemark monuments are cells named KmlPlacemark with enter-data fields that show the name, longitude, latitude and altitude of the monument. The placemark cell is located in the cell library KmlPlacemark.cel in the \System\cell folder. It is placed automatically when you use the Define Google Earth Placemark Monument tool.

The origin of the cell represents the location of the placemark in the model. The design file location can be modified by moving the cells. The longitude, latitude, and altitude values can be modified by editing the appropriate text elements. Placemark cell geometry is placed on the level KML Placemark. You can turn this level off to avoid displaying or exporting the monument geometry. Scale is set by the active design file scale.

→ **Exercise: Define a placemark monument**

1. Launch MicroStation and open placemark.dgn.
2. Select *Tools* > *Google Earth*.
3. Select Define Placemark Monument.
4. Snap to the center of the yellow circle to identify the point at which you want to locate the monument and enter a data point to accept.
5. In the Select Monument Placemark File dialog box, navigate to the class data set \data\placemark folder.
6. Select Google Earth - Bentley Exton.kml.
7. Click Open.
8. Open the Key-in browser and enter:

   DEFINE NORTH BYPOINTS
9. Press Enter or click Run Key-in.
10. Enter a data point at the placemark location and a second in the direction of the arrow in the image.



This defines North.

The origin of the cell represents the location of the placemark in the model. The design file location can be modified by moving the cells. The longitude, latitude and altitude values can be modified by editing the appropriate text elements. Placemark cell geometry is placed on the level KML Placemark. You can turn this level off to avoid displaying or exporting the monument geometry. Scale is set by the active design file scale.

☞ **NOTE:** If you are working with MicroStation GeoExtension you do not need to define a monument point in a model.

### Removing placemark monuments

To remove all placemark monument cells in a model, you can use the key-in GOOGLEEARTH PLACEMARK DELETE

## Exporting files

Once you have created a placemark file and defined a placemark monument in a model, you can export the design geometry. When exporting, you have the choice of file types.

The KMZ file type is a compressed version of KML. Both file types are recognized and extracted automatically. Typically, KML documents are large, so the compressed form is preferable.

Collada files include support for textures, and can be used in other applications that support them. You can export geometry to Collada (version 1.4) files, by selecting *File* > *Export* > *Collada*

### Configuration

You can control the default directory for the output KML files by setting the configuration variable MS_KMLOUT. If this variable is not set, the output directory defaults to the current DGN file location.

### Settings

When geometry is exported, the view attributes and level settings are taken from the active view. It is important to set up the view exactly as you want it to display in the Google Earth application. Output should be minimized to include only necessary data by turning off unnecessary levels and disabling text and dimension view attributes if they are to be excluded.

The Google Earth Export Settings dialog box has settings that control how the geometry is exported. Open it by clicking the Google Earth Settings tool.

General settings let you do the following:

- Google Earth Version Options let you set the version of Google Earth required, 3 or 4. Google Earth version 4 introduced support for textures. Select this version if you want to export geometry with textures intact.

- Stroke Tolerance (Meters) controls the accuracy of the mesh approximating curves or curved surfaces. A smaller value produces a more accurate representation but file size is larger and display is slower
- Transparency Override controls the level of transparency for the geometry. Including a level of transparency allows the geometry to be seen without obscuring the aerial photography below it.
- Convert Custom Line Styles converts custom line styles to KML by dropping them to their individual components. This produces correct display of the line style but can increase file size and degrade performance.
- Convert Raster References To Ground Overlays converts raster references in the X-Y plane to ground overlays. The raster references overlays are placed in a separate Raster References folder. Their display can be controlled as a group by selecting the folder, or individually by selecting the individual references.
- Include Raster References in KMZ File includes raster references if you are creating a compressed KMZ output file.

3D settings:

- Render Mode sets the mode of shading. If a view is rendered and this is set to From View, then the display mode is taken from the active view
- Convert Wireframe Geometry in Rendered Views exports wireframe geometry, such as text, lines, curves, and dimensions along with shaded objects in a rendered view

The Captured Geometry settings let you set the level of detail that is captured as well as the following

- Enable Google Earth View to Determine Rotation so the Google Earth view perspective is maintained on capture.

  Where there is no information about the location of a model, it is assumed that your model's origin coincides with the center of the Google Earth view and that the y-axis is to be aligned with North.

## Export

When you export models, first use the Google Earth Settings dialog box to define how they are exported and displayed. When you export, the Google Earth application opens automatically if is not already open. It navigates to the location of your placemark and model.

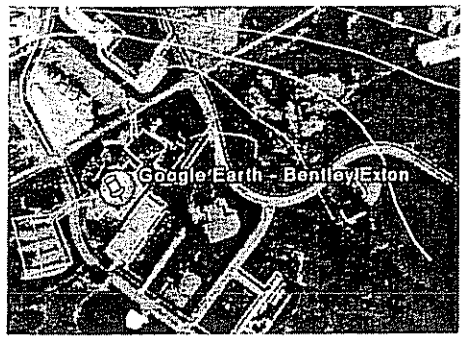
### → Exercise: Export geometry

If you have Internet access and the Google Earth application is installed, you can complete the exercise

1. Click the Export Google Earth (KML) File tool
2. In the Create Google Earth (KML) File dialog box, leave the file type at KMZ

3 Click Save

The export is completed and the Google Earth application opens and navigates to the location. The geometry is displayed against the imagery.




## Capture Google Earth Image

Use this tool in 3D DGN files to capture the terrain and imagery of the current Google Earth view. The captured image will be at screen resolution and in monochrome (a Google Earth restriction).

### Model location

If there is no information about the location of the model, MicroStation assumes that your model's origin coincides with the center of your Google Earth view and that your model's Y-axis is to be aligned with north. If location information is present in the model, then MicroStation uses the transform derived from it.

NOTE: To maintain your Google Earth view perspective, enable the Use Google Earth View to Determine Rotation option in the Google Earth Tools Settings dialog box

### To capture a Google Earth image:

1 Set up a Google Earth view displaying the required area

2 In MicroStation, select the Capture Google Earth Image tool

3 Enter a data point to capture the current Google Earth view.

NOTE: Note that the use of the Google Earth images is restricted by the Google Earth license agreement. Please consult that document (select Help > License) to insure that your use of these images does not violate the restrictions.

### Tips for capturing a view

Helpful settings and options within the Google Earth application are as follows

- For best results, the view should have the camera pointing straight down

*Google Earth application's camera tilt control*

- In order to capture terrain, the Terrain layer must be enabled in the Layer panel
- On the View tab of the Tools > Options, Google Earth Options dialog box, set Detail Area to Large 1024 x 1024 and Graphics Mode to DirectX
- Resize the Google Earth application window to the size of the graphics image desired

# Synchronizing Views

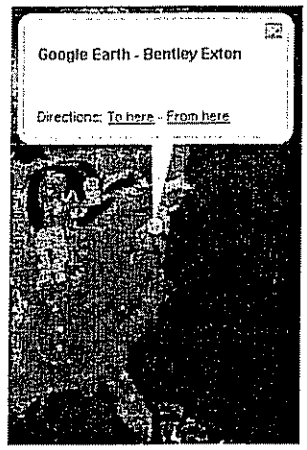
You can move to the same view location and orientation in either MicroStation or the Google Earth application

## Synchronize Google Earth View tool

Use this tool to navigate the Google Earth application to the location and orientation of the active view in MicroStation.

As the Google Earth application supports a camera model with a fixed lens length and restricts the camera to pointing downward only, the views will not always match exactly, but should provide a relatively good approximation for most views.

To synchronize, set up the view as desired and select the Synchronize Google Earth View tool. If the Google Earth Application is not open, it opens automatically.




*Click on the image to zoom right to the area*

## Follow Google Earth View tool

Use this tool to navigate the active view in MicroStation to the location and orientation of the current view in the Google Earth application. This tool will work only if the model's view location is geographically close to the current location in the Google Earth application.

To match the active view to the Google Earth application's view, set the view up as desired and select the Follow Google Earth View tool.

# 14 AutoCAD Interoperability

There are additional enhancements that increase interoperability.

## Default Units for Opening DWG files

A very important change is that the default Decimal, Scientific, or Fractional Units LUNITs setting is "Design Center Units" rather than "Meters". This change to the default setting should reduce unit mismatches when the default settings are used to open DWG files

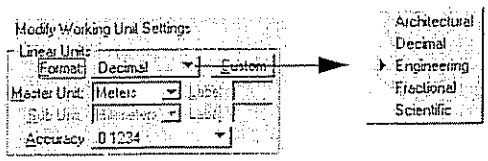
Prior to AutoCAD's Design Center, unless a file had its units set to Architectural or Engineering, which strongly implied Feet/Inches, there was no way of knowing the true size of objects When AutoCAD introduced the Design Center (R2000) an additional setting was added to DWG files to indicate their true unit setting If this value is set correctly, there is no ambiguity in a file's units and it can be referenced or used as a cell using True Scale

When MicroStation creates a DWG file, it always sets the Design Center units correctly. When opening a DWG file created by MicroStation, the units will always be correct. Now, as long as files from other sources have the Design Center units set correctly, they also will open with the correct units

It still is possible to have the Design Center units value set to Unitless or Unspecified When this is the case, an alert dialog box appears to allow you to select the correct units

## DWG Workmode Units

In DWG workmode, the units format in the Working Units category of the DGN File Settings dialog box can be set to Architectural, Decimal, Engineering, Fractional, or Scientific.



These define the linear units to use when opening DWG files with Decimal, Scientific or Fractional Units

# Save As DWG/DXF

The following settings have been added to the General tab in the Save As DWG/DXF Options dialog box. These settings were previously accessible only as configuration variables.

## Basic options

### Units

The Arch /Engineering (Feet/Inches) option lets you save a file with either Architectural or Engineering units based on whether fraction or decimal readout is required. Previously, Architectural or Engineering units would be used only if the file had Master and Sub units set to Feet/Inches and coordinate readout set to Master:Sub units. By selecting this option, the file will be saved with these units, even if the current units do not match the criteria.

## Advanced options

#### Create True Color From DGN Color Indices

MicroStation supports custom color tables, while AutoCAD supports only a fixed table. When a color from a MicroStation table is saved to AutoCAD, it can use either the closest color in the AutoCAD table or a True color.

If this setting is enabled and there is no exact match in the AutoCAD table, a True (RGB) color is used.

#### Force Zero Z-Coordinate

This option should only be used to save a 3D DGN file that represents a 2D drawing, but in which some geometry may contain non-zero values in their z-coordinate. If it is used the resulting DWG entities will have z-coordinates of zero value.

Define the configuration variable `MS_DWG_FORCE_ZERO_ZCOORDINATE` so this setting is enabled by default.

### References options

**Set Viewport Layer From Clip Element**

When this setting is enabled the layer for a viewport will be set to match the layer of the clip element from its reference attachment.

**Set Viewpoint Locked From Locate Off**

Use this option to set the Locked status of a Viewport to the Locate Off setting from its reference attachment.

### Dimensions options

**Always Create an In-line Leader for Notes**

If this option is used, a note without an in-line leader will result in a leader entity with an in-line leader. If it is not, the note will remain as a leader without an in-line leader in DWG, but will cause an AutoCAD Audit error.

Define `MS_DWG_LEADER_HOOKLINE` so this setting is enabled by default

☞ **NOTE:** Save Active Dimension Settings is relocated from the Advanced category to the Dimensions category.

## Dimension Text Placement

Previously, when a dimension was set to have text over the first extension line in AutoCAD, all the dimension text displayed over the first extension line. When opening the file in MicroStation, the dimension text would shift to the second extension line.

When working in MicroStation, make dimension text stay on the first extension line by adjusting two settings on the Advanced tab of the Dimension Styles dialog box.

- In the Text > Format section, set Justification to Left or Right.
- In the Tool Specific > Size Arrow section, set Text to Vertical (if using Size Arrow or the default tool).

# Autodesk i-Drop Indicator

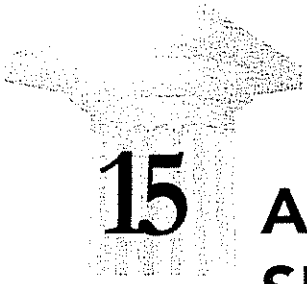
Some Web pages contain DWG content that is i-Drop enabled so you can drag the content from the Web page and drop it into MicroStation. In order to place content from a Web page as a cell, you must download the i-Drop Indicator

## Placing content from a Web page as a cell

Download the i-Drop Indicator from http://usa.autodesk.com/adsk/servlet/index?siteID=123112&id=2753219&linkID=2475161. It is installed as a plug-in to your browser

When you point to content that is i-Drop enabled, the pointer changes to the i-Drop icon When you drop the content into a model it will be placed as a cell The Place Active Cell tool becomes active and you set tool settings

The key-in WEBDROP DIALOG opens the Web-Drop Settings dialog box, which lets you set options that will affect the content



# 15 APPENDIX: SELECT Server V8 XM Edition

V8 XM Edition products no longer require a license file. All licensing information is entered and validated with activation keys. SELECT Server V8 XM Edition manages both V8 XM Edition and pre-V8 XM Edition applications, such as MicroStation V8 2004 Edition or MicroStation/J.

Licensed applications no longer require a constant connection to a system running SELECT Server V8 XM Edition. They do, however, need to connect at least once every 30 days. This is to ensure that users of Bentley applications are not denied use of their application(s). SELECT Server V8 XM Edition communicates directly with Bentley servers to perform such tasks as downloading license entitlements and uploading usage logs. Optimally there is communication every day, but it can be delayed up to a maximum of 30 days.

## About SELECT Server and the SELECT Server Gateway

- V8 XM Edition applications will communicate directly with SELECT Server V8 XM Edition.
- All pre-V8 XM Edition applications will communicate using the SELECT Server V8 XM Edition Gateway. Any pre-V8 XM applications that currently receive their licenses from a SELECT Server will be able to receive licenses from SELECT Server V8 XM Edition through this Gateway.

  This Gateway replaces an existing SELECT Server, so it makes sense to install it on the same server as the old SELECT Server, if the server meets the prerequisites. Once the Gateway has been installed and activated, the old SELECT Server can be uninstalled.

☞ NOTE: The SELECT Server V8 XM Edition and SELECT Server V8 XM Edition Gateway may be installed on the same system, or on separate systems.

### Proxy server environments

SELECT Server V8 XM Edition will work in a proxy server environment in several ways.

- V8 XM applications can communicate to SELECT Server V8 XM Edition by way of a proxy server.

- SELECT Server V8 XM Edition can also communicate with Bentley.com Web services by way of a proxy server.
- SELECT Server V8 XM Edition Gateway can communicate with SELECT Server V8 XM Edition by way of proxy servers.

# Installation and Configuration

To install SELECT Server V8 XM and/or the SELECT Server V8 XM Gateway, check the prerequisites and complete the following steps.

## Prerequisites

The first step is to check the prerequisites needed to install and run SELECT Server V8 XM and/or the SELECT Server V8 XM Gateway.

| | |
|---|---|
| **SELECT Server V8 XM Edition and the Gateway are supported on these operating systems:** | • Microsoft Windows 2000 Server (SP 4 or later) Microsoft Windows 2000 Advanced Server (SP 4 or later),<br>• Microsoft Windows 2003 Server Web Edition<br>• Microsoft Windows 2003 Server Standard Edition<br>• Microsoft Windows 2003 Server Enterprise Edition<br>• Microsoft Windows 2000 Professional (SP 4 or later) |
| **The Gateway is also supported on these operating systems:** | • Microsoft Windows 2000 Professional<br>• Microsoft Windows XP Professional |

Before you can install SELECT Server V8 XM Edition you must have Internet Information Server with ASP.NET support and Microsoft .NET Framework 1.1 installed, along with other requirements.

| | |
|---|---|
| **SELECT Server V8 XM Edition requires:** | • Internet Information Server (with ASP.NET support)<br>• .NET Framework 1.1<br>• MSXML 4.0 SP2 or above<br>• SQL Server 2000, 2005 or MSDE with Service Pack 3 or higher (If SQL not already installed, SELECT Server installation will install MSDE)<br>• Intel Pentium (or equivalent) processor or better<br>• TCP/IP Networking enabled<br>• 256MB RAM Minimum |

| | |
|---|---|
| SELECT Server V8 XM Edition Gateway requires: | • .NET Framework 1.1<br>• MSXML 4.0 SP2 or above<br>• Intel Pentium (or equivalent) processor or better<br>• TCP/IP Networking enabled<br>• 128MB RAM Minimum |

If you need to install prerequisites, install in the following order:

- MSXML 4.0 SP2 or above
- Internet Information Servers (with ASP.NET support)
- .NET Framework 1.1

☞ **NOTE:** When installing IIS on Windows 2003 Server, you are given the option to install ASP.NET. However, this option is not available when installing it on Windows XP or Windows 2000 Server. In order to install ASP.NET on these, you should install IIS before installing Microsoft .NET Framework 1.1. When .NET Framework is installed, it will then detect that IIS was installed and add support for ASP.NET. If you install IIS after .NET Framework, you will not have support for ASP.NET, and the SELECT Server Administration site will not function.

Also, review the pre-installation check list in the on-line Help at *SELECT Server V8 XM Installation and Configuration > Pre-Installation Check List*. Installation of the required products is described further here.

## Obtain a license and an activation key

A serial number and an activation key, which are obtained from Bentley Sales Support, are required.

- Request a new SELECT Server XM Edition license and identify the sites that you want it to manage

  One SELECT Server V8 XM Edition system can host multiple sites. A site can be thought of as a license pool, so one SELECT Server V8 XM Edition system can host multiple pools, each dedicated to a physical location as defined in the SELECT agreement
- Existing SELECT Server license pools (one per site) will be converted to SELECT Server V8 XM Edition license pools.

Also, you will need to find out the address of the Bentley Server you will be validating your information against.

## Installing SELECT Server and the Gateway

☞ **NOTE**: You must have Internet Information Server with ASP.NET support installed. If you do not, you will not be able to install SELECT Server V8 XM Edition. You can, however, install just the Gateway.

⚠ **IMPORTANT**: SELECT Server V8 XM Edition requires a database server. You can either use an existing SQL Server or install MSDE, the Microsoft SQL Database Engine, during the SELECT Server installation. It is delivered free with SELECT Server V8 XM Edition.
If you are using an SQL Server you will need to know the name of the SQL Server and the user name that has administrative rights for this installation.

### The InstallShield Wizard

The Bentley SELECT Server V8 XM Edition InstallShield Wizard guides you through the installation of both SELECT Server V8 XM and the SELECT Server V8 XM Gateway

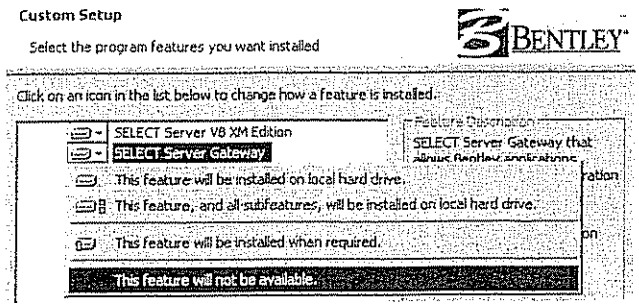
☞ **NOTE**: You will need to install a SELECT Server V8 XM Edition Gateway for each existing SELECT Server that you wish to convert

- On the Setup Type page:

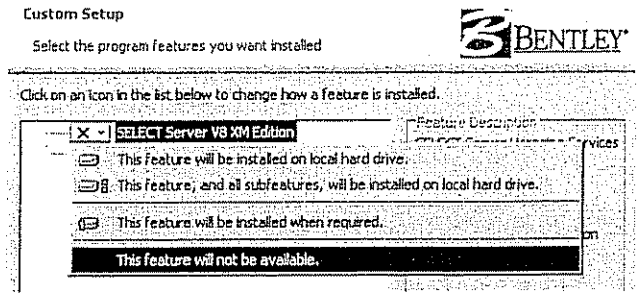
  - Enable the Complete radio button if you want to install the complete package; SELECT Server V8 XM and the Gateway.

  - Enable the Custom radio button to customize the installation, to eliminate the Gateway from the install, or if you want to install only the Gateway

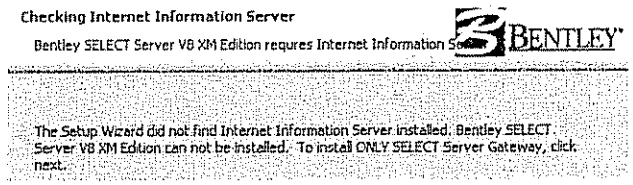
    - - To eliminate the Gateway from the install, expand SELECT Server Gateway on the Custom Setup page and select This feature will not be available.



- - To install only the Gateway, expand SELECT Server V8 XM Edition on the Custom Setup page and select This feature will not be available




☞ **NOTE:** If IIS is not installed but you are only installing the Gateway, just click Next on the Checking Internet Information Server page. To install SELECT Server V8 XM, you would need to quit the install if you see this message and install IIS before continuing.




- If you are installing SELECT Server V8 XM Edition, on the SELECT Server Database page you will choose whether to use an existing SQL server or MSDE.

  - Select Use an existing SQL Server to use an existing SQL Server. Provide the name of the server and the user name that has administrative rights.

  - To use MSDE, select Install MSDE. Configure MSDE with a password for the SQL Admin account, usually SA.

  ☞ **NOTE:** MSDE may require you to reboot the system.

- If you are installing SELECT Server V8 XM Edition, on the SELECT Server Configuration page, enter your SELECT Server V8 XM Edition serial number and activation key. This information is only required if you are doing a complete install or if you selected Bentley SELECT Server XM Edition for a custom install.

- If you are installing the Gateway, on the SELECT Server Gateway Configuration page, enter the machine name or DNS name of the machine on which SELECT Server V8 XM Edition is installed and the site activation key.

  ☞ **NOTE:** If you do not have the SELECT Server V8 XM Edition serial number and activation key, you can continue with the installation but SELECT Server V8 XM Edition will not run until this information has been entered on the Administration Site. Obtain these items from Bentley Sales Support. Information for existing licensing can be obtained from the Bentley Administrative Center (BAC).

- On the Install the Program page, click Install. If you are doing a complete installation or installing Select Server V8 XM Edition, the SELECT Server Database Setup Utility starts after setup completes.

## -Troubleshooting the Gateway:

### Specifying a proxy server for the Gateway

The SELECT Server Gateway will use the Proxy Server for which the license client is configured.

1. Launch LicenseTool exe located in the \Program Files\Bentley\SelectServer folder
2. Select Options from the Tools Menu.
3. Select the Proxy Configuration tab.
4. Enter the proxy server information.
5. Click Apply then OK.
6. Restart the Bentley SELECT Server Gateway service

### Verifying client connectivity to the Gateway

To verify client connectivity you can Telnet to the port on which the Gateway is listening.

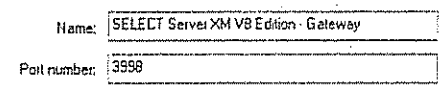
1. Open a Command prompt.
2. Enter TELNET <select server name> 3998
3. Press Enter.

You will see an OK message followed by "Connection to host lost".

### Add a firewall exception to enable remote access

Windows XP Pro SP2's firewall settings disable all remote access to the system. In order for SELECT Server and the Gateway to work, you must add a firewall exception to the Windows Firewall rules.

To do so, in the Control Panel, double-click the Firewall icon. Click the Exception tab in the Firewall dialog box. Click Add Port. Enter the name SELECT Server V8 XM Edition - Gateway in the Add a Port dialog box. Enter 3998 as the Port number




## Gateway is not running error

If you receive this error but the Gateway is running, except on another system, it is likely that a complete installation of SELECT Server V8 XM Edition was done.

Check the system on which SELECT Server V8 XM Edition is running and see if there are two Bentley services running; Bentley SELECT Server and Bentley SELECT Server Gateway. If so, you will need to uninstall the SELECT Server V8 XM Edition Gateway.

1. Open a Command prompt.

2. Change directories to the directory to which you installed Select Server V8 XM (typically C:\Program Files\Bentley\selectserver).

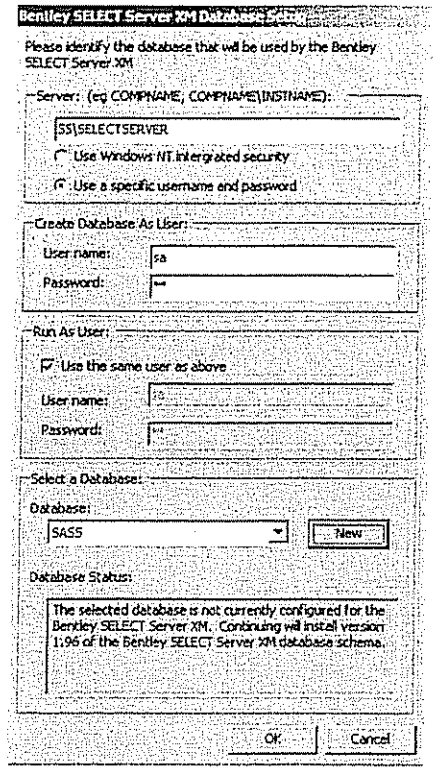
3. Type in;
SYSTEMROOT%\Microsoft.NET\Framework\v1.1.4322\InstallUtil.exe /u Bentley.SelectServer.Gateway.exe /Assembly bin\Bentley.SelectServer.Common.dll

4. Press Enter.

## Database setup

Complete database setup in the Bentley Select Server XM Database Setup dialog box.

☞ NOTE: To open the dialog box if it is not already open, select Windows Start menu > All Programs > Bentley > SELECT Server > Database Utility




- First, enter your SQL Server name in the Server field or enter the name of the local machine followed by \SELECTSERVER if you are using MSDE (machinename\SELECTSERVER)
- Next, enable the Use a specific username and password option. SELECT Server V8 XM Edition runs as System Service, therefore it is recommend that you do not use Windows NT Integrated security.
- Then, enter your database name in the User Name field. If you are using MSDE, enter SA as the user name
- Next, enter the password for your SQL database user in the Password field or enter the password you created during installation if you are using MSDE
- If you are running SQL Server, you can set the Run As User option.

  The Database setup utility requires a user with administrative rights on the SQL Server in order to create the required tables and stored procedures. However, when SELECT Server is running, you only need to have select, insert and delete rights to the database. If you do not want the SELECT Server V8 XM Edition processes to run as the SQL Admin account, disable Use the same user as above and enter the desired user name and password in the fields provided
- Finally, select the database to be used by SELECT Server from the option list or click New and enter a new database name.

It may take several minutes to configure the database. The Database creation complete message appears when the process is complete.

## -Troubleshooting the database:

### Strong SA message when installing SQL Server

You will need to run the installation executable from a Command prompt with a switch

setup.exe SAPWD="AStrongSAPwd"

Where "AStrongSAPwd" is your own strong password for the system administrator (SA) login account.

### Error "msxml2.dll not found"

Search to see if it is present on the system. If not, the issue is that an upgrade to the operating system did not upgrade all of the files required by MSDE. Go to support.microsoft.com and search for:

"FIX: MSXML 2.6 is not redistributed with SQL Server MSDE SP3 or SP3a"

to download the .msi package to fix the problem.

### Don't want SS processes to run as SQL Admin

The database setup utility requires a user with administrative rights on the SQL Server in order to create the required tables and stored procedures. However, when SELECT Server is running, you only need to have select, insert and delete rights to the database. If you do not want the SELECT Server V8 XM Edition processes to run as the SQL Admin account, disable Use the same user as the one above and enter the desired user name and password in the fields provided

## Verifying licensing and activation

SELECT Server

- Select Start > All Programs > Bentley > SELECT Server > Administration Site or enter http://<SELECT Server Name>/bss/admin in the Address field of a browser

  The SELECT Server V8 XM Edition Administration Site indicates that configuration is required.

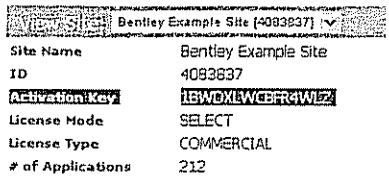
- If the serial number and activation key are shown, verify that they are correct. If not, enter your serial number and activation key.
- Verify the license file contains the appropriate applications and usage counts, then Accept. The file is saved to SELECT Server V8 XM Edition.

### The Gateway

If you did not have your SELECT site activation key during the installation process you need to configure the SELECT Server V8 XM Edition Gateway using the SELECT Server Gateway Configuration Utility.

- Select Start > All Programs > Bentley > SELECT Server > Administration Site or enter http://<SELECT Server Name>/bss/admin in the Address field of a browser
- Click on View License File under Administration in the directory on the left


- On the SELECT Server Properties page, select the site for which you want the activation key. The activation key for the site is shown.




- Select Start > All Programs > Bentley > SELECT Server > SELECT Server Gateway Configuration. In the GWAdminForm dialog box, enter the machine name or DNS name for your SELECT Server in the SELECT Server Name field.

  ☞ **NOTE**: The SELECT Server Name is the name of the machine on which SELECT Server V8 XM Edition is running. You can find this name by typing in HOSTNAME at a Command prompt.

- Enter the site activation key in the Site Activation Key field. You can click the Verify button to verify the settings. If the SELECT Server name and site activation code are a valid combination, you receive a message stating this.
- Click Save

## -Troubleshooting licensing and activation:

### Error retrieving a license from Bentley.com

Error, HTTP status 404 Not Found This indicates that the SELECT Server could not communicate with the licensing server at bentley.com because it does not have access to the internet or requires a proxy server to access the internet

If your server needs to use a proxy server to connect to the internet. Use the Server Settings link on the SELECT Server V8 XM Edition Administration page to configure your proxy settings. If you cannot connect your server to the internet, contact Bentley BAC for assistance with obtaining a a license manually.

### "Crypto API could not be loaded" error

This error usually means that the SELECT Server can not reach the internet to talk to the Bentley licensing web service.

First determine if you use a proxy server for internet access. If you do, configure the proxy server settings using the Server Settings option on the SELECT Server Administration page.

Open SS-AdminSite-WebServices log, located in c:\program files\bentley\selectserver\logs

Search for the word ERROR. You will find a description of why the connection could not be made For example, "The underlying connection was closed: The remote name could not be resolved" indicates that the SELECT Server could not resolve the DNS names for appsnet.bentley.com or buddi.bentley.com.

### No SS-AdminSite-WebServices.log file

The log file may not be created because the ASP.NET worker process doesn't have rights to write to the logs folder Grant WRITE access to the ASP.NET user account on the c:\program files\bentley\selectserver\logs folder.

### "Server does not support activation key" for hosted license

The activation key takes at least an hour to be updated in the Bentley Hosted XM server for it to be recognized for MicroStation.

Also, ensure that the email that came from the Bentley Administration Center It should only list a Bentley Server Name and activation key If it lists a SELECT Server serial number, SELECT Server activation key and site/Gateway activation key, it is the information for

running SELECT Server XM on your site. Contact the Bentley Administration Center to re-send the information for a HOSTED license.

### Start the SELECT Server services

The SELECT Server Service is a Windows System service that is responsible for processing usage logs which contain updated data that the SELECT Server V8 XM Edition relies upon, system notifications and Usage Log processing. You can start the SELECT Server V8 XM Edition and Gateway services from two locations.

To start from the SELECT Server Administration Site, do the following.

- Select Start > All Programs > Bentley > SELECT Server > Administration Site or enter http://<SELECT Server Name>/bss/admin in the Address field of a browser.
- Click Manage Services under Administration in the directory on the left.


- Click the Start button next to Bentley SELECT Server.
- Click the Start button next to Bentley SELECT Server Gateway to start the Gateway service.

To start services from the Windows Service Control Manager, do the following.

- Select Start > Settings > Control Panel > Administrative Tools and double click on Services (Local).
- Double click on Bentley SELECT Server or Bentley SELECT Server Gateway and click Start, then OK to start the service. Or, right click on the desired service and select Start from the menu.

## Upgrading SELECT Server V8 XM Edition

This consists of uninstalling a previously installed version (Start > Settings > Control Panel > Add/Remove Programs) and then installing the newest version. The re-installation process was designed with upgrades in mind, so all of your configuration settings, including SELECT Server serial number and activation key will be retained.

☞ NOTE: During the upgrade process pre-XM clients will not be able to obtain a license from the SELECT Server Gateway.

### Re-installing

When reinstalling, follow the wizard, verifying your SELECT Server serial number and activation key and your SELECT Server Gateway settings if you are installing the Gateway. When you click Install the installer will copy the required files and configure IIS accordingly. When the process is complete, click Finish

### Database upgrade

All of the previous database settings will be pre-configured and you will see a message informing you that the Selected database currently has version 1.### of the Bentley SELECT Server XM database schema installed and that this install of Bentley SELECT Server XM requires schema version 1.###. Continuing will migrate the database to the required version. You just click OK to upgrade the database schema to the required version. Then click OK when you see the Database creation complete message

**Versions prior to 08.09.02.35**

If you are upgrading from a version of SELECT Server prior to 08 09 02 35 you will be notified that SELECT Server must process your usage data. During this time SELECT Server V8 XM Edition will continue to process license requests

⚠ **WARNING:** During processing you will see a progress bar. Do not stop the processing as this will result in loss or corruption of data. Wait and then click OK at the Processing Complete message.

### Restart the SELECT Server services

- Select Start > Run and type in; services msc then click OK
- Locate Bentley SELECT Server in the list of services. If the status is not Started, right click and select Start from the menu.
- If you are running the Gateway, locate Bentley SELECT Server Gateway in the list of services and start it if it is not started

## SELECT Server XM Administration Site

This site is the interface used to manage SELECT Server

## Administration tasks

Administration options let you manage services, adjust server and site settings, control the transmission of log files to Bentley Systems, register multiple users at one time.

### SELECT Server Tasks

Each task listed here shows the date and time it was last run, the result of the last run, the current status, and has a button to run the task.

The Error Log Posting Service allows MicroStation XM Crash dumps to be forwarded to Bentley by way of SELECT Server V8 XM Edition.

Usage Log Posting is the process that sends SELECT Server usage log numbers to the Bentley Web Service on a daily basis

Usage Log Processing processes the daily logs that are sent from the client system to SELECT Server. Builds the report data and prepares the usage logs for posting to Bentley.

The Notification Service is the daily alert system for notifying administrators of usage overages, impending product license expiration and system errors.

The Data Update Service connects to Bentley on a daily basis and retrieves any license file changes, and any updates to supporting database tables that SELECT Server relies on. Administrators have the ability to disable the automatic license update, in favor of manual review and acceptance of a license.

| | | | | |
|---|---|---|---|---|
| Error Log Posting Service | 2/23/2006 | Success | Idle | Run Now |
| Usage Log Posting | 2/23/2006 | Success | Idle | Run Now |
| Usage Log Processing | 2/23/2006 | Success | Idle | Run Now |
| Notification Service | 2/23/2006 | Warning | Idle | Run Now |
| License Update Service | 2/23/2006 | Success | Idle | Run Now |

## Server settings

The Settings page is used to configure server settings such as serial number, activation key, data archiving, mail, proxy and database settings. The Windows services settings let you set the time at which SELECT Server processes run.

### Usage Log Transmittal

Usage Log Transmittal options let you set the parameters for manual log transmittal instead of the automatic transmittal, which is the default. Enable Transmit application usage logs manually to bypass automatic transmittal of usage logs. Steps for manual transmission are found on the Transmit Usage Logs page.

## Site Settings

Determine site settings for individual sites or to set global settings for all sites.

### Checkout settings

Toggle Enable clients to checkout licenses to enable or disable license check out at the site level. If disabled, checkouts will fail.

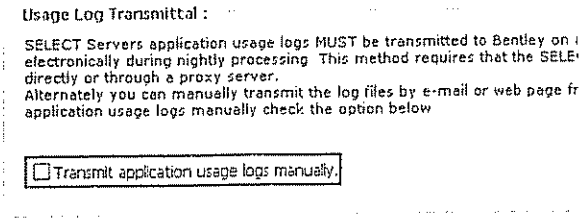
The Maximum Checkout Interval specifies the maximum number of days a license can be checked out from the server. The default is 90 days.

## Transmit Usage Logs

SELECT Server is configured to transfer the usage logs on a nightly basis, directly over the internet, to Bentley.com. If your SELECT Server will not have access to the internet, you can configure it for manual log transmittal.

SELECT Server will still process the usage logs on a nightly basis and create the log files that would be transmitted on a daily basis. However, these log files will accumulate in the database until you manually initiate the transmittal process.

- First, configure SELECT Server for manual log transmittal. This is done on the Server Settings page.




Then, The Transmit Usage Logs page has sections that walk you through the process of transmitting log files to Bentley.

- Step 1, creating a manual log transmittal file. This is done on the Transmit Usage Logs page, in the Prepare Logs section.

  Click the Create File button to prepare a log file for manual transmittal. The button is only active if the Transmit application usage log manually check box in the Usage Log Transmittal section of the Server Settings page is enabled.

- Step 2, downloading the transmittal file for transfer. This is done in the Download Submittal Files section. It lists all transmittal files that have not been downloaded for transfer. Click the Download button next to the file to be downloaded.

  No files are listed if you didn't click Create in the previous step and files that have already been downloaded do not show in this list. If you need to re-download a file, use the Previously Sent Transmittal Files section.

- Step 3, transferring the file. This is done in the Transferring the manual transmittal file section. Choose to email or upload the files or to mail the files to Bentley on floppy or CD.
- Step 4, acknowledging the file transfer. A response.xml file is required to verify that you have sent the usage log files. If the file transfer has not been acknowledged within 30 days of transfer, SELECT Server will stop issuing licenses. You receive the response.xml file by the method in which the usage logs where submitted (email, upload, mail).

  The Process Acknowledgment File section displays a list of usage log files awaiting acknowledgement.

  Browse button to the folder that contains SELECTServerUsageLogs.zip and select response.xml. Then click Open. Click Process File, then Submit to send the acknowledgement.

### Bulk Registration

Use this page to register multiple users using a CSV file. Use the Registration From File field to identify the CSV file to be used for the bulk registration.

| FIRST_NAME | LAST_NAME | EMAIL | USERNAME | DOMAIN |
|---|---|---|---|---|
| Robert | Smith | robert.smith@work.com | robert.smith | ABC |

*Sample entry from a CSV bulk registration file*

## Viewing reports

The Report Options section appears on the top of every SELECT Server report. It is used to define the range of information you want to see. Use the + to expand the section. You can set the number of days in the past for which to display report information or select a date range from which to view it. See information from all sites or from individual sites.


## Reports

Reports in this section provide many site and application details.

- Summary reports show application usage by site and by application

  The Machines column shows the number of machines that have been used at the selected site. The Peak Pooled Usage column shows the highest number of machines that have

been used simultaneously. The Peak Pooled Date column shows the date the highest number of machines were used simultaneously.

- Daily Pooled Usage reports show the application usage, by site, for a selected time range.
- Application Usage reports show application usage information by site.

  The # of Versions column shows the number of versions of an application used during the selected date range. The # of Machines column shows the total number of machines using all versions of an application used during the selected date range.
- Last Application Usage reports show the last usage of an application by site.
- Machine Usage reports show usage information by specific machine.

  The Unique Applications column shows the total number of applications used on the machine. This does not include multiple versions of the same application. The Total Version Count column shows the total number of different versions used on the specified machine, including multiple versions of the same application.

### Named User reports

Daily client usage reports show daily license usage, by user, per site and application. Monthly client usage reports show monthly license usage by user, per site. Server Usage reports contain details about the servers accessed (machine name and SELECT Server version), by application, from the specified dates and sites.

### ELS (Enterprise License Subscription) reports

App Usage by Month reports show peak month application usage for each application licensed under an ELS. Site App Usage By Month reports show peak monthly application usage for each application per site licensed under an ELS.

## -Troubleshooting the Administration Site:

### Page Not Found error or raw HTML

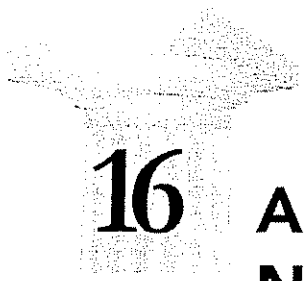
- On Windows 2003, make sure that ASP.NET support has been loaded for IIS. In the Control Panel, click Add/Remove Windows Components. Select Application Server and click Details. Select ASP.NET and click OK.
- On Windows 2000, Windows XP Pro or Windows 2003, if IIS was installed after the Microsoft.NET Framework, .NET must be registered with IIS.

  At a Command prompt type in; cd /d %windir%\microsoft net\framework\v1.1.4322 and press Enter. Type in; aspnet_regiis.exe -i and press Enter. Restart IIS by typing in; iisreset and pressing Enter.

- You may need to enable ASP.NET by adding it to your Power User group. Go to the Control Panel > Administrative Tools > Computer Management. Expand Local Users and Groups. Click on Groups. Right click Power Users and select Properties. Click Add. In the Enter The Object Names To Select field enter ASPNET. Click OK. Make sure something\ASPNET is showing in the Members box. Click OK and exit Computer Management. Restart the system

## 401 Error "Access Denied"

- Although anonymous access was defined the Windows 2000 Server may also be a domain controller. The IUSER_Server did not have sufficient access or did not exist. Use a domain administrator account instead.



# 16 APPENDIX: New Configuration Variables

## Cells

MS_RESOLVESCNAMECONFLICTS controls how shared cell name conflicts are handled for operations like reference merge. If set to 0, there is no resolution. If set to 1, the default, MicroStation resolves the name conflicts on DWG shared cell instances; if set to 2, MicroStation resolves name conflicts for all non-anonymous shared cells

## Colors

MS_COLORBOOK_LIBRARIES contains the list of DGN files that are used as a source for color books

MS_SYSTEM_COLORBOOKS sets the directory name containing the system color books delivered with MicroStation

## Data Files

MS_DATETIMEFORMATS provides the list of formats available for Date/Time fields in the Fields Editor

MS_BSILOG_CONFIG_FILE specifies the location of the file that controls and configures diagnostic logging. The default is $(MS_DATA)BSILOG.CONFIG.XML.

MS_BSILOG_ENABLE allows the logging of diagnostic messages.

## DWG/DXF

MS_DWGSETTINGSFILE points to the file that contains the settings for opening and saving DWG files.

MS_DWGSYSTEMDATA points to the directory that is used to override the local directory as a source for DWG settings files.

MS_DWG_LSTYLE_FONTPATH determines the location of the font file

MS_DWG_LSTYLE_FONTNAME determines the name of the font file, and therefore, the name of the font.

MS_DWG_CREATE_SPACE_FROM_EDF if this variable is set to 1, any empty enter data field remains as a space.

MS_DWGSAVEAPPLICATIONDATA affects saving linkage data and type 66 application elements from DGN to DWG. If set, the applications are stored as XRECORDS and the linkages as XDATA. The default is off.

MS_DWG_FIELD_2005FORMATTING if this variable is defined and set to 1, MicroStation only generates field information that AutoCAD 2005 supports

## Design History

MS_DESIGN_HISTORY_COMMIT_ON_MODEL_SWITCH specifies whether changes are committed to Design History when the model is switched

MS_DESIGN_HISTORY_COMMIT_DOC_PROPERTIES if this variable is set to 1 (the default), design history tracks changes to document properties such as Title, Author and Comment

## Distributed DGNs

MS_DISTRIBUTED_DGN_COMMIT_ON_SAVE specifies whether changes are committed to the distributed DGN when the file is saved.

MS_DISTRIBUTED_DGN_COMMIT_ON_CLOSE specifies whether changes are committed to the distributed DGN before the file is closed

## Extensions

MS_GUITASKTREEROOT defines which tasks are available in the Task Navigation tool box.

MS_DOCKINGPREF

MS_DWG_OBJECT_DRX

MS_PROCESSEXCEPTIONLOG use for MicroStation exception.log and minidump dmp management

MS_PROPERTYENABLER_APPS

MS_CUSTOMIZE_REPORT_STYLESHEET

MS_SELECTBY

MS_BUTTONMENU

MS_ECFRAMEWORK_SCHEMAS

MS_RASTER_DEF_DIR

MS_VIEWTOOLBOX3D

MS_VIEWTOOLBOX2D

MS_MAINTOOLBOX

MS_ICONRSCLIST lists directories containing .rsc files for icons.

MS_ICONLIBRARYLIST lists directories containing .dll files for icons.

MS_ICONPATH lists directories containing files for icons

MS_MIXEDMODEBUILD

## Levels

MS_LEVEL_DISPLAY_FORMAT specifies the formatting that the level name uses when the level lists display, including in PDF plots. If N, the default, the level name is used. If D, the level description is used; if C, the level code is used. More than one value can be specified.

MS_LEVEL_ALLOW_LIBRARY_LEVEL_EDIT allows you to edit library levels when it is not yet used in master-file. If not set, a library level can be edited only when if it is used. If set, a library level that is not yet copied into the master file can be edited. On editing, the library level will be copied into the master-file.

MS_LEVEL_PICKER_WIDTH sets the width, in pixels, of the level picker in the Attributes tool box.

MS_HIDE_LIBRARY_SOURCE_NAMES if this variable is set to 1, hides the level library name (in brackets) that precedes the level name.

## Operation

MS_LEGACYDRAWORDER for 3D wireframe views, use a draw order based on the element position

MS_MAINMENUDOCKINGBESIDE if this variable is set to 0 or not set (default), the MicroStation main menu bar spans the entire width of the application window. If set to a

value other than zero, tool boxes and dockable dialogs can be docked along the main menu bar

MS_SOURCENAME_PROPERTY if this variable is set the SOURCE file property can be set to the name of the source file. By default, only the name and extension of the source file are saved. Set to 0 to disable the SOURCE property. Set to FULL to save the full path of the source file.

MS_NO_VIEW_ANIMATION if on, the animation of view tile and cascade is disabled.

MS_NATIVEMAINMENU if this variable is set to 0, menus that are larger than the screen size do not have top and bottom scroll arrows, and auto menu positioning is not available. If set to 1, menus appear correctly.

## Printing

MS_BATCHPRINT_NO_READONLY if this variable is set to 0, Batch Print opens design files in read-only mode, which is the default

MS_BATCHPRINT_ADD_ONLY_DESIGN_MODELS

MS_PLTDLG_CLOSE_AFTER_PLOT if this variable is set to 1, the Print dialog box closes automatically after a print job is performed successfully.

MS_PLT_SET_PRINTER_FROM_SHEET if this variable is set to 1, the default Print dialog box printer is taken from the active sheet definition (if one is present).

MS_PLT_SET_LAYOUT_FROM_SHEET if this variable is set to 0, the Print dialog box layout is not automatically set when a sheet definition is loaded and the current print area is Sheet

MS_PLT_SET_PLOT_STYLE_TABLE_FROM_SHEET if this variable is set to 0, plot style tables specified in the sheet definition are not attached to the plot

MS_PLTDLG_SHOW_BASIC_LAYOUT_CONTROLS if this variable is set to 1, the Print dialog box's Rotation field and Mirror option menu are hidden. The orthogonal print Rotation option menu is displayed instead.

MS_PLTDLG_ALLOW_FORM_SIZE_EDIT if this variable is set to 1, the size of the selected form may be modified via the Print dialog box.

MS_PLT_SHOW_PRINT_STATUS if on, a print status dialog box opens when a job is being printed. You can cancel the print job.

MS_PLT_THUMBNAIL_PREVIEW_TIMEOUT controls how long the thumbnail preview in the Print dialog box paints before stopping to allow the rest of the dialog box to refresh. The default is 10 seconds.

MS_PLTDLG_SHOW_ACCURATE_PREVIEW_ROTATION if this variable is set to 1, the Preview dialog box displays the plot in its current rotation

MS_PLT_SET_UNITS_FROM_SHEET if this variable is set to 0, the Print dialog box's units are not automatically set from the sheet definition when the current print area is Sheet.

MS_PLTDLG_TRANSPARENCY_OVERRIDE sets the Print dialog box's transparency print attribute to a value other than the one obtained from the view.

MS_PLTDLG_DISABLE_PREFERENCES_DIALOG if this variable is set to 1, the Preferences menu item is not displayed on the Settings menu

MS_PENTABLE_SEARCH_LEVEL_LIBRARIES if this variable is set to 0, level libraries are not included when searching for level names defined in the pen table.

MS_PLT_ABBREVIATE_BORDER_FILENAME if this variable is set to 0, the file names included in the plot border text are not abbreviated.

MS_PLT_USE_VIEW_BACKGROUND_COLOR_FOR_RENDER if this variable is set to 1, the print engine does not change the background color for the plot when rendering.

MS_PLT_USE_HARDWARE_PHONG if this variable is set to 0, the print engine uses the MicroStation software renderer to render Phong view modes and reference presentation states, including shadows. If set to 1, the graphics card is used instead.

MS_PLT_APPLY_COLOR_MODE_TO_RASTER if this variable is set to 0, the print engine does not apply the color mode specified in the plot description to raster data.

## Protection

MS_PROTECTION_V8_COMPATIBILITY limits encryption strength. 0 = stronger; previous versions cannot open (default) or 1 = previous versions can open protected file and create licenses

## Primary Search Paths

MS_ADDINPATH search path for managed AddIn assemblies that are used outside of MicroStation's application base or configured privatePath.

MS_ADDIN_DEPENDENCYPATH Search path for managed assemblies that are used by AddIns outside of MicroStation's application base or configured privatePath. Directories should not be listed here and in MS_ADDINPATH.

MS_GUIDGNLIBLIST lists directories containing DGN library files that store tool, tool box, task, menu, and icon customizations

MS_LINFILELIST specifies the directory containing line style files

## Raster

MS_RASTER_DISABLE_IPPCONNECTION if undefined, the default socket server port 1924 is used. If defined, the socket port 1924 is ignored

MS_RASTER_VIEWSAVEASDWG controls whether the raster is displayed when exporting to DWG

MS_RASTER_DEFAULT_LEVEL defines the level for raster elements when upgrading to MicroStation XM Edition

MS_RASTER_TRANSPARENCY if set to 1, Raster Manager sets the background transparency value; possible values are 0 to 255, where 255 is 100% transparency

## Rendering/Images

MS_LOCAL_MATERIALS serves the same function as the Copy Materials Locally On Use toggle in the Settings menu of the Material Editor dialog box.

MS_DISABLE_RPCBROWSER If set to 1, the RPC Thumbnail Browser is disabled

## Seed files

MS_DWGSEED_OVERRIDE seed file used to override MS_DWGSEED or the user-selected DWG seed file

MS_TRANSEED_OVERRIDE seed file used to override MS_TRANSEED or user-selected DGN seed file to be used for DWG open.

## Un-categorized

MS_ALWAYSRELATIVEREFPATH if this variable is set to any value, MicroStation always turns on the Save Relative Path toggle and disables it so that it cannot be turned off. It will save relative paths whenever possible.

MS_ANNOTATIONSCALEPROPAGATION controls the propagation of a model's annotation scale. If set to PROMPT, you are prompted to accept or reject the propagation to existing annotations. If set to ALWAYS, the scale will be automatically propagated. If set to NEVER, the scale will not be propagated.

MS_AUTO_UPDATE_FIELDS controls the rules for updating fields in the active model. If set to ALWAYS, the fields are always kept up to date. If set to NEVER, the fields are never updated. If not set or set to FOLLOWMODELFLAG, the models Update Fields Automatically field determines if fields are updated for that model.

MS_DIMLEGACYPOINTORDER if set to 1, the dimensioning tools use the legacy data point sequence for placing linear and angular dimensions (StartPoint – ExtensionPoint – EndPoint).

MS_DWG_LWDEFAULT controls the width of the default line weight. The default value is 0 for unweighted default lines. Valid values are 0, 5, 9, 13, 15, 18, 20, 25, 30, 35, 40, 50, 53, 60, 70, 90, 100, 106, 120, 140, 158, 200, 211.

MS_DWG_PROXYSHOW controls the display of proxy objects within a DWG drawing. Default setting is 1, display complete graphics. Set to 0 for no graphics and 2 for bounding box display only.

MS_NO_POSITION_MAPPING_HINTS if set to 1, the keyboard navigational aids will not display when <Esc> is clicked.

MS_NOTEAUTOUPDATE controls the list of settings that will be propagated to existing notes when a dimension style is saved. To propagate all settings, set to All. To control individual settings, list attributes in a comma-separated list.

MS_SMARTSOLID specifies the directory path for the SmartSolid subsystem.

MS_SNAPMODE_SOURCE if set to 0 (the default), MicroStation saves the snap mode data to the DGN file. If set to 1, the data is saved to the user pref file.

MS_SOURCENAME_PROPERTY if set, the SOURCE file property can be set to the name of the source file. By default, only the name and extension of the source file are saved. Set to 0 to disable the SOURCE property. Set to FULL to save the full path of the source file.