

# Workflow MS 10 - Converting AutoCAD Files 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*.

## Workflow Outline

**Batch Conversion Of AutoCAD Files** - All of the file within a directory can be converted at one time using Batch Processing. Because the level conversion table will be set up for only the open drawing it may not convert all AutoCAD level into Microstation levels. When these unconverted levels are discovered, repeat this process to convert the remaining AutoCAD levels.

- ◆ **Commands Used: File > Open** - Used to access the MicroStation Manager dialog box. From there, the desired AutoCAD file can be selected.
- ◆ **DWG/DXF Units** - This is a message window displayed when an AutoCAD file is opened in MicroStation. Set the Units to Survey Feet.
- ◆ **Utilities > Batch Converter** - This command is used to select the AutoCAD files for conversion, set up the conversion table, and convert the files.
  - **Edit > Add Files** - Used to select the AutoCAD files for conversion
  - **Edit > V8 Save Options** - Used to access the remapping CSV file.
  - **Excel > Level** - This button (in the Excel spreadsheet) queries the dgn file for AutoCAD level names and places them into the spreadsheet.
  - **Excel Cut and Paste** - In the Spreadsheet, MicroStation level names are cut from their current location and pasted next to the corresponding AutoCAD level. This tells the batch converter what to rename the AutoCAD levels too.

**Fixing Converted Files with Multiple Models** - Some AutoCAD files may have multiple models, usually a sheet border model and a data model. Because the CDOT standard is one model per dgn, these will have to be separated

- ◆ **Commands Used: File > Save As** - Used to create a dgn file to contain the sheet border data.
- ◆ **Delete** - Used to remove the data from the Default Model.
- ◆ **References > Attach** - The file is attached to itself so that the sheet border data can be moved into the Default Model.
- ◆ **Copy** - Used to copy the referenced sheet border data into the Default Model.
- ◆ **Models > Delete** - Used to remove all models except the Default Model.
- ◆ **Color Table > File > Default** - Used to set the CDOT standard color table active.
- ◆ **CDOT Menu > Drafting > Dimensions** - Used to replace the AutoCAD dimensions.
- ◆ **CDOT Menu > Tools > Text to Node** - Used to group lines of text into paragraphs.
- ◆ **annotationscale add** - A MicroStation key in that adds the annotation scale attribute to the text.
- ◆ **Change Text Attributes** - Used to assign a CDOT text style to the text.

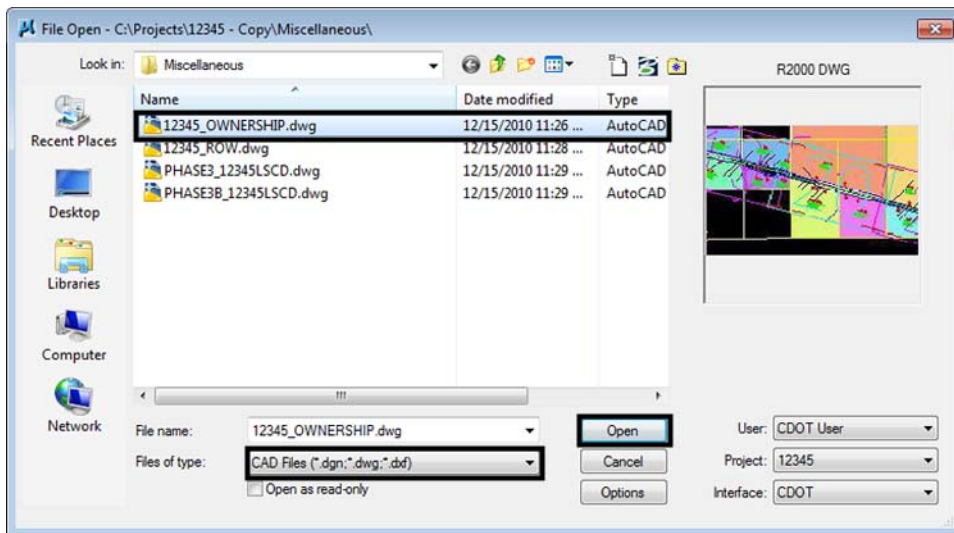
## Batch Conversion Of AutoCAD Files

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.

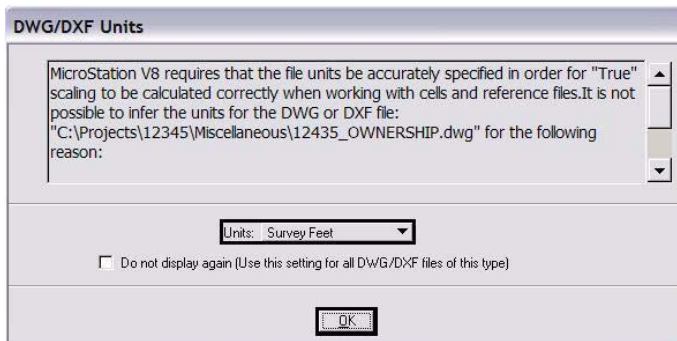
The steps below describe how to set up and run the Batch Converter.

### Opening an AutoCAD file in MicroStation

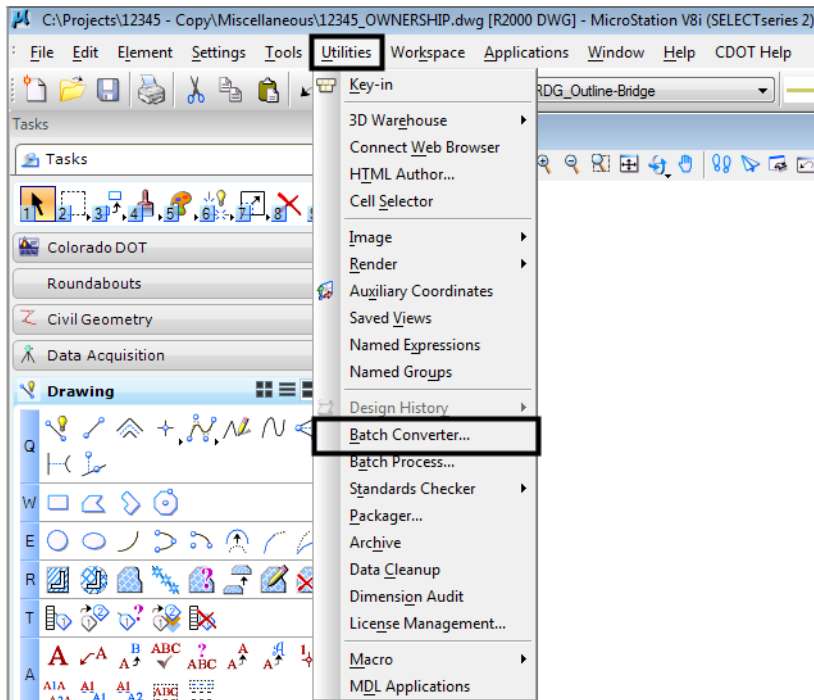
1. From the **File Open**, open an AutoCAD (\*.dwg) drawing file. (Change **List Files of Type** to **CAD Files (\*.dwg, \*.dgn, \*.dxf)** to see the AutoCAD files in the selected directory).
2. <D> the desired file then <D> **OK**.



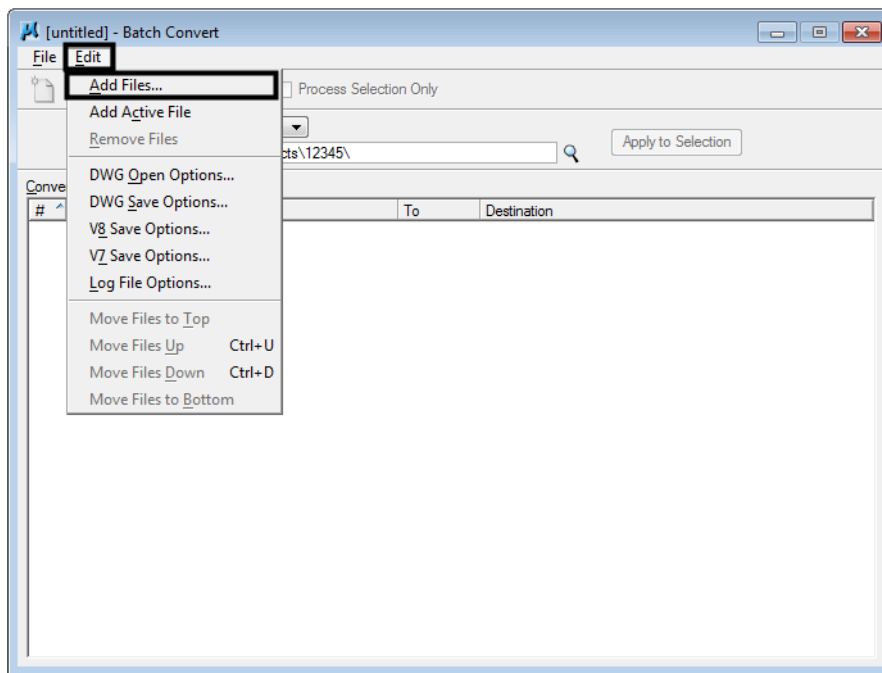
3. The **DWG/DXF Units** dialog box will appear. Verify the **Units** are set to **Survey Feet** and <D> **OK**.



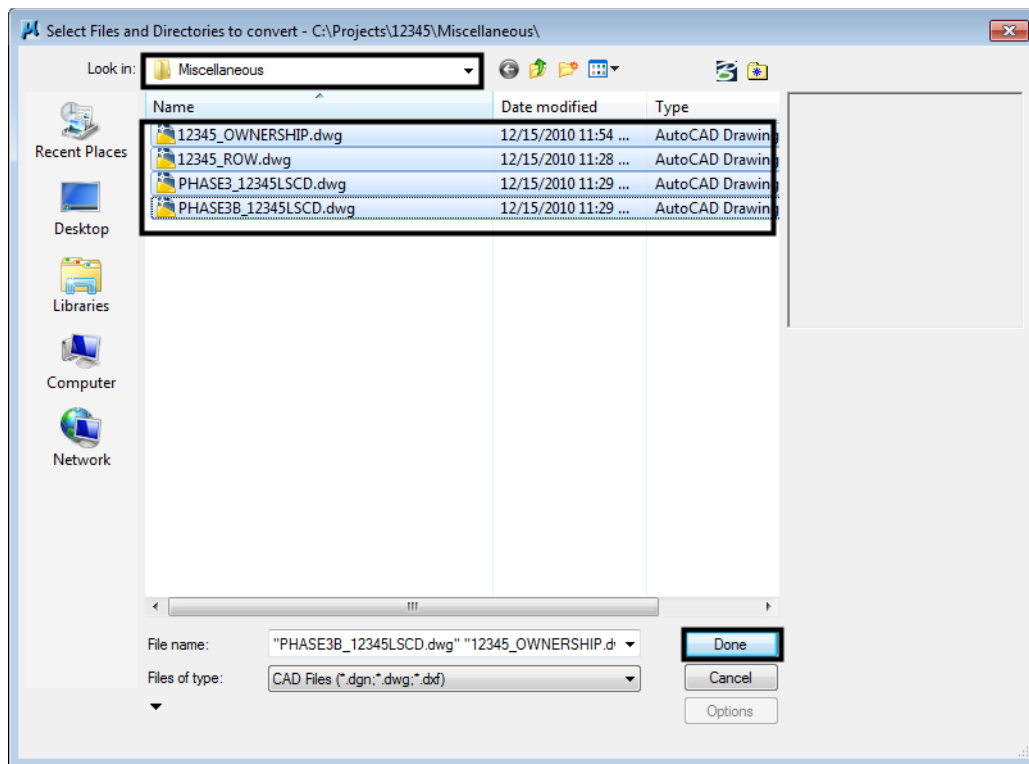
4. Select **Utilities > Batch Converter** from the MicroStation menu. The **Batch Convert** dialog box is displayed.



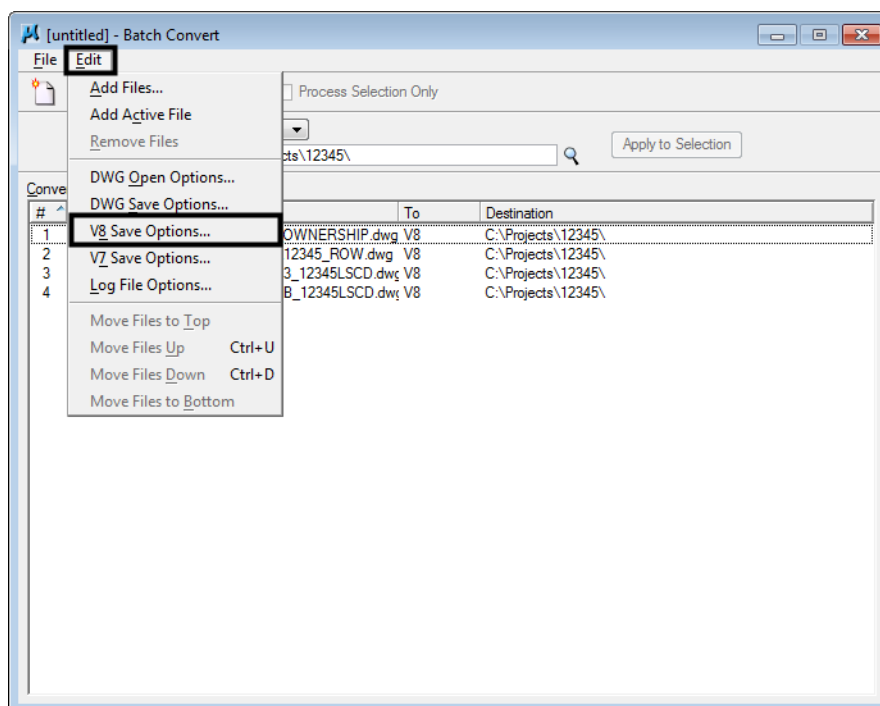
5. Select **Edit > Add Files** from the menu.



- From the **Select Files and Directories to Convert** dialog box, Navigate to the directory containing the files to be converted, then highlight the files to be converted. <D> **Done** to complete the selection.

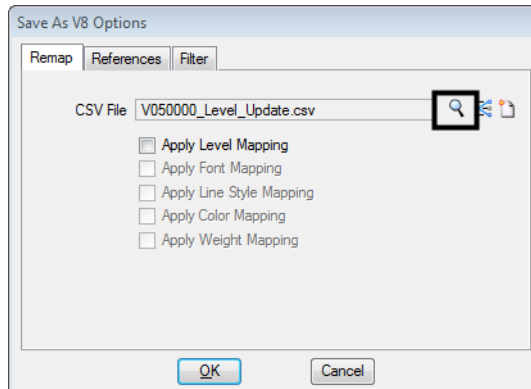


- Back on the **Batch Convert** dialog box, select **Edit > V8 Save Options** from the menu.

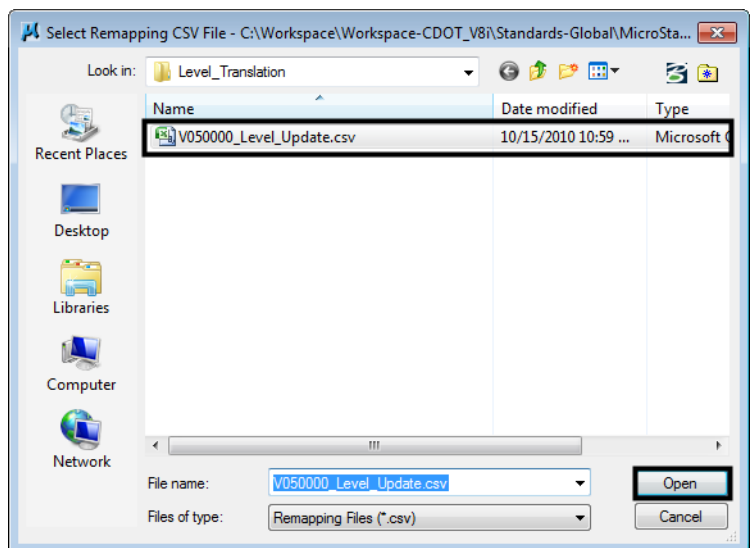


## Editing the CSV file

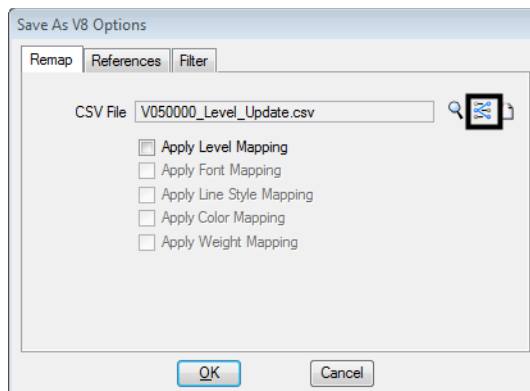
1. In the **Save As V8 Options** dialog box, <D> the **Browse for CSV remapping file** icon to edit the CSV file.



2. Navigate to the following directory: **C:\Workspace\Workspace-CDOT\_V8i\Standards-Global\MicroStation\Tables\Level\_Translation** and select the **V050000\_Level\_Update.csv** file. The CSV file maps all of the previous AutoCAD layers to the standard CDOT MicroStation levels.



3. The **CSV File** field will be populated with the correct level mapping file. 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**.





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		<input type="checkbox"/> Show Optional Columns		
5				
6		Level	V8OutputLevel	DWGOutputLayer
7		TEXT		
8		BROKEN		
9		HIDDEN		
10		OUTLINE		
11		TITLE		
12		HATCH		
13		Center		
14		Dimensions		
15		REBAR		
16		Defpoints		
17		Zigzag		
18		0		
19		DRAFT_Text-1		
20		DRAFT_Text-2		
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.



- 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.

	A	B	I	J
1				
2				
3	Level Mapping Table			
4	<input type="checkbox"/> Show Optional Columns			
5				
6	<b>Level</b>	<b>V8OutputLevel</b>	<b>DWGOutputLayer</b>	
7	TEXT	DRAFT_Text-3		
8	BROKEN	BRDG_BREAK		
9	HIDDEN	BRDG_HIDDEN		
10	OUTLINE	BRDG_OUTLINE		
11	TITLE	DRAFT_Text-2		
12	HATCH	BRDG_PATTERN		
13	Center	DRAFT_LC-Center_WT-0		
14	Dimensions	DRAFT_Text-1		
15	REBAR	BRDG_REBAR		
16	Defpoints			
17	Zigzag	DRAFT_CO-Violet		
18	0			
19				
20				
21				
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			

MicroStation Levels moved from Levels column

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.

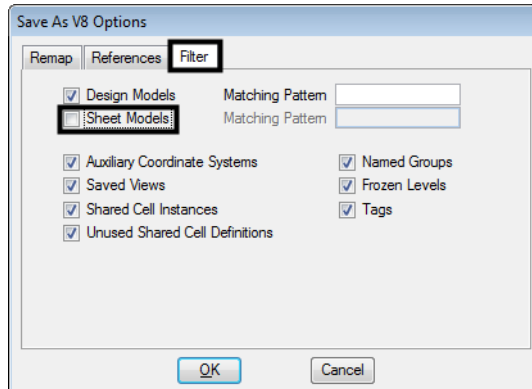
Layers generated in AutoCAD that will be recreated as cells in MicroStation such as the Border, North Arrow, and Bar Scales do not need to be remapped because they will automatically come in on the correct levels when the standard CDOT workflows are followed. Also, the layers used for creating AutoCAD 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 13 and 14 below are available when converting a single file only. When doing a batch conversion, all of the models within the file will be converted.

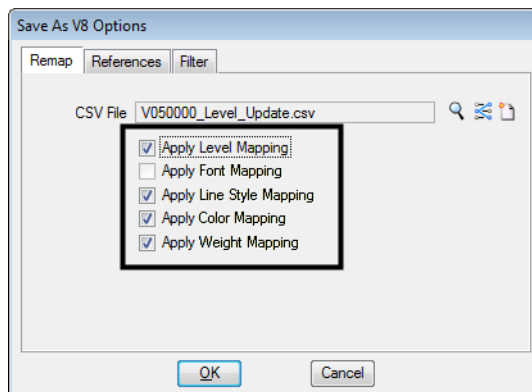
- In the **Save As V8 Options** dialog box, <D> the **Filter** tab.

- Toggle off the **Sheet Models** check box.

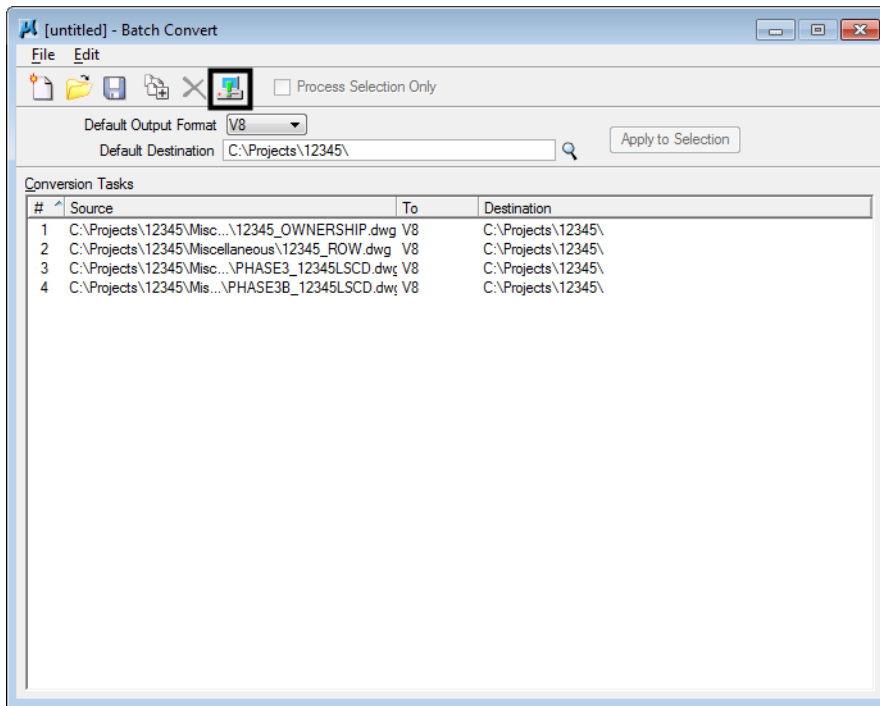


- <D> the **Remap** tab.

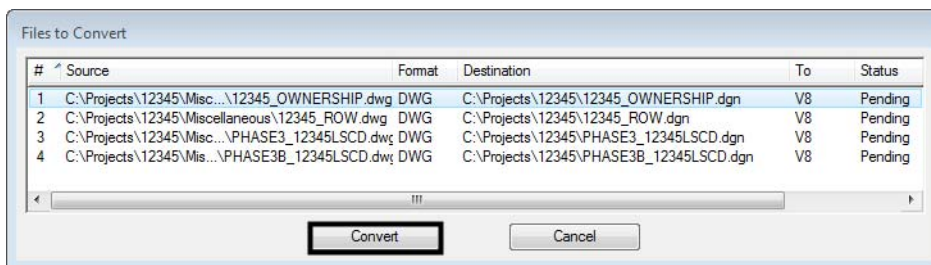
- Check on the fields for **Apply Level Mapping, Apply Line Style Mapping, Apply Color Mapping, and Apply Weight Mapping**. <D> OK.



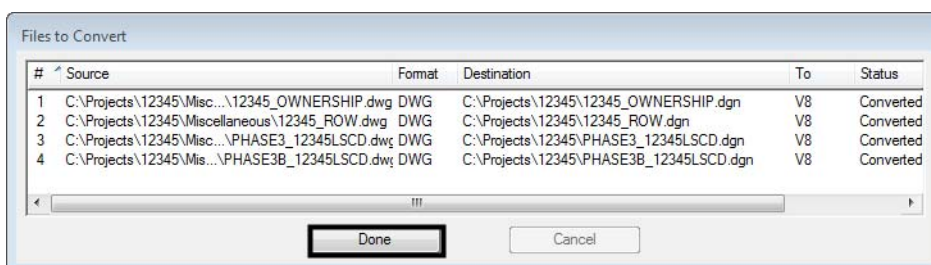
12. From the **Batch Convert** dialog box, <D> the **Process Batch Convert Job** icon.



13. The **Files To Convert** dialog box is displayed. From this dialog, <D> the **Convert** button.



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



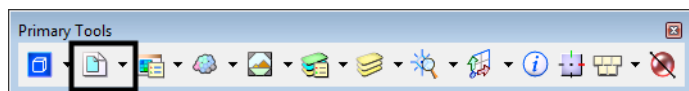
This will convert all of the levels in the active file (as specified in the csv file) and convert the same levels in the other specified files.

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.

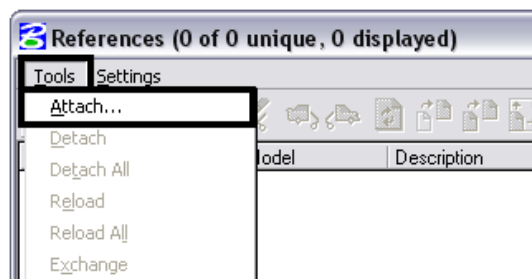
## Fixing Converted Files With Multiple Models

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.

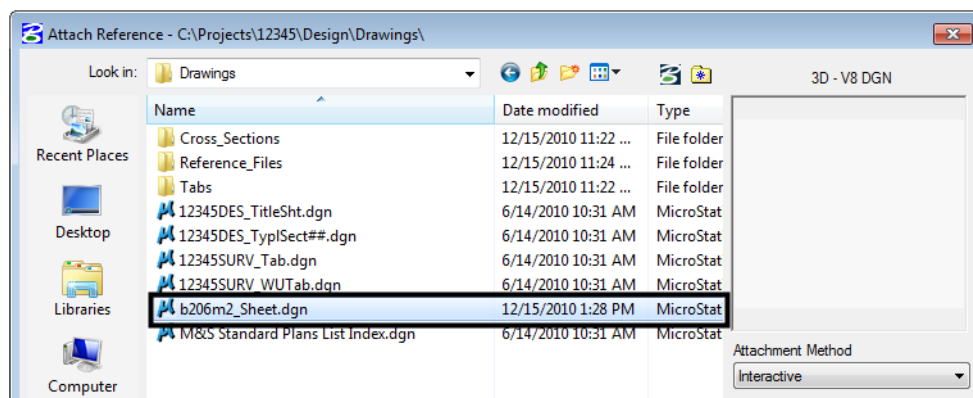
1. Open the converted dgn file that contains the Sheet Layouts to be saved.
2. Select **File > Save As** and name the file appropriately for the Sheet Layout to be saved and **<D> OK**.
3. This will open the copy of the file. **Delete** all of the elements from the **Default Model**.
4. **<D>** the **References** icon from the MicroStation **Primary Tools** toolbar.



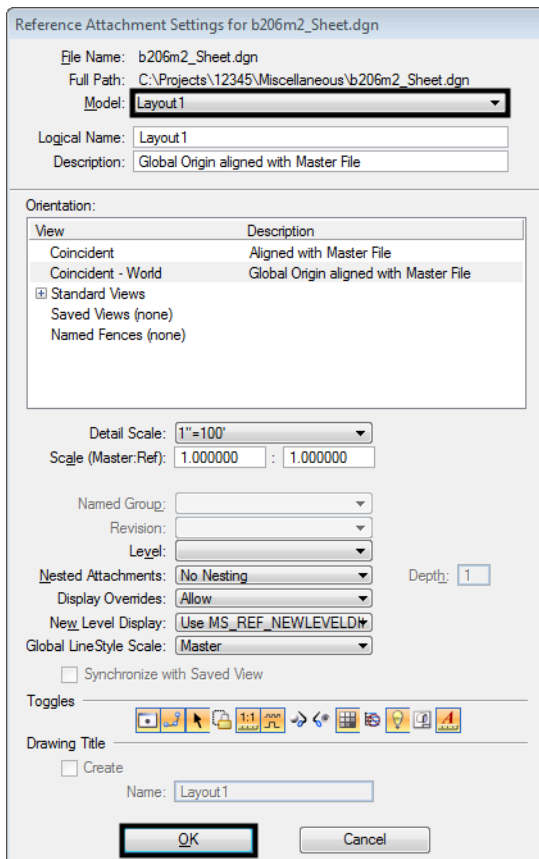
5. Select **Tools > Attach** from the References dialog box.



6. Select the open dgn file to attach it to itself. **<D> Open**.



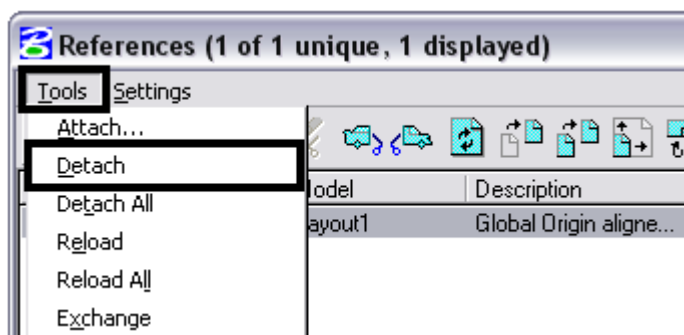
- In the **Reference Attachment Settings** dialog box, select the desired Sheet Layout from the **Model** drop down menu. <D> OK.



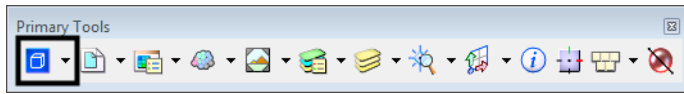
- <D> the **Fit** view control icon to display all of the elements in the view.
- All of the elements in the view must be copied into the default model. This can be done using the **Element Selector** or with a **Fence**.

**Note:** 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.

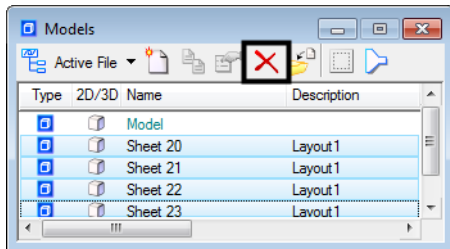
- After the elements have been copied, **Detach** the reference file.



11. <D> the **Models** icon from the MicroStation Primary Tools toolbar.



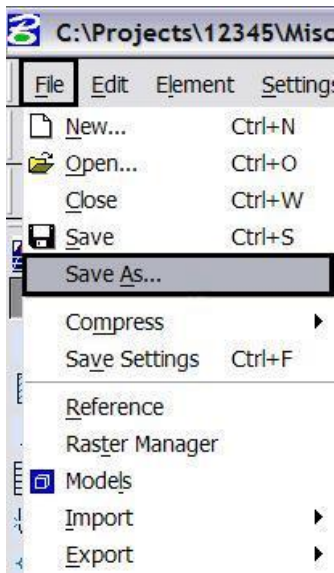
12. In the **Models** dialog box, <D> to highlight all of the models except the Default Model. <D> the **Delete** icon to remove all of the sheet layouts. <D> the 'X' to close the **Models** dialog box.



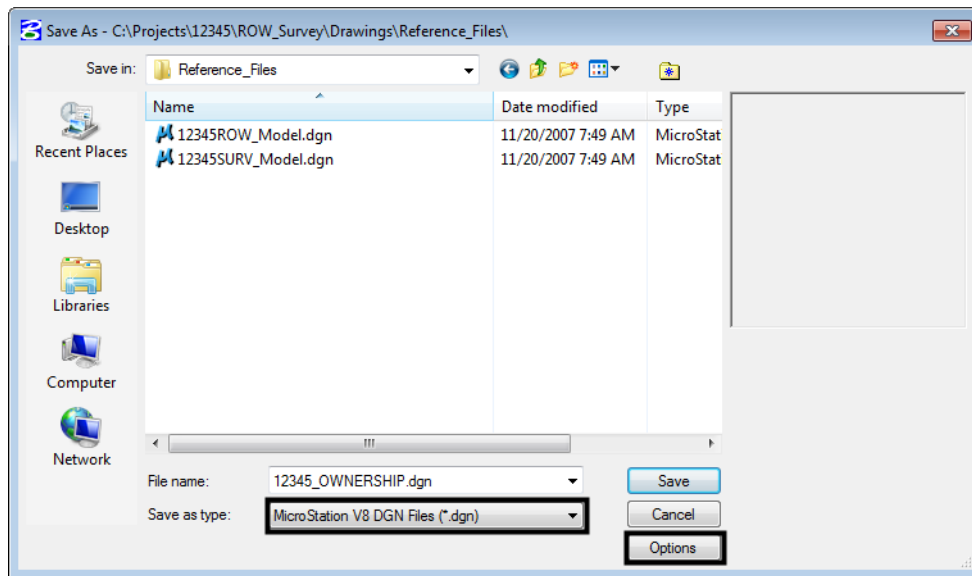
13. Steps 19 through 30 will have to be repeated for each sheet layout.

## Converting a Single AutoCAD file

1. Open the desired AutoCAD file in MicroStation as described in steps 1 and 2 above.
2. Select **File > Save As**.

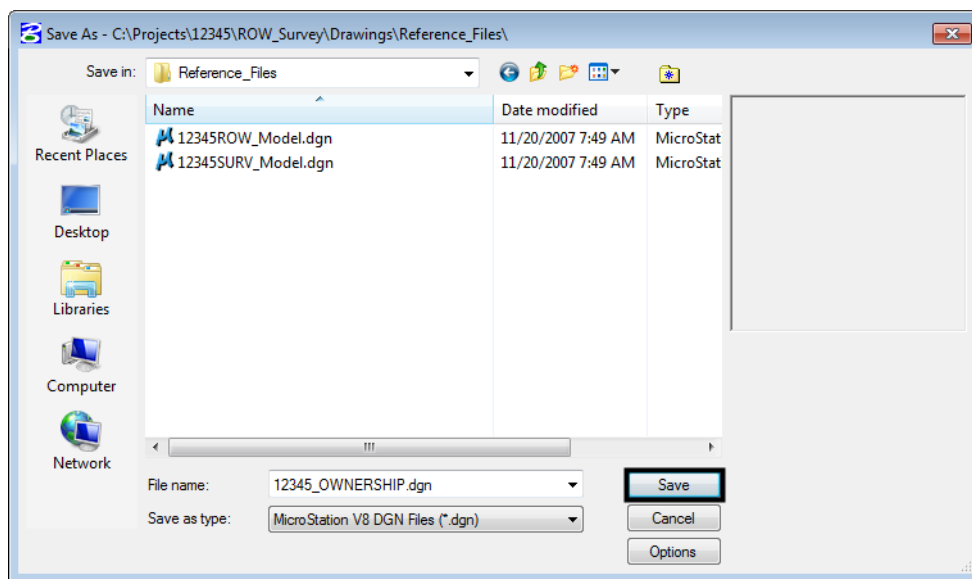


3. Change the **Select Format to Save** to **MicroStation V8 DGN Files (\*.dgn)** and navigate to the appropriate folder under the Projects directory. The file will be automatically saved with the same name as the AutoCAD file with a different extension. You can rename the file at this time if you choose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



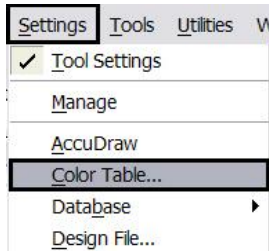
**Note:** Model files should be saved to the specialty group's **Reference\_Files** folder. Sheet files are saved under the specialty group's **Drawings** folder.

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

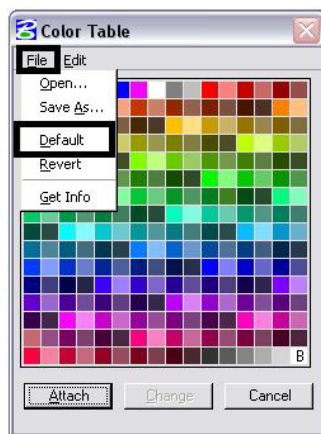


5. The file that is now open in MicroStation is the converted file. Running the CSV file changed the levels in the Model file to the CDOT Standard levels with bylevel symbology.

- From the MicroStation menu, selected **Settings > Color Table** after the MicroStation drawing file has been created.



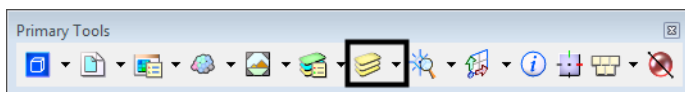
- In the **Color Table** dialog box, select **File > Default**.



- <D> Attach.**

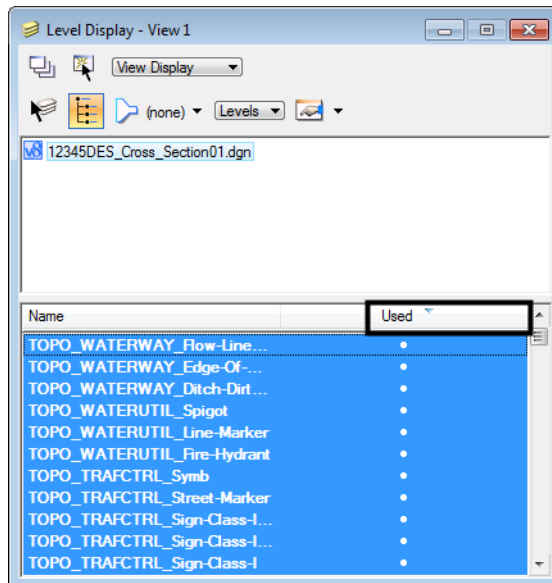


- Verify that the conversion was successful. **<D>** the **Level Display** icon from the MicroStation **Primary** toolbar.





10. In the **Level Display** window, <D> on the **Used** tab to sort the levels by those that have elements.



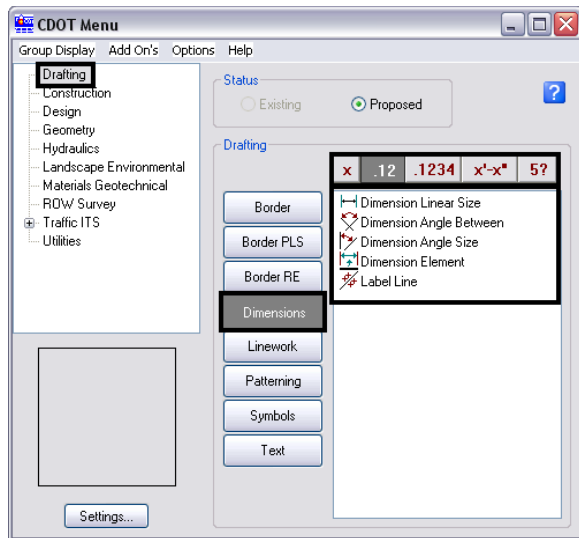
**Note:** levels with elements will have a dot in this column. If no used levels are visible, <D> on the tab again. If the triangle on the tab is pointing down, the used levels are at the top of the window.)

## Other Drawing Elements

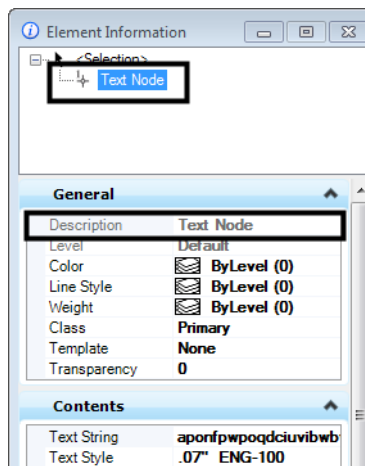
Other updates will need to be made to the files so all drawing elements and sheet setups conform to the CDOT standards.

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.

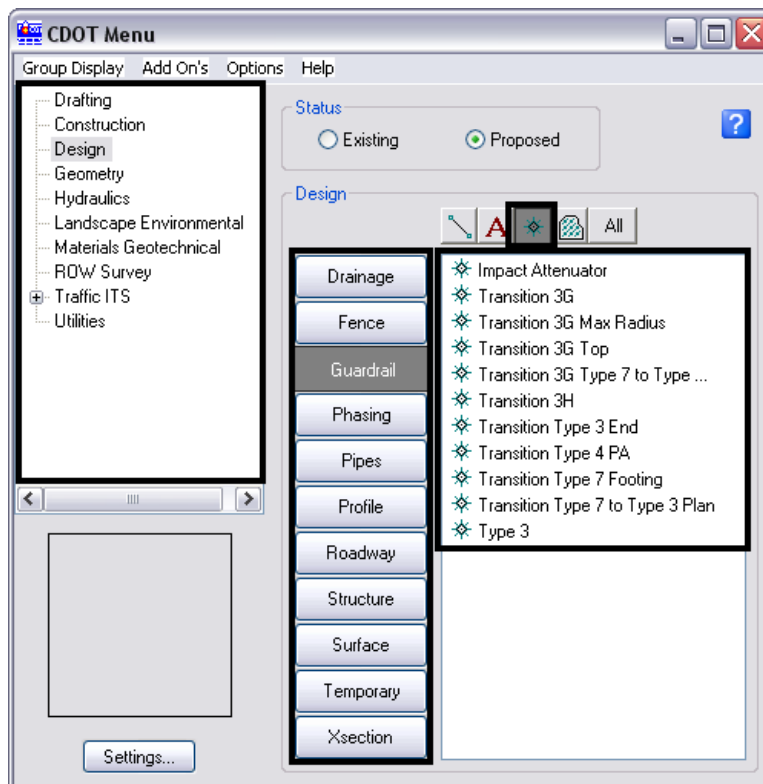
1. Recreate all Dimensions and leader lines (placed by AutoCAD) using the standard CDOT dimension styles. The dimensioning commands are found in the CDOT menu under **Drafting > Dimensions**.



2. Erase all hatch patterns generated in AutoCAD recreate using the MicroStation **Patterns** tools, shown below.




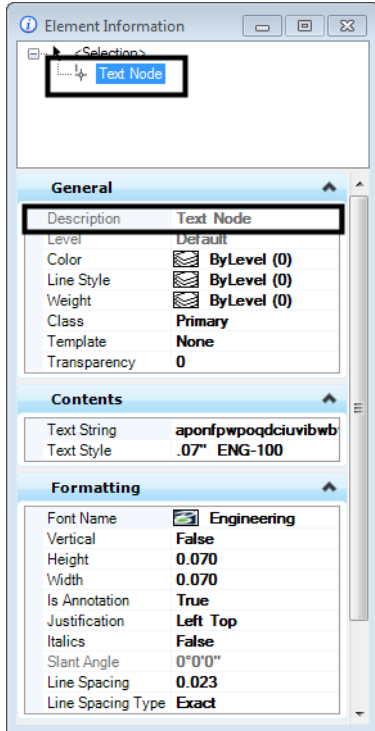
3. All blocks generated in AutoCAD will need to be replaced with the standard CDOT MicroStation Cells. The cells are found on the CDOT menu. Use the CDOT Menu Explorer to select the desired specialty group. Use the Category buttons and the Filter buttons to locate the cells within the menu. Select the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



## Updating Text

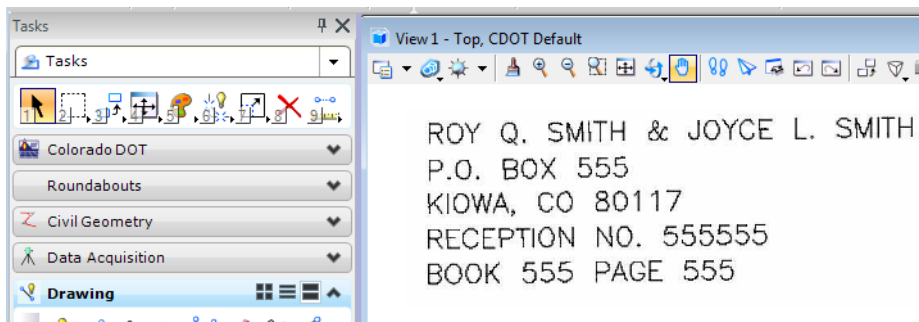
Text created in AutoCAD with multiple text strings can be converted to a text node in MicroStation. Some multiple text strings created in AutoCAD will be translated into a text node when the file is converted.

1. To verify this, <D> the **Element Information** icon . Text Nodes will display under the General Tab.

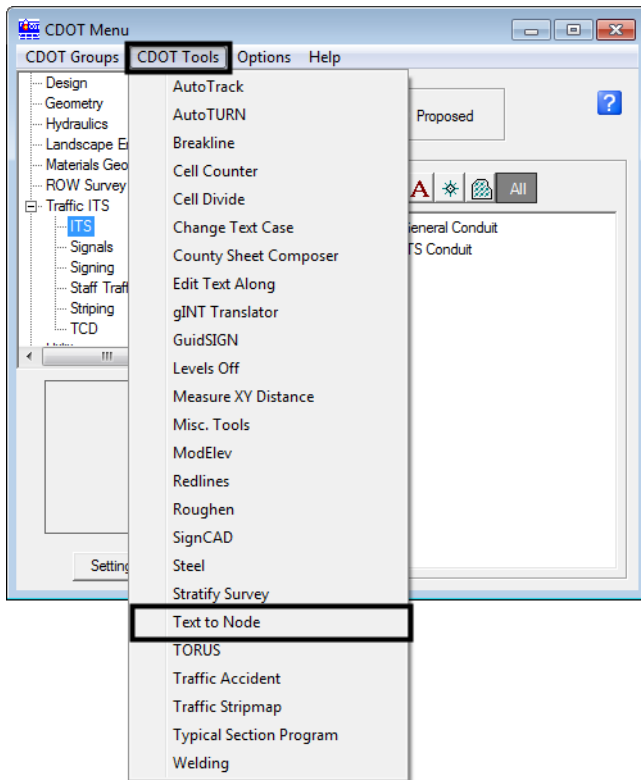


2. If not, select all text that will be combined into a text node using the **Element Selection** tool. While in the **Element Selection** command, hold down the **Ctrl** key to select individual text strings. Highlight them in the order they are to be placed into the text node.

**Note:** Do not *Window* around the multiple lines of text because the text strings may not merge in the desired order.



3. Select the **Text to Node** utility from the CDOT Menus under **Add On's**.



4. <D> the **Convert Text Element to Text Node** icon
5. 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 555 PAGE 555~~  
 KIOWA, CO 80117  
 RECEPTION NO. 555555  
 BOOK 555 PAGE 555

6. Check on **Delete Original**, set the **Justification**, and leave the **Line Spacing** set to **1.00**. Place the text in the desired location.

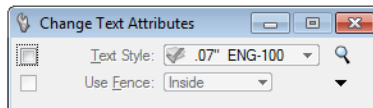
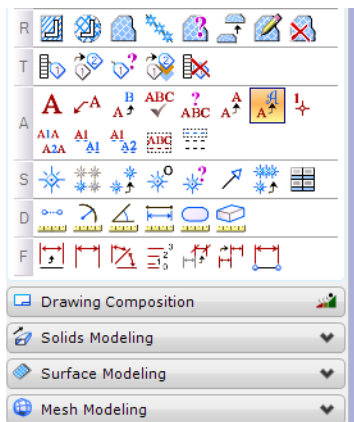


**Note:** If the Justification is set to anything other than **Left Bottom**, double <D> on the text after it is placed. The text will be brought into the Text Editor dialog. <D> again on the screen to place the text to its proper location and close the dialog.

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



8. Update the text style by <D> **Change Text Attributes**. Select the desired CDOT **Text Style** and select the text placed previously in AutoCAD.

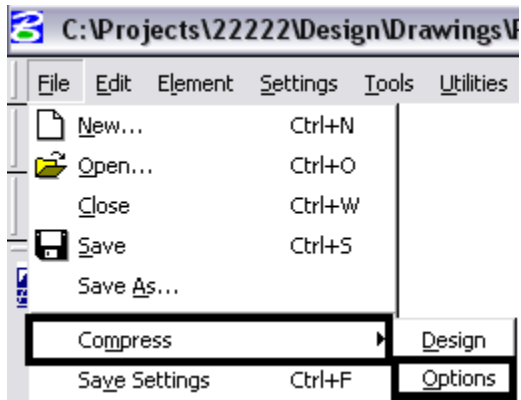


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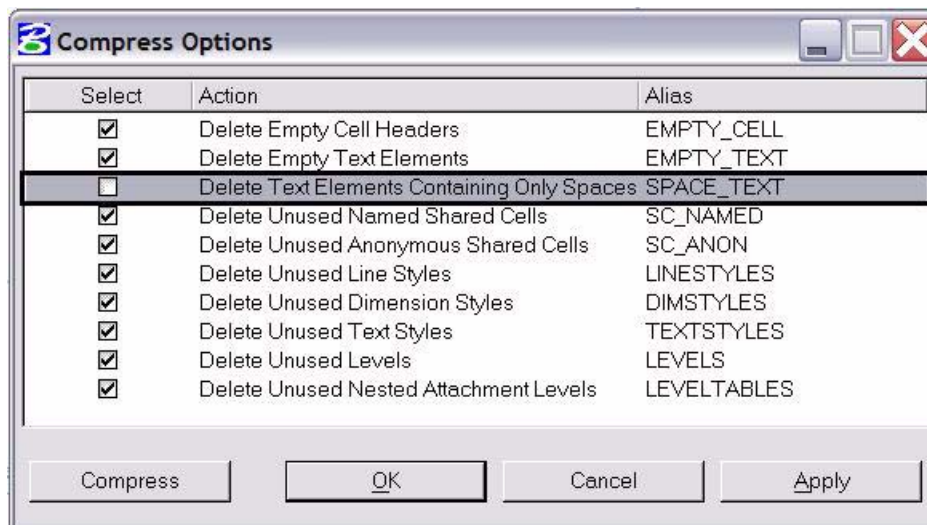
9. All fractions placed in AutoCAD will need to be re-typed in MicroStation so the format conforms to CDOT standards.

## Compressing the Model File

1. 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**.



2. Under **Compress > Options**, verify that all options are checked **ON** except **Delete Text Elements Containing Only Spaces**.



3. Once the correct options have been selected, <D> the **Compress** button.

