Real DWG and Object Enablers

Presented by:

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Jeanne Aarhus is known for keeping her training sessions fast-moving and fun while still providing a thorough understanding of the topic. She has been working with various CAD systems and applications since the early 1980's, when she began using Intergraph's VAX-based IGDS system. She has gained experience in many CAD related fields that have included production drawing, coordination, end-user support, programming, and training for PC and UNIX based CAD applications.

Her specialty is in providing users with the necessary tools to increase productivity and get the job done as efficiently as possible. She has 20+ years of experience using MicroStation and AutoCAD in the Mapping and AEC environments, and she continues to focus on maximizing the users time and productivity using these constantly changing tools. She is certified in all levels of MicroStation and AutoCAD which enables her to assist users moving from one CAD environment to another easily and proficiently.

She has conducted seminars and workshops on CAD productivity for managers and users in both corporate and college settings. Jeanne has provided training workshops and been actively involved in International, National and Local CAD Users Groups, and is known for her "real-world" approach to learning. Here are a few comments from previous students:

> *... Presentation was exactly what I was looking for!*
>
> *...Jeanne is a great instructor!... Lots of energy!... Made learning fun again!*
>
> *...Jeanne is very knowledgeable!....and was very pleasant and patient when I needed help!*
>
> *...Excellent knowledge from instructor, able to answer any questions with real life experience!*
>
> *...Jeanne Aarhus is one of the best instructors I have ever had*

Available Training Classes

Bentley Products
- MicroStation Update
- MicroStation Fundamentals
- MicroStation for AutoCAD Users
- MicroStation for Power Users
- MicroStation for CAD Managers
- PDF Composer
- Interplot Fundamentals

Adobe Products
- Adobe Professional for CAD Users
- Integrating PDF's into your Projects

Autodesk Products
- AutoCAD Update
- AutoCAD Fundamentals
- AutoCAD Advanced
- AutoCAD Plotting and Sheet Sets
- AutoCAD Architecture Update
- AutoCAD Architecture Fundamentals
- AutoCAD Architecture Advanced
- AutoCAD Architecture for CAD Managers/Power Users
- Revit Architecture for ACA Users
- Revit Architecture Fundamentals
- Revit Structure
- Tips for Revit Architecture
- Tips for Revit Structure

Other Presentations & Workshops
- Productivity Tips & Tricks
  MicroStation or AutoCAD
- More Tips & Tricks
  MicroStation or AutoCAD
- Customizing MicroStation or AutoCAD
  For the USER
- MicroStation for AutoCAD Users
- AutoCAD for MicroStation Users
- Workspaces
  Making Them Work for YOU
- AccuDraw & Smartline
- Cool Tools for MicroStation
- Cool Tools for AutoCAD
- What's NEW in MicroStation
- MicroStation "Interesting Occurrences"
  ie. (Dirty Tricks)
- Using Styles
- Tips for Users
- Tips for CAD Managers
- Automate Your Standards
  MicroStation or AutoCAD
- Manage Your Standards
  MicroStation or AutoCAD

Custom Training/Workshops also available!

What is Real-DWG?

You can open and save RealDWG 2014 files using MicroStation V8i-SS3.
Following table lists the support of RealDWG in different versions of the product:

RealDWG version	SS1	SS2	SS3
2009	Yes	Yes	Yes
2010	Yes	Yes	No
2012	No	No	Yes
2013	No	No	Yes
2014	No	No	Yes

MicroStation V8i–SS3 delivers RealDWG 2009 and RealDWG 2014 and by default, RealDWG 2014 is active.

RealDWG 2010 and RealDWG 2011 are not supported in MicroStation V8i-SS3. If you have RealDWG 2010 installed on your machine, it will not work with MicroStation V8-SS3.

What is an Object Enabler?

Autodesk offers free downloadable enablers that you can use to access, display, and manipulate object data in applications different from their native environment. This provides essential data accessibility for design teams who create or receive files using Autodesk software. For more information on functionality, installation, and performance, see the Help file included with the enabler.

Select the Autodesk product you are using from the list below. This will display a list of all available object enablers for your product. Choose the enabler that best matches the program that originally created the drawing file. Contact the source of the drawing file directly if you are unsure what program it was created in.

Choose the Autodesk application used to open the file:

- AutoCAD
- AutoCAD Architecture
- AutoCAD Civil 3D
- AutoCAD Electrical
- AutoCAD Map 3D
- AutoCAD Mechanical
- AutoCAD MEP
- AutoCAD Plant 3D
- AutoCAD Structural Detailing
- Autodesk 3ds Max
- Autodesk Inventor
- Autodesk Mechanical Desktop
- Autodesk VIZ

Prior to V8i-SS1, MicroStation supported object enablers that were rewritten using the Open Design Alliance (OpenDWG) library, however, there were many object enablers that did not support OpenDWG. As of V8i-SS1, MicroStation can directly run object enablers directly from Autodesk and other vendors that are used to run on AutoCAD, so the graphical objects created by these enablers are displayed desirably.

The following object enablers can be used with products that have them enabled:

- AutoCAD Architecture and AutoCAD MEP Object Enabler
- AutoPLANT V8i (SELECTseries 3) Object Enabler
- ProStructures V8i for AutoCAD Object Enabler

Following object enabler is not included in the delivery but has been tested on RealDWG 2014:

- AutoCAD Civil 2014 Object Enabler*
  While this object enabler works correctly on 64 bit operating system, some old computers using 32 bit operating system may not work properly.

If you require any other object enabler, you can install it separately. For further details see Installing Object Enablers.

Installing Object Enablers

AutoCAD Architecture
The object enabler for AutoCAD Architecture is incorporated into the RealDWG delivery, and you do not have to install it

AutoCAD MEP, AutoPLANT V8i, AutoCAD Civil 2014
Other object enablers can be downloaded from their respective vendors and installed. Even if you have previously installed the object enabler to work with AutoCAD, you must go through the object enabler's installation process after you have installed MicroStation, so that it can be found and used by MicroStation.

Object enablers from Autodesk can be either for a 32-bit operating system or for a 64-bit operating system. For AutoCAD, you need to install a 32-bit object enabler on a 32-bit operating system and a 64-bit object enabler on a 64-bit operating system. However, MicroStation supports only 32-bit object enablers. So, irrespective of your operating system, when you are downloading object enablers from Autodesk or other sources, **download the Autodesk® RealDWG™ 2013 or 2014 32-bit version**.

When you are prompted for a host application, select MicroStation V8i-SS3. Some 32-bit object enablers may not be configured to be installed on 64-bit operating systems.

If the installer of a 32-bit object enabler does not have the option of installing on a 64-bit operating system, you need to check for a work-around with the provider of the object enabler.

Some OBJECT ENABLER installations will require that you REBOOT after the installation. Be sure to follow ALL prompts as needed.


An Example:
The Civil Object Enabler is a freeware application that you can use to access Autodesk AutoCAD Civil 3D drawing files. Each version release allows object data created in Autodesk AutoCAD Civil 3D to be accessed outside the Autodesk AutoCAD Civil 3D environment.

If you are installing on a 32-bit OS such as Windows 7 32-bit or Windows XP Pro 32-bit, please download the file Civil_2014_OE_32Bit.exe.

Download the file Civil_2014_OE_64Bit.exe if you are installing on a 64-bit OS such as Windows 7 64-bit or Windows XP Pro 64-bit.

- Civil 2014 OE 32Bit (exe - 168894Kb)
- Civil 2014 OE 64Bit (exe - 176931Kb)
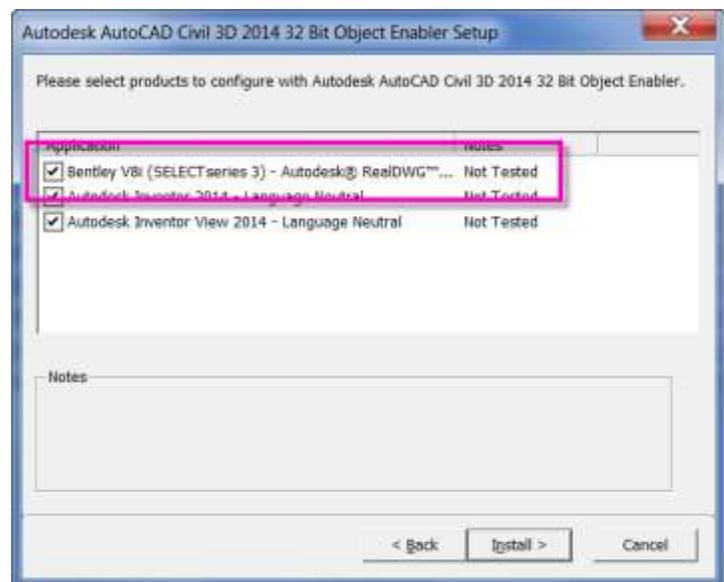
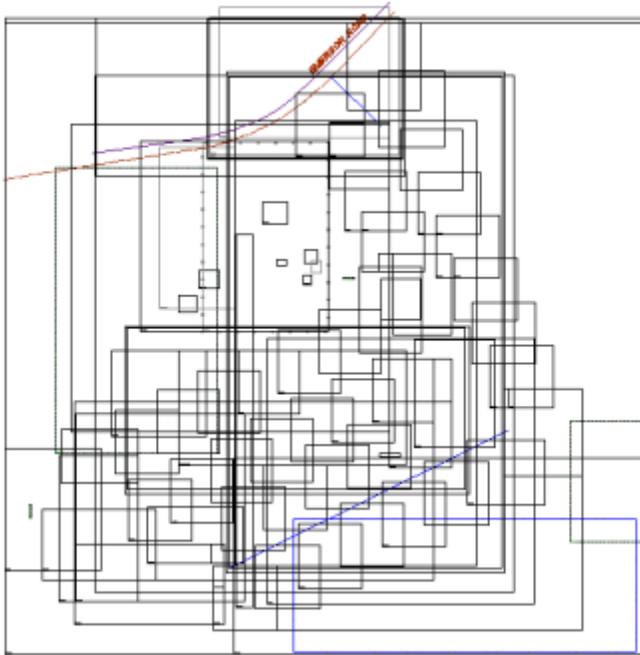## MS_OPENDWGAEC

Controls the behavior when opening DWG AEC files of an older version:

      0:       open with alert dialog (default)
      1:       upgrade AEC objects to the current version, no alert dialog
      2:       open DWG as read-only, no alert dialog (MS_OPENDWGAEC)

Viewing a File WITHOUT an Enabler

Below is an example of viewing a file without an enabler.

Viewing a File WITH an Enabler

Below is an example of viewing a file WITH an enabler.

DWG Related Configuration Variables

The following list can be found in the online help provided by Bentley Systems. MicroStation includes many configuration variables to help open, edit, and reference AutoCAD DWG data. The following list includes most of the configuration variables that affect MicroStation's DWG operations.

Configuration Variable	Definition
MS_ACADDIR	Defines the directory containing AutoCAD. It is used to find the DWG support files, such as fonts. When you first load MicroStation V8, MicroStation reads the registry, determines whether AutoCAD or AutoCAD LT is installed on your computer, and if present, sets this configuration variable.
MS_BLOCKLIST	Defines the list of DWG and DXF files available for insertion as MicroStation cells. You can use this configuration variable when you turn on Display All Cells in Path in the Cell Library dialog.
MS_DWG_BACKUP	Defines the directory for the DWG backup (.bak) files. If not set, the backup files are placed in the same directory as the DWG file.
MS_DWG_COMMANDPREFIX	Defines a character or string of characters that can be used as a shortcut to the AutoCAD key-in commands.
MS_DWG_CREATE_SPACE_FROM_EDF	If set to 1, any empty data field remains as a space.
MS_DWG_FEETUNIT_AS_ARCHENG	If set, when a DGN file with Working Units set to Feet-Inches, Format set to Master Units, and Units on the Save As DWG/DXF Options dialog set to Master Units, the resulting DWG file has Engineering or Architectural units in AutoCAD. (If not set, the units are Decimal or Fractional.) For details, see Setting units in files that will be saved to DWG files.
MS_DWG_FIELD_2005FORMATTING	If defined and set to 1, MicroStation only generates field information that AutoCAD 2005 supports.
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.

Configuration Variable	Definition
MS_DWG_MAX_ORPHANTAGS_PERSET	Set the maximum number of tags per tagset for "orphan tags." An orphan tag is an attribute definition that is never instantiated in a block as it should in a DWG file. When opening a DWG file, all such "dangling" attribute definitions are collected into a tagset. For better performance, a tagset should be limited to a manageable size. Therefore, in the case of a large number of dangling attribute definitions, multiple tagsets are preferred rather than one large tagset. The default size is 100 per tagset.
MS_DWG_PGPFILE	Points to a PGP file that contains shortcuts, or aliases, for AutoCAD commands.
MS_DWG_PRE2004_COLOR_TABLE	Sets the color table for DWG files in MicroStation. In version 2004, AutoCAD began displaying indexed colors with a slightly different (generally lighter) colors. MicroStation also uses these new colors unless this variable is set.
MS_DWGAUTOSAVE	If set to a positive number, specifies the number of seconds after the first change to the DWG or DXF file that auto-save occurs. When this time elapses, an Alert window appears that asks whether the changes should be saved. The saving time can be significant, so you can defer the saving by clicking Cancel. If set to zero, no auto-save is done while the file is open. The file is automatically saved on exit or when switching to a different file.
MS_DWGAUTOSAVE_NODIALOG	If set to a positive number, specifies the number of seconds after the first change to the DWG or DXF file that auto-save occurs. When this time elapses the Alert window is skipped and the file change is automatically saved.
MS_DWGDATA	Points to the directory where the following files are stored: • "DwgSettings.rsc" — resource file containing all of the DWG settings • Files (*.dws) containing saved settings for opening and saving DWG/DXF files. • "DwgDisplayColors.tbl"(Optional) — A MicroStation color table that contains the fixed AutoCAD colors used for display to the screen. • "DwgPlotColors.tbl" (Optional) — A MicroStation color table that contains the fixed AutoCAD colors used for plotting.

Configuration Variable	Definition
MS_DWGFONTPATH	Defines the path to AutoCAD *.SHX fonts if AutoCAD is not installed on the system. By default, MicroStation first uses the value of the MS_ACADDIR configuration variable to find AutoCAD support files. If this is unavailable, MicroStation uses individual variables, such as MS_DWGFONTPATH.
MS_DWGOMITUNIQUEEXTENSION	If more than one file with the same name is present in the same directory, appends the extension to the output filename when saving the file. For example, if the directory contains both sample.s01 and sample.s02, then the extension is included in the output filenames (sample_s01.dgn and sample_s02.dgn). If the directory does not include any files with duplicate names, then the extensions are included in the output names. For example, if the directory contains only file sample.s02, this file is saved to sample.dwg.
MS_DWGPATFILE	Defines the full path file name that contains AutoCAD pattern definitions.
MS_DWGREF_ALLOWMASTERCOLORS	Defines how MicroStation uses color tables for DWG or DXF files attached as references. • If MS_DWGREF_ALLOWMASTERCOLORS is set to 1, the color tables for DWG or DXF references are handled as they are for DGN references: they are controlled by the Use Color Table setting (Workspace > Preferences > Reference category). When Use Color Table is on, the elements in each reference are displayed using the reference's color table. When Use Color Table is off, the elements in each reference are displayed using the active design file's color table. • If MS_DWGREF_ALLOWMASTERCOLORS is not set to any value, DWG or DXF references are always displayed using the active design file's color table. In this case, the Use Color Table setting has no effect.
MS_DWGSEED	Defines the DWG seed file used when opening DWG files.

Configuration Variable	*Definition*
MS_DWGSEED_OVERRIDE	Determines whether a user can modify the DWG Seed File setting on the Save As DWG/DXF Options dialog. When the variable is not set or set to 0, the first time that the dialog opens, the default DWG seed file is set by the MS_DWGSEED configuration variable. The user can choose a different seed file When the variable is set to 1, the user can only use the DWG seed file identified by MS_DWGSEED. The user cannot choose a different seed file. When the variable is set to 2, the default DWG seed file is set by MS_DWGSEED at the beginning of each MicroStation session. The user can choose a different seed file during the session.
MS_DWGSETTINGSFILE	Points to the file that contains the settings for opening and saving DWG files.
MS_DWGSHEETMODELSEED	Identifies the file containing the seed model for new sheet models in DWG files.
MS_DWGSHEETMODELSEEDNAME	Identifies the seed model for new sheet models in DWG files.
MS_DWGSYSTEMDATA	Identifies the directory containing the DWG settings file Dwgsettings.rsc. Overrides the directory specified by MS_DWGDATA. The display and plotting color tables (DwgDisplayColor.tbl and DwgPlotColors.tbl) can also be controlled by placing them in this directory.
MS_MERGE_DISPLAYEDLEVELSONLY	Modifies Copy Levels During Merge setting on the References tab of the Save As DWG/DXF Options dialog. When set (to 1), only those reference levels that are displayed in the selected view are merged into the output file. If not set, and the Merge Displayed Levels Only setting is off (in the References tab), then all reference levels are merged into the output file.
MS_NO_DWG_BACKUP	If set, backup files (.bak) are not created when you edit a DWG or DXF file.

Configuration Variable	Definition
MS_TRANSEED_OVERRIDE	Determines whether a user can modify the DGN Seed File setting on the DWG Open Options dialog. When the variable is not set or set to 0, the first time that the dialog opens, the default DGN Seed File is set by the MS_TRANSEED configuration variable. The user can choose a different seed file. When the variable is set to 1, the user can only use the DGN seed file identified by MS_TRANSEED. The user cannot choose a different seed file. When the variable is set to 2, the default DGN seed fie is set by MS_TRANSEED at the beginning of each MicroStation session. The user can choose a different seed file during the session.
MS_WORKMODE	Defines the workmode as either DGN or DWG.

DWG OPEN Related Configuration Variables

Configuration Variable	Definition
MS_DWG_ALERT_DEC_FRC_SCI_UNITS	When a DWG file is opened, an alert dialog opens to warn that Decimal/Fractional/Scientific units are not set to Design Center units. Valid values are ON (or no value) or OFF.
MS_DWG_ALERT_DESIGNCENTER_UNITS	When a DWG file is opened, an alert dialog opens to warn that Design Center units are not set to a specific unit. Valid values are ON (or no value) or OFF.
MS_DWG_ALERT_ENG_ARCH_UNITS	When a DWG file is opened, an alert dialog opens to warn that Architectural/Engineering units are not set to Inches. Valid values are ON (or no value) or OFF.
MS_DWG_ARCH_ENG_UNITS	Sets units to open DWG files that use Architectural or Engineering units. Valid values are: Master Units Sub Units Design Center Units a unit defined in file units.def
MS_DWG_AXISLOCK_FROM_ORTHOMODE	If DWG ORTHOMODE=1, sets the Axis Lock. Valid values are ON (or no value) or OFF.

Configuration Variable	*Definition*
MS_DWG_CUSTOMOBJECT_DISPLAY	Used to make object enablers generate their custom objects for the desired display outcome. If set to 1, the object enablers generate a wireframe representation for their objects. If set to 2, the object enablers generate a mesh representation. This configuration variable is set to 2 generally for full rendering. If set to 3, the result is same as 2, but some object enablers respond to different rendering modes. This configuration variable is set to 3 generally for hidden line removal. For example, some AutoCAD MEP (mechanical, electrical, plumbing) objects draw mesh only when this configuration variable is set to 3, while others draw mesh when this configuration variable is set to 2. If set to 4, the object enablers usually generate wireframe geometry but may have mixed result depending on the enablers. When this configuration variable is not set, the default behavior depends on the current view display in the model. For example, if the current view display is in rendering mode, mesh geometry is generated from the object enabler. Similarly, if the view display is in wireframe mode, wireframe geometry is generated from the object enabler. To improve performance when opening large files, setting this variable to 1 may be preferred.
MS_DWG_DEC_FRC_SCI_UNITS	Sets units to open DWG files that use Decimal, Fraction or Scientific units. Valid values are: Master Units Sub Units Design Center Units a unit defined in file units.def

Configuration Variable	*Definition*
MS_DWG_DESIGNBACKGROUND_COLOR	Sets the background color for the default design model. Valid values are Red, Green, or Blue, where each of the three color indices is an integer between 0 and 255.
MS_DWG_DESIGNCENTER_UNITS	Sets units to open DWG files that use Design Center Units. Valid values are: Master Units Sub Units a unit defined in file units.def
MS_DWG_DISCARD_INVALID	If set, entities that are outside the DGN design plane are discarded and will not be written back to the DWG file on the next file save. If the variable is not set, MicroStation ignores these entities. Typically these entities are not valid and will cause the AutoCAD Zoom Extents tool to perform poorly.
MS_DWG_FOREGROUNDCOLOR255RGB	Sets the RGB value to display DWG color index 255 as the foreground color, with red, green, and blue values separated by commas. For example, setting MS_DWG_FOREGROUNDCOLOR255RGB= 255,255,255 will display DWG index color 255 as white. If this configuration variable is not set, a grayish color is displayed. This is a workaround for DWG's ambiguous index color 255, which serves both as a background color for wipeout fill and as a foreground color for other entities. The foreground definition is remapped by this configuration variable and the RGB value is saved as a named color "DWG Color 255" in a color book called "DWG Special Colors."
MS_DWG_GRAPHIC_GROUP_ATTRIBUTES	Sets blocks to Graphic Groups, that is, puts shared cell and attached tags into a graphic group. Valid values are ON (or no value) or OFF.
MS_DWG_HLINK_AS_ELINK	Converts hyperlinks to Engineering Links instead of Design Links. Valid values are ON (or no value) or OFF.

Configuration Variable	*Definition*
MS_DWG_LINEWEIGHT_MAPPING	Maps DWG line weights to DGN line weights. Valid values are 0=DWG weight1; 1=DWG weight2; 2=DWG weight3; and so forth to 31=DWG weight31, where DWG weights are the DWG line weight values in millimeters, for examples, 0.0, 0.13, 2.11.
MS_DWG_LWDEFAULT	Controls the width of the default line weight and is analogous to the AutoCAD registry variable LWDEFAULT. The default value is 0 for unweighted default lines. Valid LWDEFAULT values are From AutoCAD Registry, 0.00 mm, 0.05 mm, 0.09 mm, 0.13 mm, 0.15 mm, 0.18 mm, 0.20 mm, 0.25 mm, 0.30 mm, 0.35 mm, 0.40 mm, 0.50 mm, 0.53 mm, 0.60 mm, 0.70 mm, 0.80 mm, 0.90 mm, 1.00 mm, 1.06 mm, 1.20 mm, 1.40 mm, 1.58 mm, 2.00 mm, 2.11 mm. The Line weight index is also a valid alternative, that is, any integer from 0 through 211. A line weight index is an enumeration of line weight defined by DXF Group Code 370.
MS_DWG_MAX_DICTIONARYITEMS	(Affects DWG files with many dictionary items.) A dictionary item is non-graphical data stored in the DWG file that often does not impact the visible elements. When opening a file, if the DWG file has a large number of these items, performance can be slow. To speed up the file opening process, you can ignore this items. If you need these dictionary items, you can opt to keep them in spite of poor performance. This variable sets the number of dictionary items you want to keep. The default is set to 2000.
MS_DWG_MODELSPACE	Sets the model space to 2D or 3D. Valid values are 2D or 3D.
MS_DWG_PAPERSPACE	Sets the paper space to 2D or 3D. Valid values are 2D or 3D.

Configuration Variable	*Definition*
MS_DWG_PROXYSHOW	Controls the display of proxy objects within a DWG drawing. It is analogous to the AutoCAD registry setting PROXYSHOW. Valid values are: From AutoCAD Registry Do Not Show Proxy Show Proxy Image Show Proxy Box An alternative is an integer value such as 0 – do not show graphics, 1 – show graphics, or 2 – show boundary box only. The default setting is 1.
MS_DWG_PROXY_VIEW	Sets a view to be displayed for a multi-view proxy. Valid values are: Top Front Left Isometric
MS_DWG_REFERENCE_CONVERT	Converts reference files to DWG files. Valid values are ON (or no value) or OFF.
MS_DWG_REFERENCE_COPYLEVEL	Sets the conditions to copy reference levels during merge: only if they are not in the target file, if they are overridden, or always copy. Valid values are If Not Found, If Overrides Exist, or Always.
MS_DWG_REFERENCE_COPYNESTED	Copies live nested reference attachments to the target file when merging. Valid values are ON (or no value) or OFF.

Configuration Variable	*Definition*
MS_DWG_REFERENCE_EXTERNAL	Saves external reference file attachments to be an Xref attachment (retained), merged, merged as a block, or omitted. Valid values are: Retain Merge Merge To Cell Omit
MS_DWG_REFERENCE_MASKED	Saves masked reference file attachments to be an Xref attachment (retained), merged, merged as a block, or omitted. Valid values are: Retain Merge Merge To Cell Omit
MS_DWG_REFERENCE_MERGE_DISPLAYEDLEVELSONLY	Merges reference levels only if they are displayed. Valid values are ON (or no value) or OFF.
MS_DWG_REFERENCE_OPTIMIZEDCLIP	Optimizes reference clipping when merged. Valid values are ON (or no value) or OFF.
MS_DWG_REFERENCE_SELF	Saves self-referenced file attachments to be an Xref attachment (retained), merged, merged as a block, or omitted. Valid values are: Retain Merge Merge To Cell Omit
MS_DWG_RENDER_LIGHTSOURCE_OPEN	Sets to use light source for rendering. Valid values are ON (or no value) or OFF.
MS_DWG_RENDER_MATERIAL_OPEN	Sets to use materials for rendering. Valid values are ON (or no value) or OFF.

DWG SAVE Related Configuration Variables

Configuration Variable	Use
MS_DWG_2D_UNFILLED_3OR4SIDED_SHAPE	Converts 2D unfilled triangles and quadrangles to polyline, face, polyface mesh, or region entities. Valid values are: "Face" Entity "Region" Entity Polyface Mesh Polyline
MS_DWG_2D_UNFILLED_5ORMORESIDED_SHAPE	Converts 2D unfilled polygons to polyline, polyface mesh, or region entities. Valid values are: "Region" Entity Polyface Mesh Polyline
MS_DWG_2D_UNFILLED_COMPLEX_SHAPE	Converts 2D unfilled complex shapes to polyline, polyface mesh, or region entities. Valid values are: "Region" Entity Polyface Mesh Polyline
MS_DWG_2D_UNFILLED_GROUPHOLE	Converts 2D unfilled group hole elements to polyface mesh or region entities. Valid values are: "Region" Entity Polyface Mesh

Configuration Variable	*Use*
MS_DWG_3D_UNFILLED_3OR4SIDED_SHAPE	Converts 3D unfilled triangles and quadrangles to polyline, face, polyface mesh, or region entities. Valid values are: "Face" Entity "Region" Entity Polyface Mesh Polyline
MS_DWG_3D_UNFILLED_5ORMORESIDED_SHAPE	Converts 3D unfilled polygons to polyline, polyface mesh, or region entities. Valid values are: "Region" Entity Polyface Mesh Polyline
MS_DWG_3D_UNFILLED_COMPLEX_SHAPE	Converts 3D unfilled complex shapes to polyline, polyface mesh, or region entities. Valid values are: "Region" Entity Polyface Mesh Polyline
MS_DWG_3D_UNFILLED_GROUPHOLE	Converts 3D unfilled group hole elements to polyface mesh or region entities. Valid values are: "Region" Entity Polyface Mesh
MS_DWG_ACS_TO_UCS	Converts ACS to UCS. Valid values are ON (or no value) or OFF.
MS_DWG_BLOCKDEF_ON_LAYER0	Saves the block definitions on layer "0." Valid values are ON (or no value) or OFF.

Configuration Variable	*Use*
MS_DWG_BLOCKNAMES_FROM_TRIFORMA_PARTS	Sets the block names from TriForma parts. Valid values are ON (or no value) or OFF.
MS_DWG_BYBLOCK_COLOR	Sets the block definitions to use the color BYBLOCK. Valid values are ON (or no value) or OFF.
MS_DWG_BYBLOCK_LINETYPE	Sets the block definitions to use line type BYBLOCK. Valid values are ON (or no value) or OFF.
MS_DWG_BYBLOCK_WEIGHT	Sets the block definitions to use line weight BYBLOCK. Valid values are ON (or no value) or OFF.
MS_DWG_CONSTRUCTION_CLASS	Sets the elements of the construction class to "Construction" layer, "Defpoints" layer, element´s own layer, invisible, or omits them. Valid values are: Save To "Construction" Layer Save To "Defpoints" Layer Save Save As Invisible Omit
MS_DWG_CONVERT_RSC_FONTS	Converts and creates SHX files from RSC fonts. Valid values are ON (or no value) or OFF.
MS_DWG_CREATE_SEPARATE_SHEETS	When a DGN file containing sheet models is saved to DWG, the sheets are usually saved to separate layouts within the DWG file. If this variable is set, the sheets are saved to separate DWG files with the file name created by appending the model name to the original file name. Valid values are ON (or no value) or OFF.

Configuration Variable	Use
MS_DWG_CURVED_SOLIDSURFACE	Converts curved solids and surfaces to wireframe, polyface mesh or ACIS entities. Valid values are: Wireframe Polyface Mesh ACIS Entity
MS_DWG_CURVES	Converts curves to spline curves or polyline curves. Valid values are: Spline Entity Polyline
MS_DWG_DROP_LABELLINES	When present, a label line dimension will be dropped to single line text when saved to DWG. By default, a label line will become an mtext. If a label line's text positions are important, dropping them to a single line may be desired. Set this variable to any value to turn it on. It is off by default.
MS_DWG_DROP_UNSUPPORTED_LS	Drops line styles that are not supported by DWG file format. The most possible custom line styles DWG format allows are those with characters in them. Any other types are incompatible. Valid values are ON (or no value) or OFF.
MS_DWG_EMPTY_EDF_TO_SPACE	Converts blank enter data fields to spaces. Valid values are ON (or no value) or OFF.

Configuration Variable	*Use*
MS_DWG_FARREFDEPENDENCY	If set to 0 (the default), DWG named groups work as they do in DWG, that is, elements from a reference file are not supported by group. This is a DWG limitation. If set to 1, you can work around that limitation, that is, elements in reference files can be selected and saved in named groups. However, these groups still will not work in AutoCAD. If these groups and elements are edited in AutoCAD, they may not function anymore when the DWG file is reopened in MicroStation.
MS_DWG_FILE_CODEPAGE	Sets the DWG file codepage. Valid values are 1252 (English) , 1251 (Cyrillic), 1253 (Greek), 1254 (Turkish), 1255 (Hebrew), 1256 (Arabic), 1257 (Baltic), 1258 (Vietnam), 874 (Thai), 932 (Japanese), 936 (Simplified Chinese), 949 (Korean), or 950 (Traditional Chinese).
MS_DWG_FILLED_3OR4SIDED_SHAPE	Converts filled triangles and quadrangles to solid, polyface mesh, region or hatch entities. Valid values are: "Solid" Entity "Region" Entity "Hatch" Entity Polyface Mesh
MS_DWG_FILLED_5ORMORESIDED_SHAPE	Converts filled polygons to polyface mesh, region or hatch entities. Valid values are: "Region" Entity "Hatch" Entity Polyface Mesh

Configuration Variable	Use
MS_DWG_FILLED_COMPLEX_SHAPE	Converts filled complex shapes to polyline, region or hatch entities. Valid values are: "Region" Entity "Hatch" Entity Polyline
MS_DWG_FLAT_SOLIDSURFACE	Converts flat solids and surfaces to wireframe, polyface mesh or ACIS entities. Valid values are: Wireframe Polyface Mesh ACIS Entity
MS_DWG_FORCE_POSITIVE_ARCS	For arcs, changes clockwise orientation to counter clockwise. Valid values are ON (or no value) or OFF.
MS_DWG_FORCE_ZERO_ZCOORDINATE	Sets the z-coordinate of an element to have a zero value. Valid values are ON (or no value) or OFF.
MS_DWG_INDEXCOLOR_TO_TRUECOLOR	Converts index color to true color. Valid values are ON (or no value) or OFF.

Configuration Variable	Use
MS_DWG_LEADER_HOOKLINE	If set, an inline elbow displays on notes that did not have an elbow when first created. MicroStation allows a note to be placed without an inline elbow (a hook line in AutoCAD) when the inline toggle is unchecked, but AutoCAD does not. This type of note (for instance, a leader without a hook line) saved to DWG will retain correct graphical presentation, and will operate properly in AutoCAD. However, the audit tool will generate an error (annotation ID not null). The audit error can be resolved by setting this configuration variable to 1. However, the original graphical presentation will be lost (the hook line will appear).
MS_DWG_LEVEL_DISPLAY	Sets the view number from which the level display will be used for the layer´s on/off status. Valid values is a number from 0 through 8.
MS_DWG_LEVELDISP_FOR_VPORTFREEZE	Saves the level display status per view to viewport layer thaw/freeze status. Valid values are ON (or no value) or OFF.
MS_DWG_LEVELSYMBOLOGY_OVERRIDE	Overrides the element symbology from the level symbology. Valid values are ON (or no value) or OFF.

Configuration Variable	*Use*
MS_DWG_LINEARPATTERN_CLASS	Sets the elements of the linear pattern class to "Linear Patterned" layer, "Defpoints" layer, element's own layer, invisible, or omits them. Valid values are: Save To "Linear Patterned" Layer Save To "Defpoints" Layer Save Save As Invisible Omit
MS_DWG_LINECODE_SCALE	Scales the line code. Valid value is a positive real number.
MS_DWG_LOGICALNAME_TO_XREFNAME	Saves the reference attachment logical name as the block name of an Xref file. Valid values are ON (or no value) or OFF.
MS_DWG_NONDEF_DESIGNMODEL_ATTACHMENTS	Merges the attachments of a non-default design model or merges them as block references. Valid values are: Merge Merge To Cell Omit
MS_DWG_NONDEFAULT_DESIGNMODEL	Saves non-default design models to separate files, layout models (paper space), or ignore them if their attachments are not merged. Valid values are: Create Separate Files Create Paper Space Ignore If Not Merged

Configuration Variable	*Use*
MS_DWG_NONPLANAR_POLYLINES	Converts a nearly planar line string to a 2D or 3D polyline. A nearly planar line string is strictly non-planar, but its vertex deviation is small enough to be treated as planar such that it is allowed to become a 2D polyline. Valid values are ON (or no value) or OFF.
MS_DWG_ONE_BLOCK_FOR_DUP_CELLS	Creates one block definition for all type-2 cells that are found to be the same. Valid values are ON (or no value) or OFF.
MS_DWG_OVERLAY_FOR_REFERENCES	Creates overlays for reference attachments (no live nesting). Valid values are ON (or no value) or OFF.
MS_DWG_PATTERN_CLASS	Sets elements of pattern class to "Pattern" layer, "Defpoints" layer, element's own layer, invisible, or omits them. Valid values are: Save To "Pattern" Layer Save To "Defpoints" Layer Save Save As Invisible Omit
MS_DWG_PFACE_MESH_ANGLE	Sets an angular tolerance for polyface mesh conversion. Valid value is a real value in degrees between 0 and 90.
MS_DWG_PLANARPOLYLINES	Converts a planar line string to a 2D or 3D polyline. A planar line string has all its vertices lined up to form a unique plane. They do not have to be on an orthogonal plane; they can be on any plane in space. Valid values are: 3D Polyline Polyline

Configuration Variable	*Use*
MS_DWG_REFERENCE_CONVERT	Converts reference files to DWG files. Valid values are ON (or no value) or OFF.
MS_DWG_REFERENCE_COPYLEVEL	Sets the conditions to copy reference levels during merge: only if they are not in the target file, if they are overridden, or always copy. Valid values are: If Not Found If Overrides Exist Always
MS_DWG_REFERENCE_COPYNESTED	Copies live nested reference attachments to the target file when merging. Valid values are ON (or no value) or OFF.
MS_DWG_REFERENCE_EXTERNAL	Saves external reference file attachments to be an Xref attachment (retained), merged, merged as a block, or omitted. Valid values are: Retain Merge Merge To Cell Omit
MS_DWG_REFERENCE_MASKED	Saves masked reference file attachments to be an Xref attachment (retained), merged, merged as a block, or omitted. Valid values are: Retain Merge Merge To Cell Omit

Configuration Variable	*Use*
MS_DWG_REFERENCE_MERGE_DISPLAYEDLEVELSONLY	Merges reference levels only if they are displayed. Valid values are ON (or no value) or OFF.
MS_DWG_REFERENCE_OPTIMIZEDCLIP	Optimizes reference clipping when merged. Valid values are ON (or no value) or OFF.
MS_DWG_REFERENCE_SELF	Saves self-referenced file attachments to be an Xref attachment (retained), merged, merged as a block, or omitted. Valid values are: Retain Merge Merge To Cell Omit
MS_DWG_RENDER_LIGHTSOURCE_SAVE	Saves rendering light sources. Valid values are ON (or no value) or OFF.
MS_DWG_RENDER_MATERIAL_SAVE	Saves rendering materials. Valid values are ON (or no value) or OFF.
MS_DWG_SAVE_DIMENSION_SETTINGS	Saves active dimension settings, such as the one listed as Style-none in dimension style dialog. Valid values are ON (or no value) or OFF.
MS_DWG_SAVE_FILE_SETTINGS	Saves file settings such that non-DWG settings can round-trip back. Valid values are ON (or no value) or OFF.
MS_DWG_SAVE_FRONTBACK_CLIPS	Saves front-back clippings. Valid values are ON (or no value) or OFF.
MS_DWG_SAVE_REFERENCE_PATH	Tells MicroStation whether/how to save paths for reference attachments. Valid values are: When saving to same directory Relative to Master File Never

Configuration Variable	Use
MS_DWG_SAVE_UNITS	Sets the file units to be saved. Valid values are: Master Units Sub Units Arch./Engineering a unit defined in file units.def
MS_DWG_SCALE_BLOCKS	Scales the block definitions. Valid values are ON (or no value) or OFF.
MS_DWG_SHEETBACKGROUND_COLOR	Sets the background color for sheet models. Valid values are Red, Green, Blue, where each of these color values is an integer between 0 and 255.
MS_DWG_SHX_OUTPUT_PATH	Sets the path to place converted SHX files. Valid value is a path or folder name.

Configuration Variable	*Use*
MS_DWG_SOURCEVIEWGROUP	Used to specify a view group name, rather than using the active view group, to save the level display on/off status per view to DWG's global layer display. Because DWG does not support per-view level display, if multiple view groups (for example, the default design model and sheet models) use different per-view level display, only one can be saved as the global layer display for all models. When this configuration variable is not set, the active view group determines the global layer display status. When it is set with a valid view group name, that view group determines the global layer display status. When it is set with an invalid view group name, the first view group that points to a sheet model in the file determines the global layer display status. This can be useful if you are saving files in a batch, and each file has only one sheet model which is not always the active model. This configuration variable takes effect only if MS_DWG_LEVEL_DISPLAY is set.
MS_DWG_TEXTSTYLE_NAME_TEMPLATE	Sets a text string template to convert text style name. Valid value is a text string that may contain a place holder %s for the font name.
MS_DWG_VERSION	Sets DWG version to be saved. Valid values are 11, 12,13, 14, 2000, 2000i, 2002, 2004, 2005, 2006, 2007, 2008, 2009.

Configuration Variable	*Use*
MS_DWG_VPORT_LAYER_FROM_CLIP	Sets the layer of viewport entity from the clipping element. Viewport entities are represented as reference attachments in MicroStation – the viewport level is extracted from the reference attachment. If no level is set for the reference attachment then by default the viewport is assigned to layer 0 . However, if this variable is set and a clip element is present, then the viewport layer is extracted from the clip element.
MS_DWG_VPORT_MAP_LOCATE_OFF_TO_LOCKED	If set, the Display locked status of a viewport entity is mapped to the Locate setting of the reference attachments that represent this viewport. In this case, a viewport with Display locked off will have Locate turned off – and changing the Locate status of the reference attachment will change the Display Locked status of the viewport.
MS_DWGINSERTLAYER	Specifies the layer to which normal (unshared) cells and reference attachments are assigned when saving the open DGN file in DWG format. If this configuration variable is not defined, layer 0 is used. Valid values are ON (or no value) and OFF.
MS_DWGSAVEAPPLICATIONDATA	Linkage data and type 66 application elements can be saved from DGN to DWG. If set, the applications are stored as XRECORDS and the linkages as XDATA. Valid values are ON (or no value) and OFF. The default is off.
MS_DXF_PRECISION	Sets the number of decimal places for real numbers when saving

That's probably more than I have time for….but hopefully not more that you wanted to know!

Thank you for your time

Hope you enjoyed the session!

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