CDOT Converting AutoCAD File to MicroStation

This document guides you through translating AutoCAD files into MicroStation using a .CSV remapping file. The MicroStation dgn files produced using this workflow will have standard CDOT levels using bylevel symbology. For plotting AutoCAD files only, see the workflow, *CDOT Printing AutoCAD Files in MicroStation*.

Batch Conversion Of AutoCAD Files

Entire directories can be processed at one time using the Batch Converter. Using this option, a large number of files can be processed quickly. However, because only one of the files can be used to create the csv file (the open file), many AutoCAD levels may be transferred to the MicroStation files. As the user finds MicroStation files with AutoCAD levels, those files can be used to create a new csv file and the Batch Converter can be re-run on all the files. By repeating this process all of the AutoCAD levels will be gradually eliminated.

The steps below describe how to set up and run the Batch Converter.

Opening an AutoCAD file in MicroStation

1. From the **MicroStation Manager**, open an AutoCAD (*.dwg) drawing file. Change *List Files of Type* to *CAD Files (*.dwg, *.dgn, *.dxf)* to see the AutoCAD files in the selected directory. **<D>** the desired file then **<D> Open**.
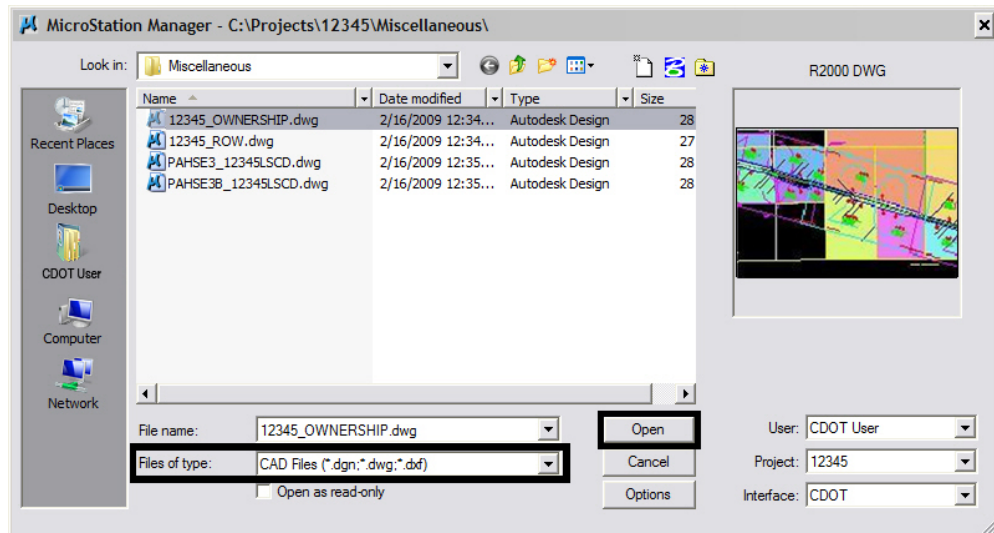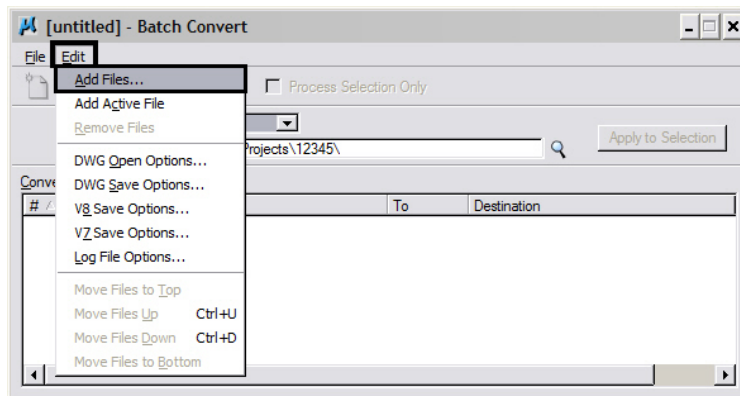
2. The *DWG/DXF Units* dialog box will appear. Verify the *Units* are set to **Survey Feet** and <D> **OK**.
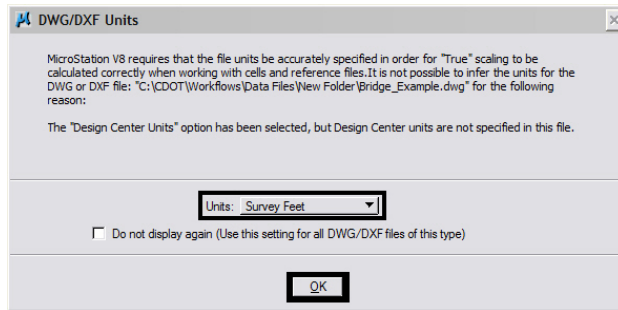
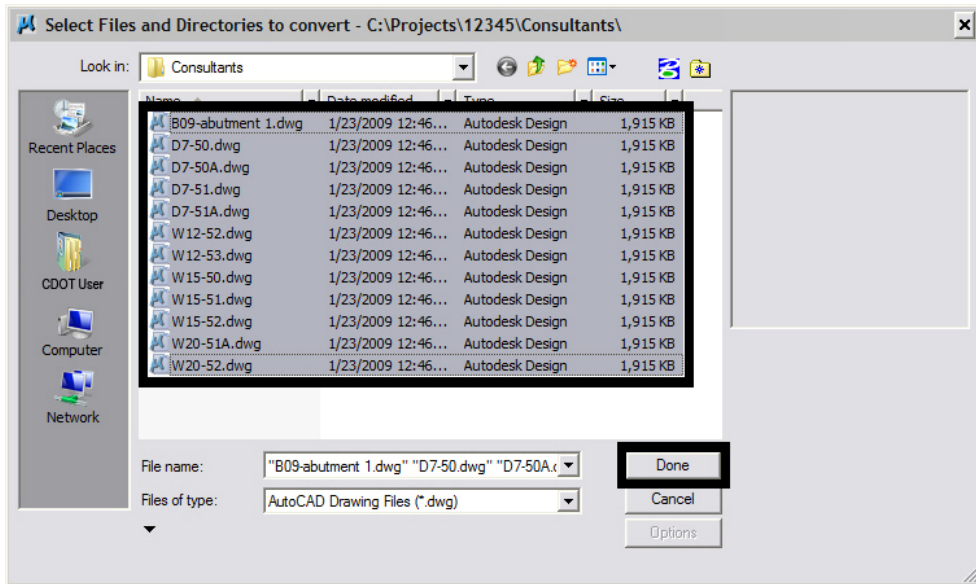
3. Select **Utilities > Batch Converter** from the MicroStation menu. The *Batch Convert* dialog box is displayed.
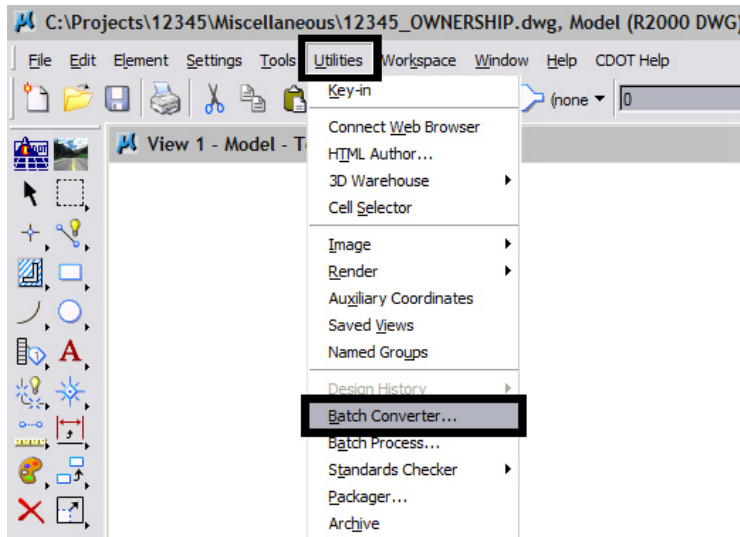

4. Select **Edit > Add Files** from the menu.

5. From the *Select Files and Directories to Convert* dialog box, Navigate to the directory containing the files to be converted, then select the files to be converted. **<D>** to select the file, and **<D> <Ctrl>** to add others.


6. After all of the desired files have been added, **<D> Done**. The *Select Files and Directories to Convert* dialog is dismissed.

7. Back on the *Batch Convert* dialog box, select **Edit > V8 Save Options** from the menu.
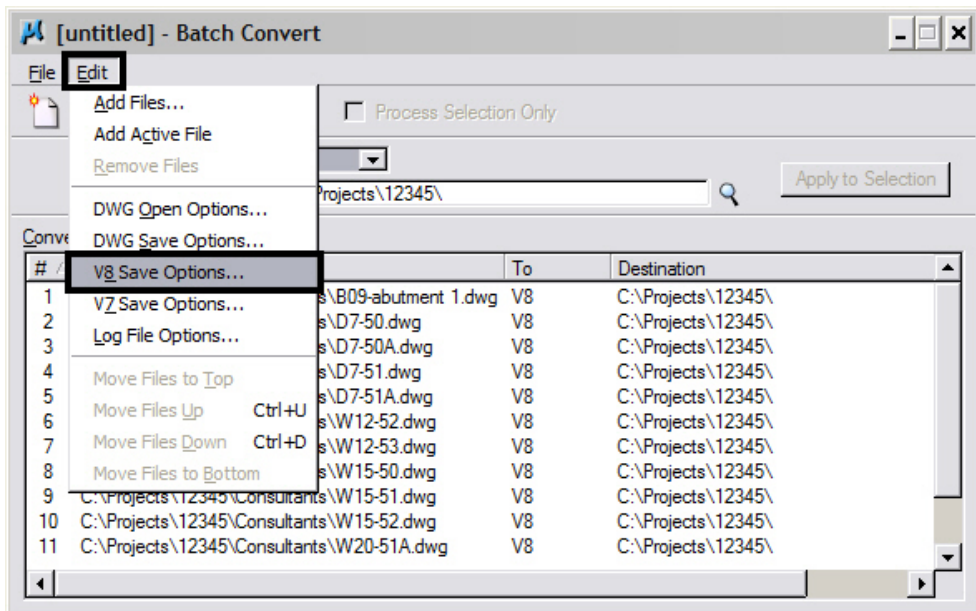
Editing the CSV file

1. In the *Save As V8 Options* dialog box, open the template CSV file that is created when you ran the *CDOT – Create Project Directory* application. The CSV file maps all of the previous AutoCAD layers to the standard CDOT MicroStation levels. <D> the Browse for CSV remapping file icon to edit the CSV file.
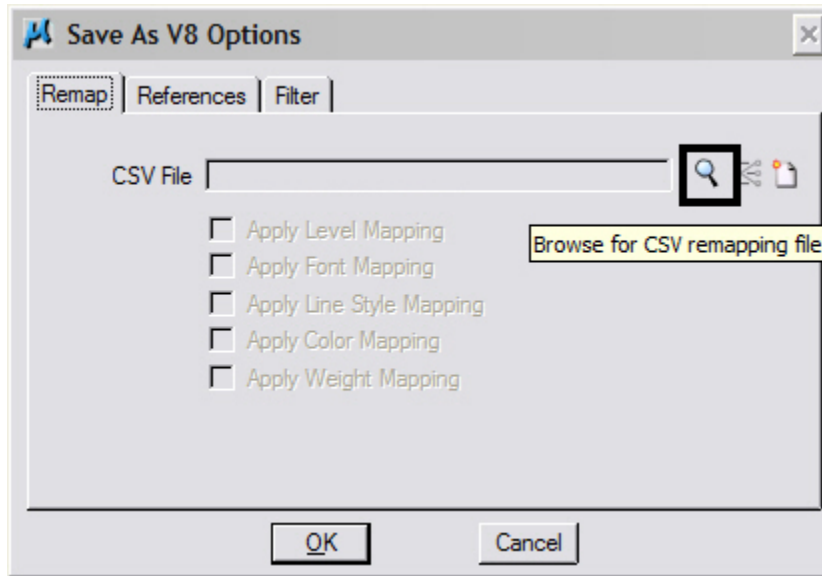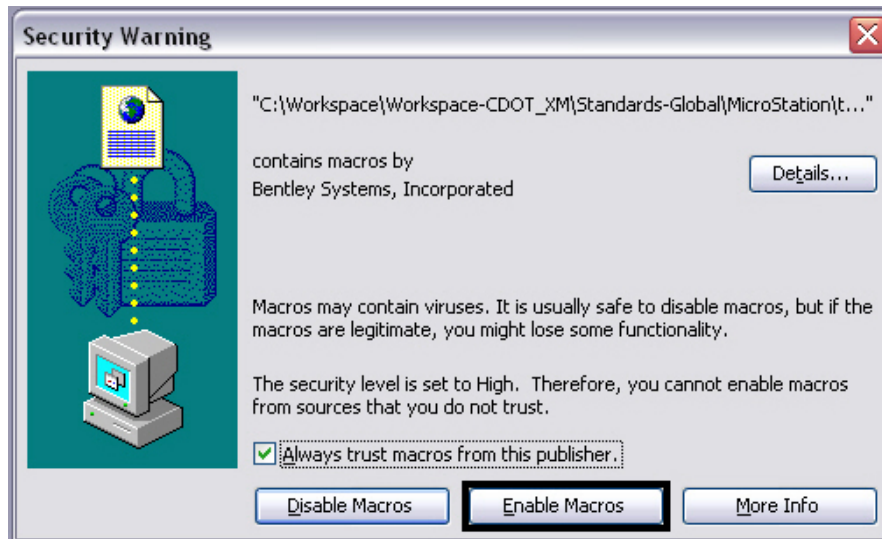
2. Navigate to the *C:/Projects/12345/Miscellaneous* directory. **<D>** the file
   12345.csv to highlight it, then **<D> Open**.
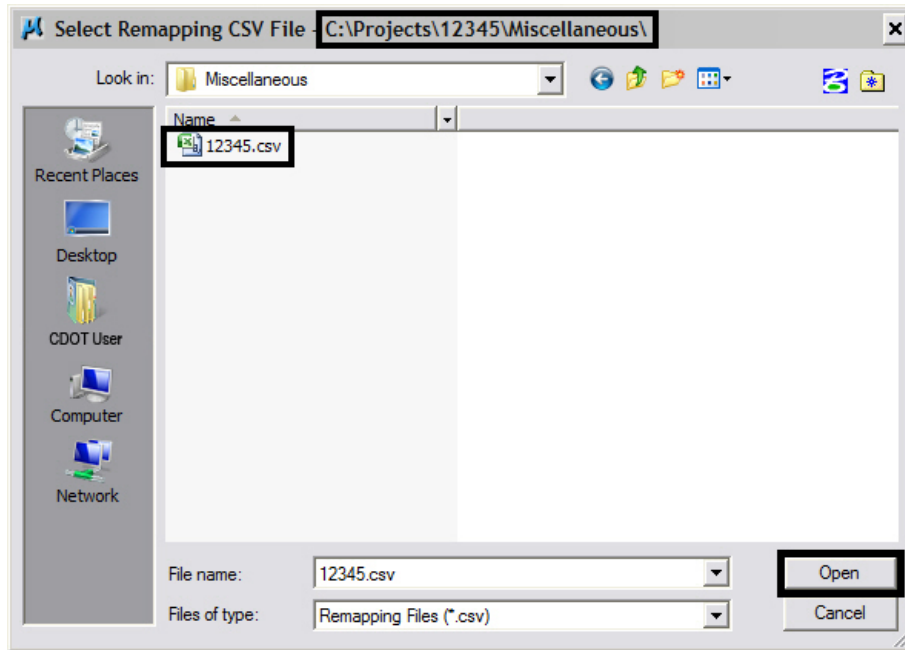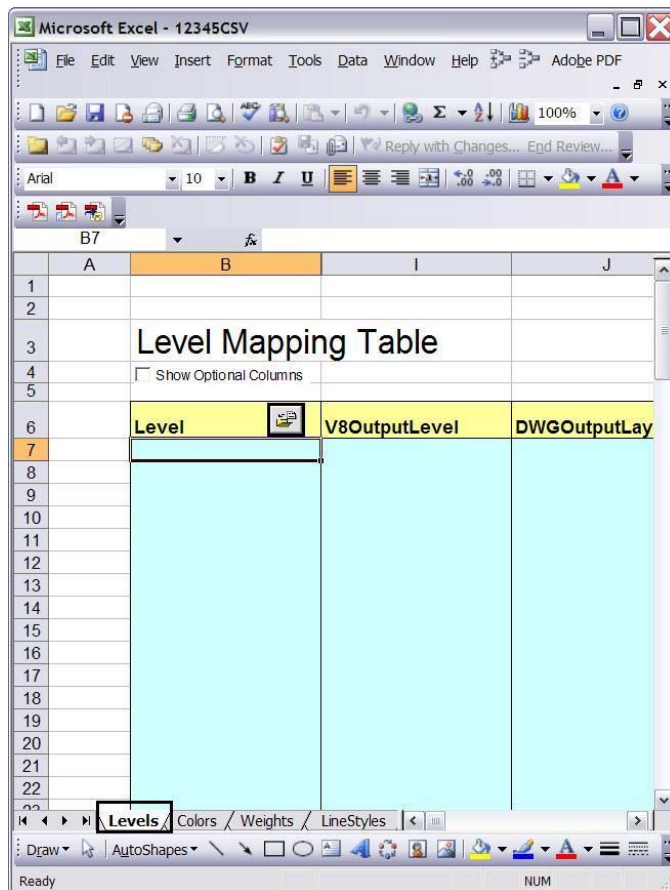
3. The *CSV File* field will be populated. In the *Save As V8 Options* dialog box,
   <D> the **Edit CSV remapping file** icon.
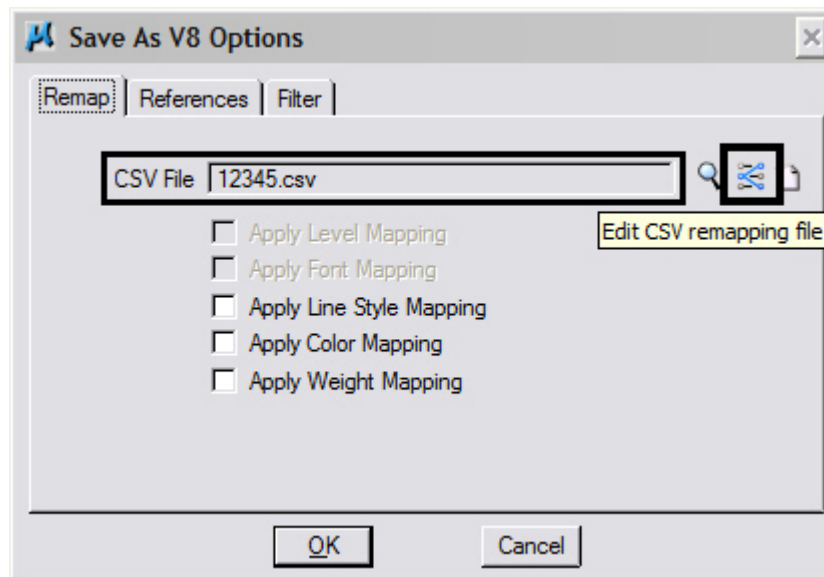
4. Microsoft Excel will activate. If the *Security Warning* dialog box appears, **<D> Enable Macros**.

5. In Excel, the *Level* tab will be active. **<D>** the [icon] icon that is embedded in the *Level* cell.

6. The fields under *Level* will be populated with the layers that are defined in the AutoCAD file.

	A	B		I	J
1					
2					
3		Level Mapping Table			
4		☐ Show Optional Columns			
5					
6		Level	🖻	V8OutputLevel	DWGOutputLayer
7		TEXT			
8		BROKEN			
9		HIDDEN			
10		OUTLINE		AutoCAD Levels	
11		TITLE			
12		HATCH			
13		Center			
14		Dimensions			
15		REBAR			
16		Defpoints			
17		Zigzag			
18		0			
19		DRAFT_Text-1			
20		DRAFT_Text-2		MicroStation Levels	
21		DRAFT_Text-3			
22		DRAFT_WT-0			
23		DRAFT_WT-1			
24		DRAFT_WT-3			
25		DRAFT_WT-2			
26		DRAFT_WT-4			
27		DRAFT_WT-5			
28		DRAFT_WT-6			
29		DRAFT_WT-7			
30		DRAFT_Screened-40			
31		DRAFT_Screened-70			
32		DRAFT_Pattern			

In the example above, the first 12 levels listed are the AutoCAD layer names. The levels below them are the CDOT standard MicroStation levels.

7. In order to remap the AutoCAD layers to the standard CDOT levels, you will need to manually populate the *V8OutputLevel* fields. To do this, find the desired CDOT standard MicroStation level in the Level column. Copy/Cut the level and paste it in the *V8OutputLevel* column directly across from the AutoCAD layer it is to replace.

In the above example, elements that were on the AutoCAD 'TEXT' layer will be placed on the 'DRAFT_Text-3' level' after conversion.

Note: Not all levels need to be populated. Blank entries in V8OutputLevel column will be ignored when processed and the AutoCAD layer (if occupied) will be brought into the MicroStation file as a new level. Be aware that some of the MicroStation levels are not in alphabetical order. And take care to search the entire list for the desired level.

Layers generated in AutoCAD that will be recreated as cells in MicroStation such as the Border, North Arrow, and Bar Scales do not need to be remapped because they will automatically come in on the correct levels when the standard CDOT workflows are followed. Also, the layers used for creating AutoCAD viewports do not need to be remapped. Items on the Defpoints layer should be remapped to the level DRAFT_INFO_No-Plot.

The line styles, color, and weight of each level has already been taken into account through the CSV file. The translation variables in the CSV file have been set to remap all levels to bylevel symbology.

Note: Steps 8 and 9 below are available when converting a single file only. When doing a batch conversion, all of the models within the file will be converted.

8. In the **Save As V8 Options** dialog, **<D>** the Filter tab. **Select** *Design Models* and/or *Sheet Models*.
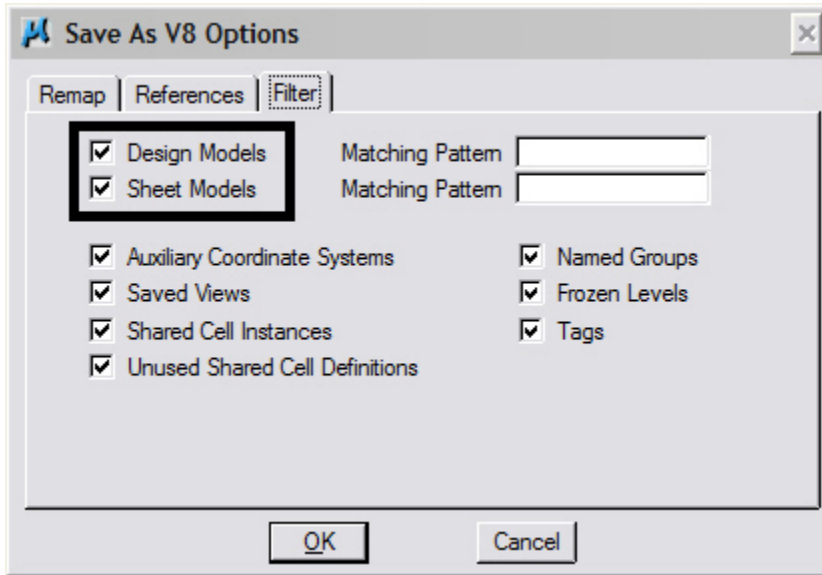
9. From the *Select Models* dialog, isolate the Model file from the Sheet Layouts. CDOT Standards do no allow multiple models within a single dgn file.. Highlight the *Model* file and **<D> OK**.
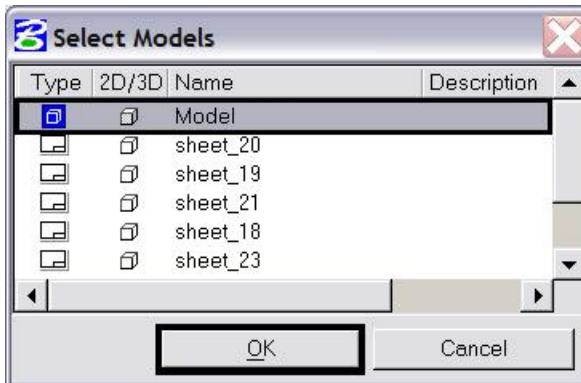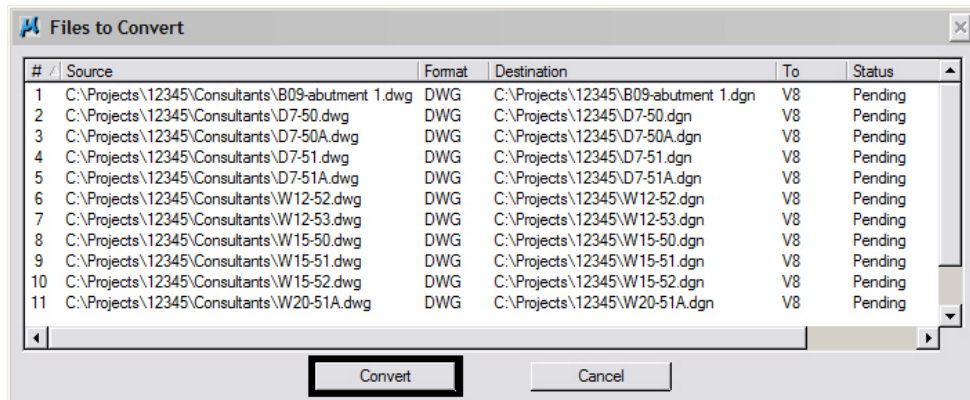
10. Check on the fields for ***Apply Level Mapping***, ***Apply Line Style Mapping***, ***Apply Color Mapping***, and ***Apply Weight Mapping***. **<D> OK**.
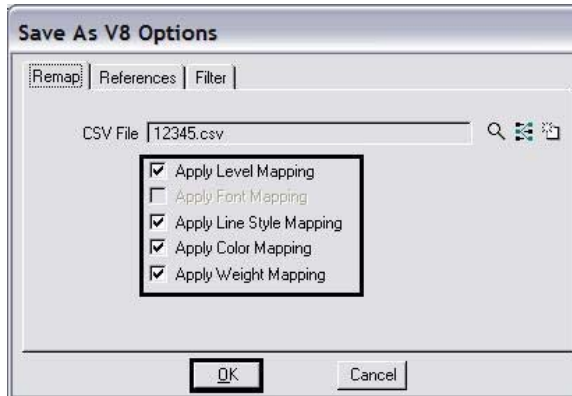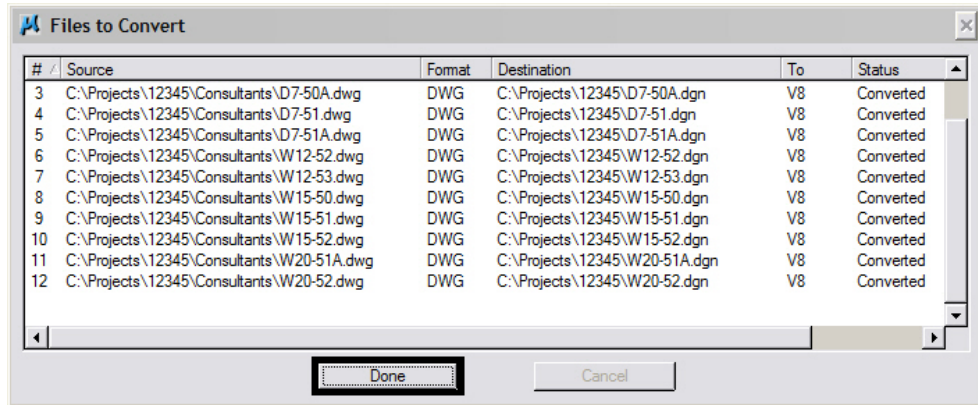

11. From the ***Batch Convert*** dialog box, **<D>** the **Process Batch Convert Job** icon.
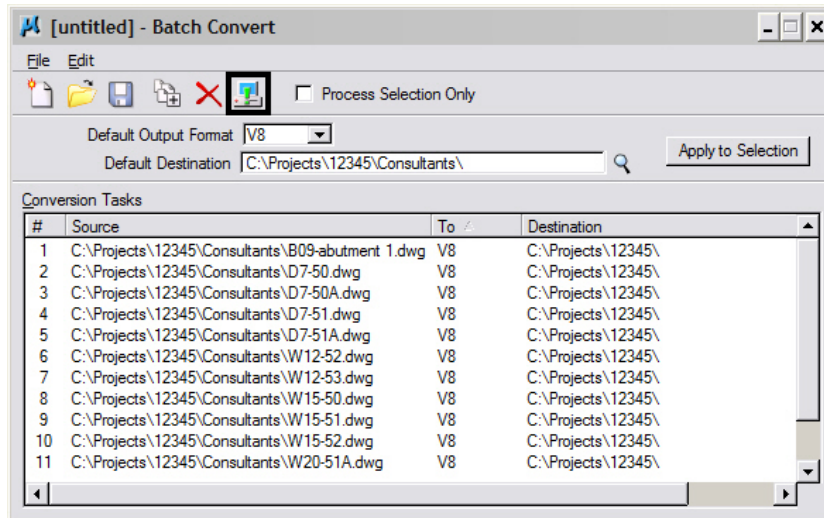
12. The **Files To Convert** dialog box is displayed. From this dialog, **<D>** the **Convert** icon.

13. When the processing is complete, **<D>** the **Done** icon to dismiss the dialog box.


This will convert all of the levels in the active file (as specified in the csv file) and convert the same levels in the other specified files.

It is possible that the other files processed will have other AutoCAD levels. When these are discovered, repeat this conversion process on the previously converted MicroStation files. This will clean up the file that is currently being used and update the levels in other specified files.

Converted Files With Multiple Models

Sheet Layout models are not used in the standard CDOT configuration. However, those models will be retained in batch converted files. If the Sheet Layouts contain information that is needed, they will need to be saved to individual dgn files. To do this we will reference a dgn file to itself, selecting the desired sheet model, in order to copy information from the sheet layout to the default model.

1. Open the converted dgn file that contains the Sheet Layouts to be saved.

2. Select **File > Save As** and name the file appropriately for the Sheet Layout to be saved and **<D> OK**.

3. This will open the copy of the file. *Delete* all of the elements from the Default Model.

4. **<D>** the **References** icon from the MicroStation Primary Tools toolbar.
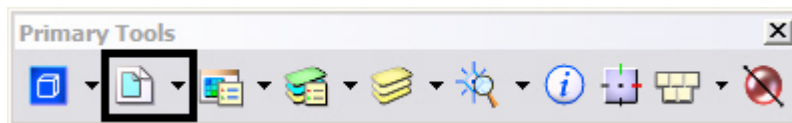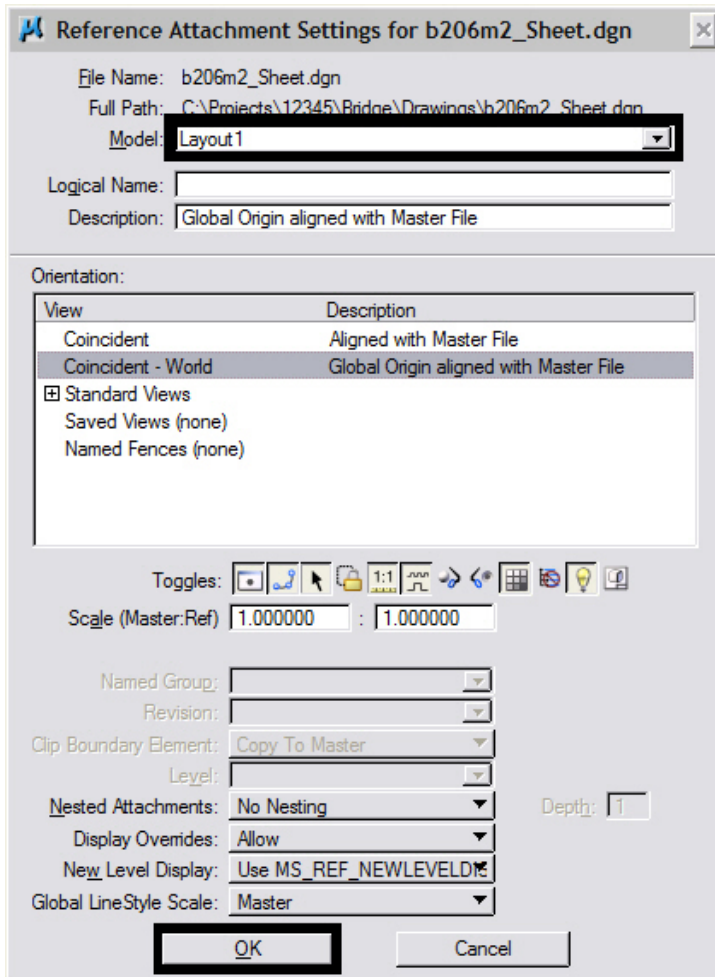
5. Select **Tools > Attach** from the References dialog box.
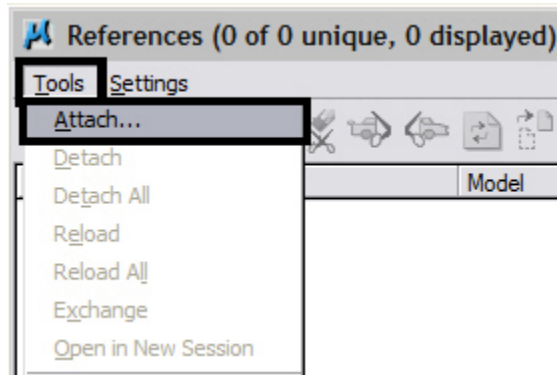

6. Select the open dgn file to attach it to itself. **<D> Open.**
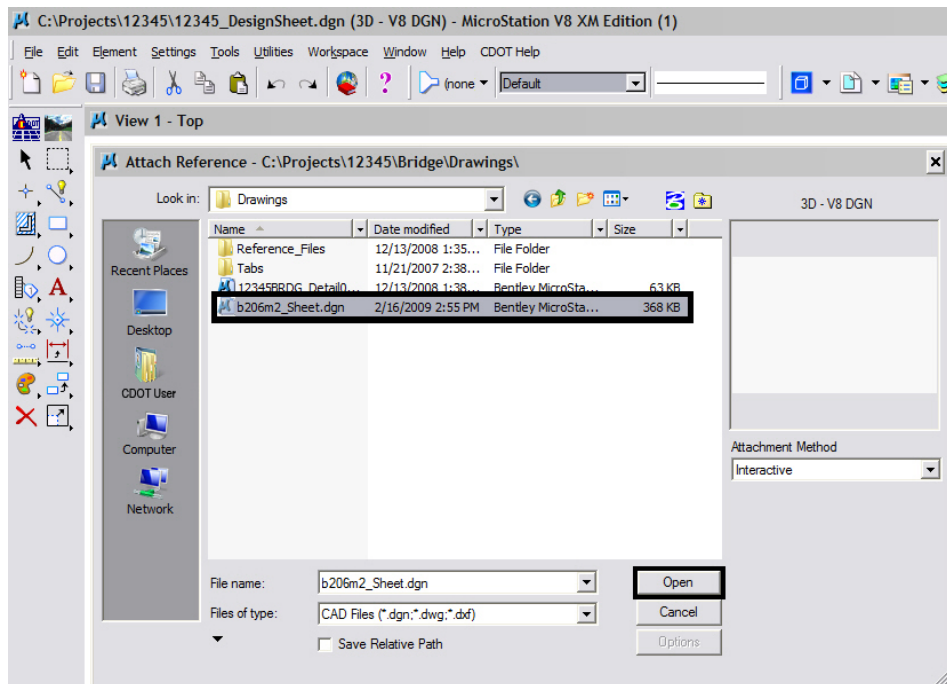
7. In the ***Reference Attachment Settings*** dialog box, select the desired Sheet Layout from the **Model** drop down menu. **<D> OK**.


8. **<D>** the **Fit view** control icon to display all of the elements in the view.

9. All of the elements in the view must be copied into the default model. This can be done using the **Element Selector** or with a **Fence**. When making the copy be sure to snap to an element when copying and the same point on the element when placing the elements. This will ensure that they are at the same coordinates in the default model as they were in the sheet layout model.

10. After the elements have been copied, **Detach** the reference file.
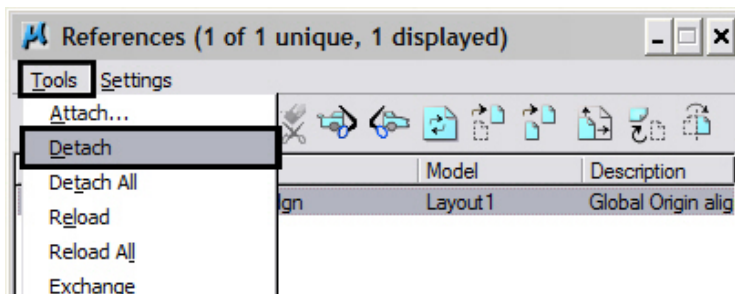
11. **<D>** the **Models** icon from the MicroStation Primary Tools toolbar.

12. In the *Models* dialog box, **<D>** to highlight all of the models except the Default Model. **<D>** the **Delete** icon to remove all of the sheet layouts. **<D>** the **'X'** to close the *Models* dialog box.
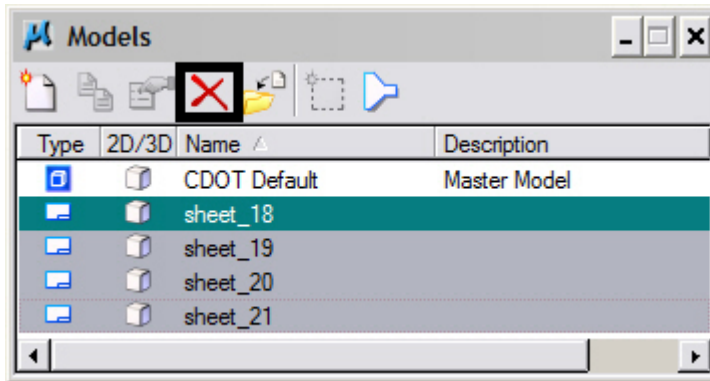

13. Steps 1 through 12 will have to be repeated for each sheet layout.

Converting a Single AutoCAD file

1. Open the desired AutoCAD file in MicroStation as described in *Opening an AutoCAD file in MicroStation* steps 1 and 2 above.

2. Select **File > Save As**.
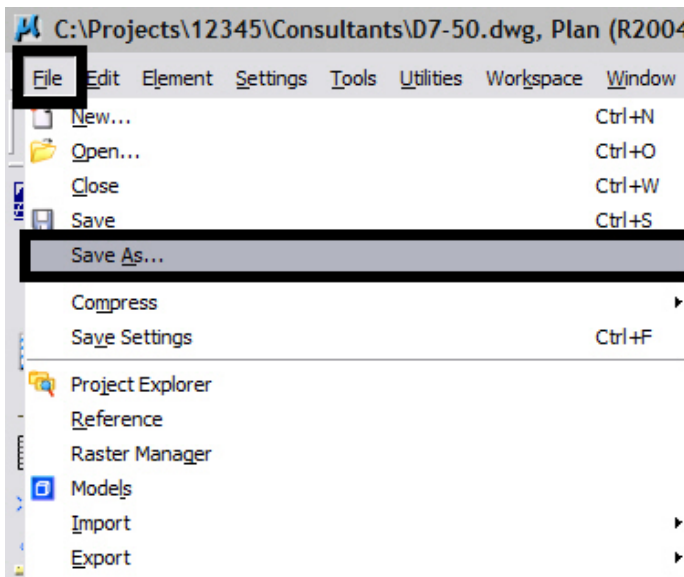
3. Change the *Select Format to Save* to **MicroStation V8 DGN Files (*.dgn)** and Navigate to the appropriate folder under the Projects directory. The file will be automatically saved with the same name as the AutoCAD file with a different extension. You can rename the file at this time if you choose to do so. **<D> Options**.
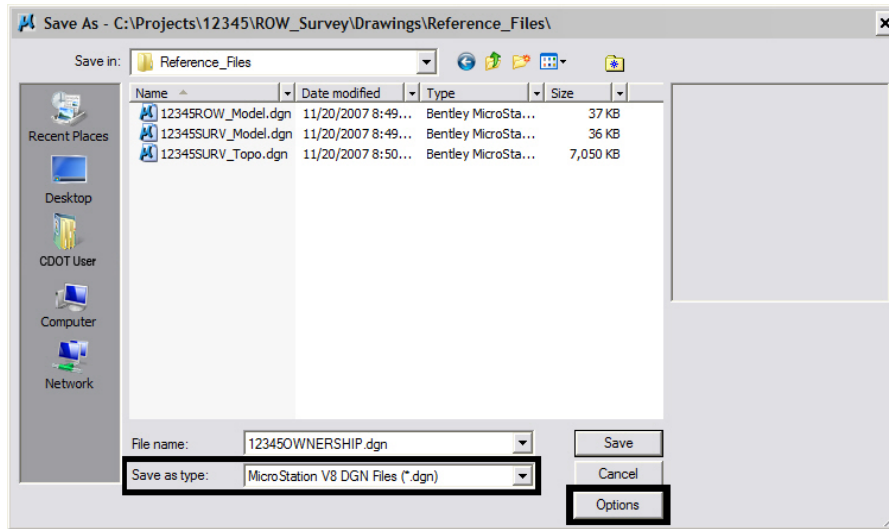

Note: Model files should be saved to the specialty group's *Reference_Files* folder. Sheet files are saved under the specialty group's *Drawings* folder.

4. **<D> OK** in the *Save As* dialog box. The CSV file will execute and the AutoCAD drawing file will be converted to a MicroStation file.
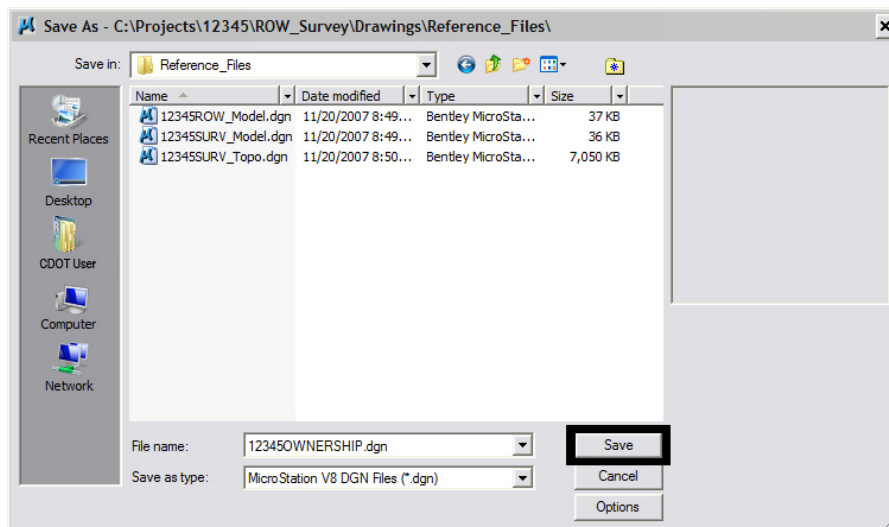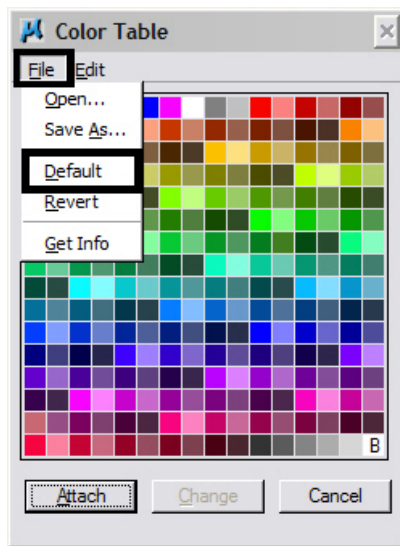

The file that is now open in MicroStation is the converted file. Running the CSV file changed the levels in the Model file to the CDOT Standard levels with bylevel symbology.
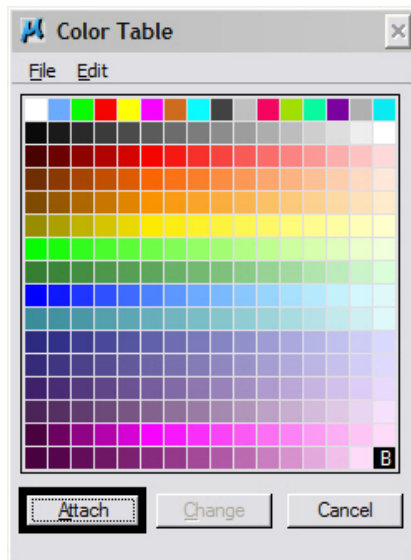
5. From the MicroStation menu, selected **Settings > Color Table** after the MicroStation drawing file has been created.
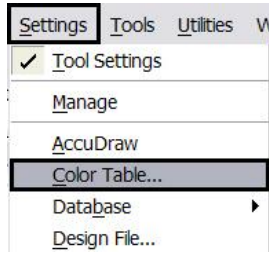
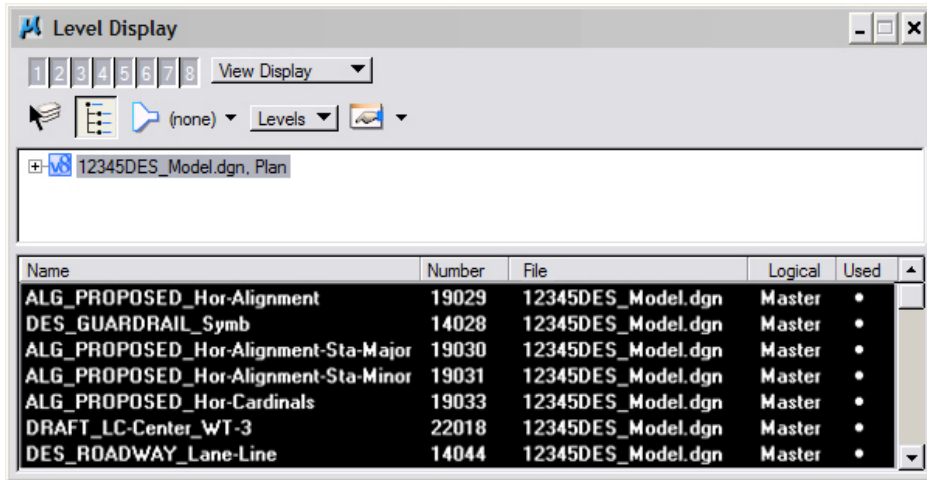6. In the *Color Table* dialog box, select **File > Default**.

7. <D> **Attach**.

8. Verify that the conversion was successful. **<D>** the **Level Display** icon from the MicroStation *Primary* toolbar.


9. In the *Level Display* window, **<D>** on the *Used* tab to sort the levels by those that have elements. (Note: levels with elements will have a dot in this column. If no used elements are visible, **<D>** on the tab again.

10. If the triangle on the tab is pointing down, the used levels are at the top of the window.)

Other Drawing Elements

1. Other updates will need to be made to the files so all drawing elements and sheet setups conform to the CDOT standards.

2. All of the Sheet Layouts will need to be recreated using CDOT standard workflows. This means there can only be one Model for each MicroStation file. All of the sheet borders will need to be placed in their own separate file, called a Sheet File. Then, the Model file will be referenced to the Sheet File. Please refer to the documents *CDOT Sheet File Creation*, *CDOT Sheet File Creation Multiple Scales*, and *CDOT Creating Multiple Plan Sheets* for additional information about this procedure. They are all accessed from the Windows Start menu under > *All Programs > _CDOT_CADD_Information > Workflows*.

3. Recreate all Dimensions and leader lines (placed by AutoCAD) using the standard CDOT dimension styles. The dimensioning commands are found in the *CDOT menu* under Drafting > Dimensions.
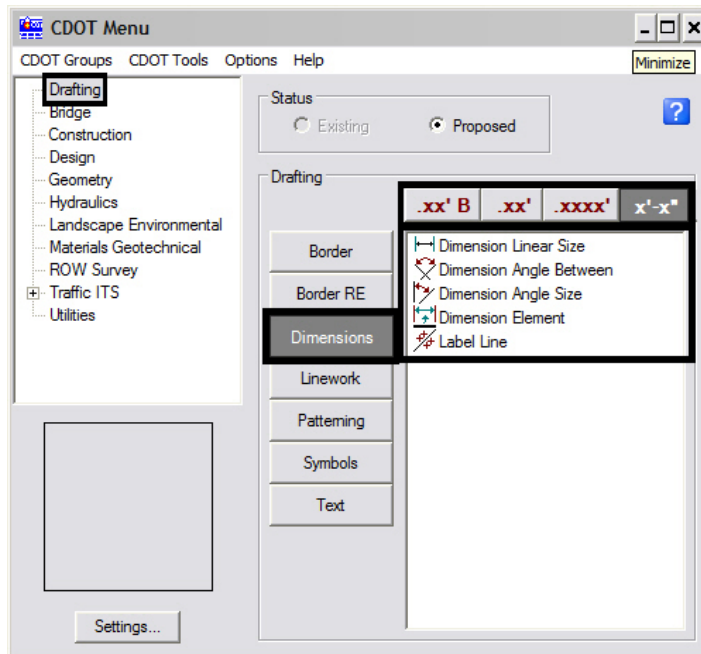
4. Erase all hatch patterns generated in AutoCAD recreate using the MicroStation Patterns tools, shown below.

5. All blocks generated in AutoCAD will need to be replaced with the standard CDOT MicroStation Cells. The cells are found on the *CDOT menu*. Use the *CDOT Menu Explorer* to select the desired specialty group. Use the *Category* buttons and the *Filter* buttons to locate the cells within the menu. Select the desired cell from the list.
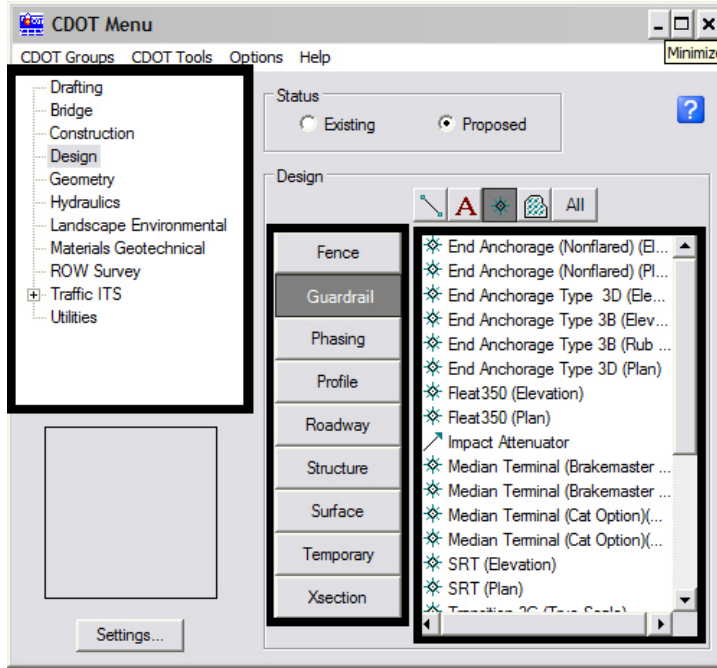

Updating Text

6. Text created in AutoCAD with multiple text strings can be converted to a text node in MicroStation. Some multiple text strings created in AutoCAD will be translated into a text node when the file is converted.

To verify this, <D> the **Element Information** icon . Text Nodes will display under the General Tab.
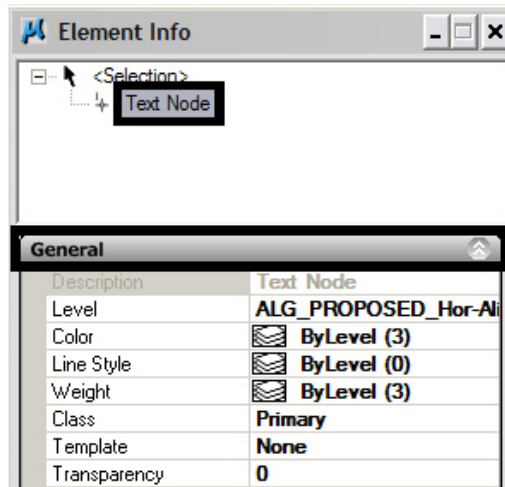
7. If not, select all text that will be combined into a text node using the **Element Selection** tool. While in the **Element Selection** command, hold down the **Ctrl** key to select individual text strings. Highlight them in the order they are to be placed into the text node. Do not *Window* around the multiple lines of text because the text strings may not merge in the desired order.
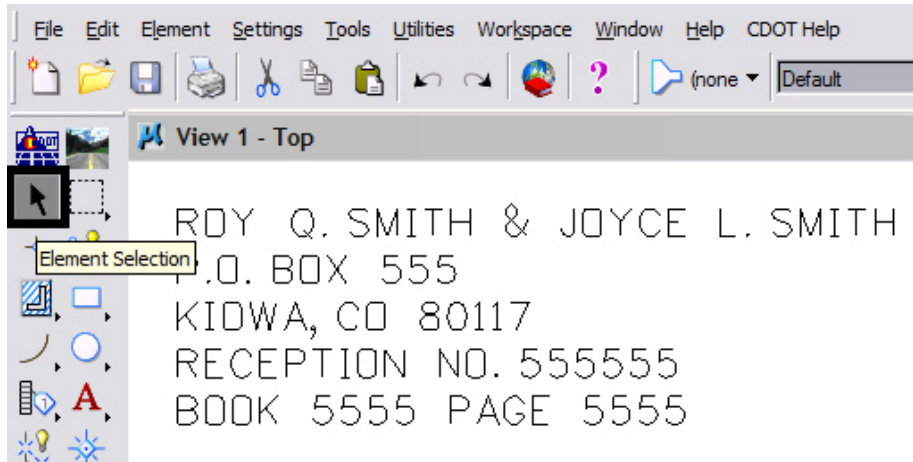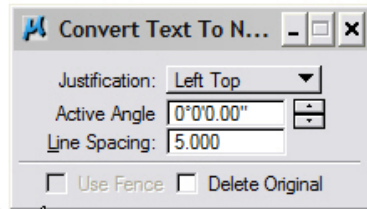

8. Select the **Text to Node** utility from the *CDOT Menu's* under **CDOT Tools.**
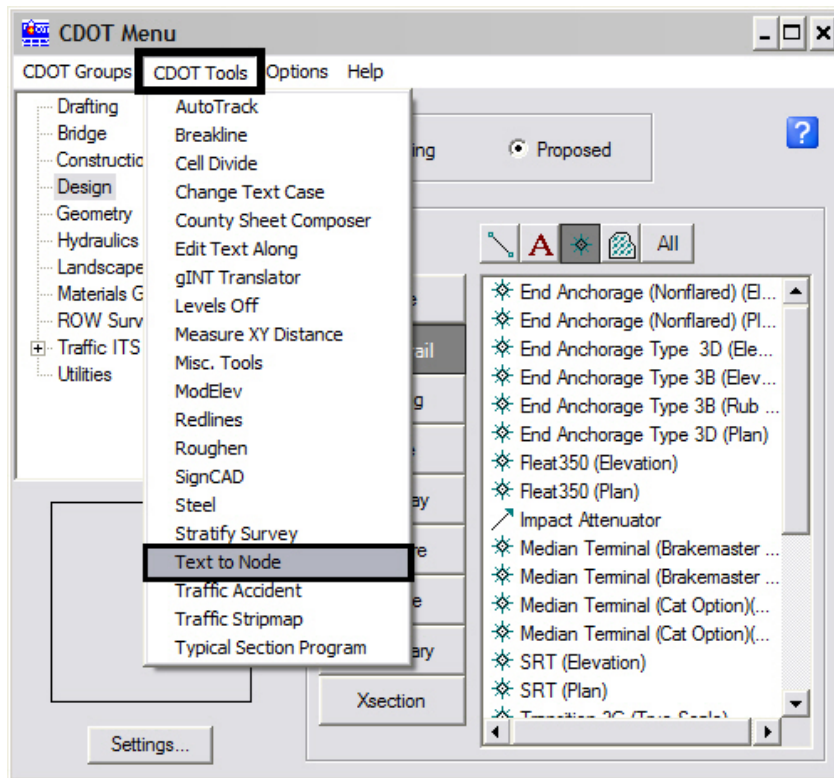
9. <D> the **Convert Text Element to Text Node** icon

10. The following dialog box will appear. The selected text will be anchored to the cursor.

    ROY Q. SMITH & JOYCE L. SMITH
    P.O. BOX 555
    KIOWA, CO 80117
    RECEPTION NO. 555555
    BOOK 5555 PAGE 5555

    ROY Q. SMITH & JOYCE L. SMITH
    P.O. BOX 555
    KIOWA, CO 80117
    RECEPTION NO. 555555
    BOOK 5555 PAGE 5555

11. Check on ***Delete Original***, set the ***Justification***, and leave the ***Line Spacing*** set to ***1.00***. Place the text in the desired location.
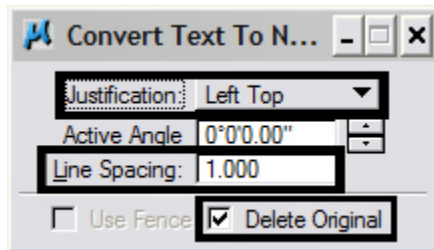
    Note: If the ***Justification*** is set to anything other than **Left Bottom**, double **<D>** on the text after it is placed. The text will be brought into the ***Text Editor*** dialog. **<D>** again on the screen to place the text to its proper location and close the dialog.

12. Select all text and key-in ***annotationscale add***. The text will now recognize the MicroStation Annotation Scale Factor.

13. Update the text style by **<D> Change Text Attributes**. Select the desired CDOT *Text Style* and select the text placed previously in AutoCAD.
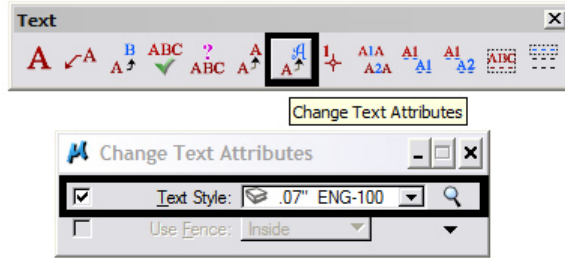
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14. All fractions placed in AutoCAD will need to be re-typed in MicroStation so the format conforms to CDOT standards.

Compressing the Model File

15. After all changes and updates have been made to update the drawing into MicroStation using CDOT standards and standard workflows, you will need to compress the drawing in order to remove all AutoCAD information stored in the drawing buffer. This will ensure that AutoCAD data does not get repopulated into the drawing. Select **File>Compress>Options.**
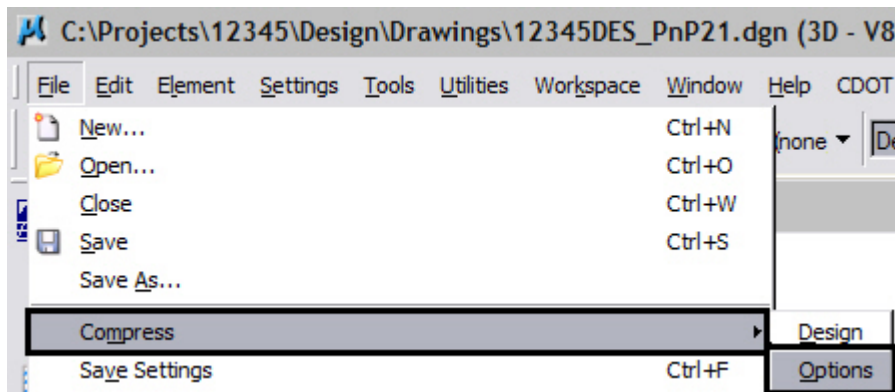
16. Under **Compress > Options**, verify that all options are checked *ON* except
    Delete Text Elements Containing Only Spaces.
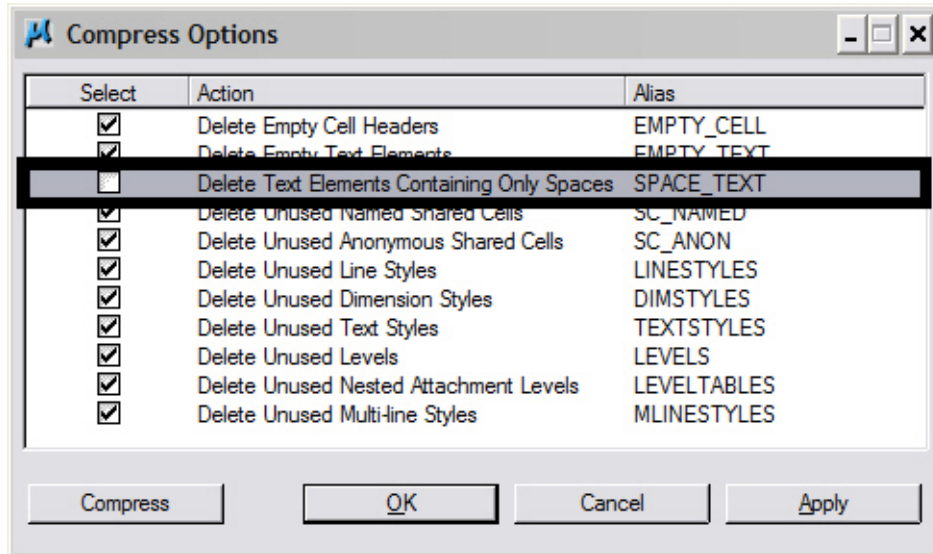
17. Once the correct options have been selected, **<D>** the **Compress** button.