

# The ODOT User Guide for AutoTable

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# The ODOT User Guide for AutoTable

## Introduction

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### What is AutoTable and Why Do We Want to Use It?

AutoTable is a software product from CADIG Inc. that imports Excel worksheets into MicroStation design files as native MicroStation elements *and* allows the imported information to be easily updated when changes have been made in the original Excel files.

The Excel elements that can be imported and updated include text, tables/cell borders, charts, cell shading, images, and some Excel AutoShapes. AutoTable provides options that allow the user considerable control over the translation of the Excel elements to MicroStation elements (e.g. symbology, font style and type, scale).

Also of note: due to the nature of the AutoTable link between a MicroStation representation of an Excel file and the actual Excel file, the product does allow a user in a MicroStation file to update an imported Excel table at the same time another user is in the original Excel file.

### Content

This document will attempt to give users (and CADD administrators) the “How To” when using AutoTable for the first time. The following general topics are covered:

- Installation/Licensing
- Activation and Settings
- Using AutoTable
- Plan Sheet Design
- Recommendations/Limitations

Some information in this documentation has been taken directly from the AutoTable **Help**.

### Additional Resources

A brief demo on the use of AutoTable is available at the website link shown below.

<http://www.cadig.com/demo/at/>

Although the demo uses AutoCAD as an example, please be aware that any and all options shown for AutoCAD are also provided for MicroStation in the current release.

# The ODOT User Guide for AutoTable

## Installation and Licensing

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### Step-By-Step

#### Before you start

Before installing AutoTable v4.5, you should uninstall any previous versions of the software.

You must also make sure that you have the ODOT Standard *Cadig* sub-directory in your *ODOTcadd* directory; you may copy it from <\\itcfs007\idrive\ODOTcadd\Standards\Cadig>. This directory contains ODOT's Standard Excel Sheets, our AutoTable Standards, any vba programs/add-ins used to run our automated spreadsheet programs, and this documentation. The Standards files are ODOT Standard Fonts.afm, ODOT AutoTable Options.opt, and As Delivered Options.opt. The file As Delivered Options.opt can be used to quickly return the AutoTable Excel options back to their original delivered state. There is also a batch file, *AutoTableSetup\_v8i.bat*, for each user to run once on their particular computer that loads all of the ODOT standards for AutoTable.

#### Installation

You must have administrator privileges to perform the installation.

The AutoTable software is found in the sub-directory <\\itcfs007\support1\Win7Software - PC\AutoTable\ver450>. The Installation of AutoTable occurs as part of the Bentley V8i Suite installation. If a manual installation is necessary, run *setup.exe* from the above directory and accept the defaults. After installation, license activation can be loaded by registry key. Use *License\_AMD64.reg* from the above folder, (or *License.reg* for a 32-bit OS).

#### User Standards Setup

The software installation is now complete and the AutoTable Standards setup is next.

*The Administrator should now log out and allow the user to login and complete the following Step.*

The Excel AutoTable Standards is required and must be loaded once by *each user* on the machine. Run file *AutoTableSetup\_v8i.bat*, located in the *ODOTcadd\Standards\Cadig\AutoTable Standards* directory, to load the necessary ODOT user standards.

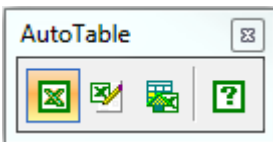
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## Activation and Settings

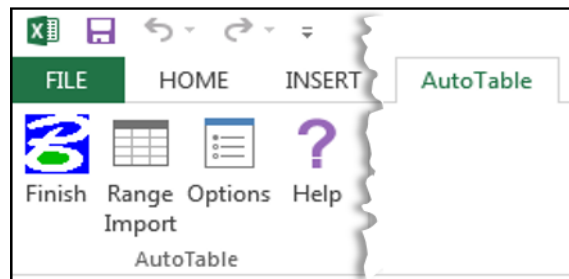
### Activation

When a MicroStation design file is opened, a Cadig pull-down should appear on the main toolbar menu. This Cadig pull-down menu contains additional features that are not accessible in the accompanying MicroStation AutoTable toolbar.

Figure 2 shows the MicroStation AutoTable toolbar that appears on the screen after opening a design file. When the Create AutoTable or the Edit AutoTable command is issued from either this toolbar or the Cadig pull-down menu, an Excel AutoTable Ribbon, as shown in Figure 3, will appear in the newly opened Excel worksheet. These toolbars are fully explained in the [Using AutoTable](#) section of this document.



**Figure 2**  
Toolbar in MicroStation



**Figure 3**  
Ribbon in Excel

### ODOT Standards

The standards mentioned in the Installation/Licensing section should have been loaded immediately after the AutoTable installation; if not, please execute the instructions in the [User Standards Setup](#) section now.

The standards affect font type and placement Level, Scale, Rotation Angle, etc. for new and existing AutoTable imports. They may be viewed/modified from either of two dialog boxes; one accessible from MicroStation and the other from Excel.

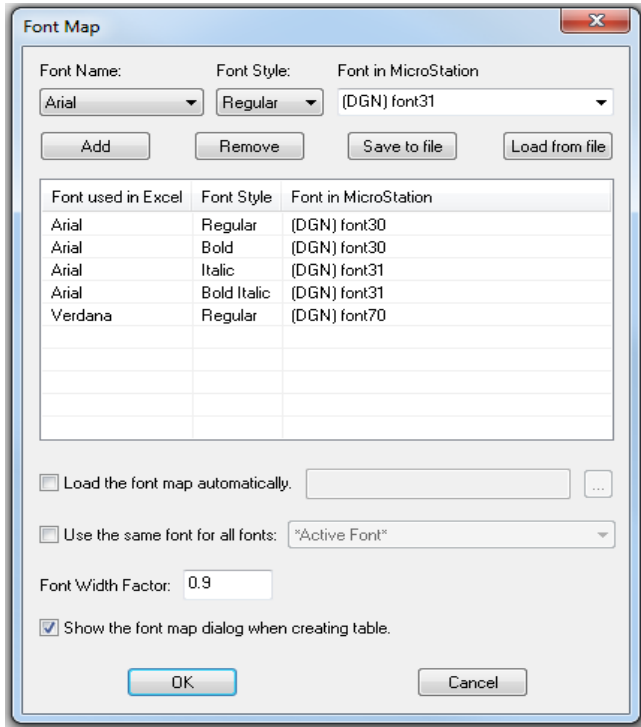
### Font Mapping

#### General

Font Mapping allows the user to specify, or "map", a specific Excel font to a specific MicroStation font. For example, as per the ODOT standard, when Arial Regular is used in Excel it is placed as Font 30 in MicroStation.

The "default" Font Map dialog, as shown in Figure 4 below, is accessed from MicroStation by selecting Cadig>AutoTable>Font Map from the menu bar or by entering the key-in: autotable fontmap. There is no access to the dialog from Excel.

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**Figure 4** “Default” Font Map dialog box

Note that both versions allow you to save your font map to a file, or to load a font map from a saved file.

It is important to understand that the active text settings of the design file are not used by AutoTable when placing or updating a table (Text Height, Width, and Justification, and the Annotation Scale); these properties are instead determined by the Excel Worksheet and the settings in the [Excel AutoTable Options](#).

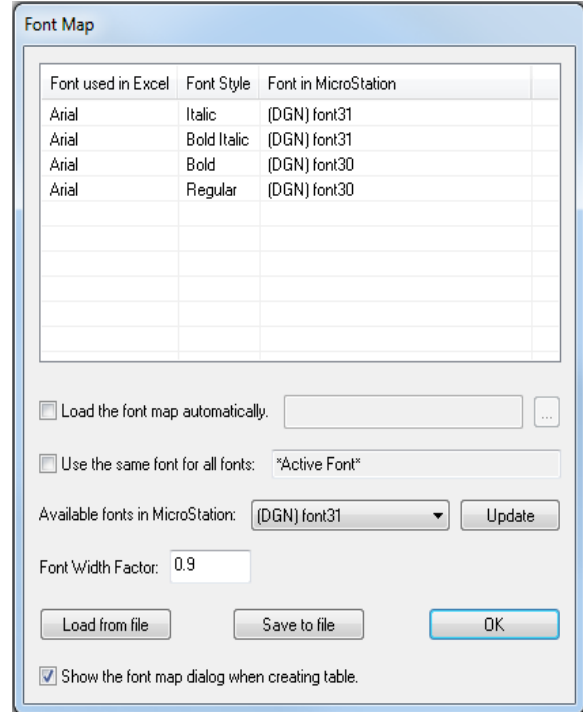
If there is no font map in use, all imported fonts will be placed in the active font of the design file.

The dialog boxes shown in Figures 4 and 5 are comprised, for purposes of this documentation, of two functional sections: a font mapping area (the upper portion of the dialog) and a font override/control area (the lower section). The following sections describe the functioning of each area, for each version of the dialog, in detail.

The term “default” is used to differentiate the font mapping that is to be used, in general, for all Excel imports, from the mapping that may be necessary for a “specific” import. The import-specific version of the same dialog, as shown below in Figure 5, will be displayed before an import may be placed/updated, provided the “Show the font map dialog when creating table” option is checked on, as shown to the left.

The settings as displayed in Figure 4 are the ODOT standard default settings. They are to be used for all highway and bridge plan work that may possibly be modified by another District/Office.

The import-specific Font Map dialog tells you what fonts were found in the Excel table being imported/updated and allows various options for translating them into MicroStation fonts and associated text elements.

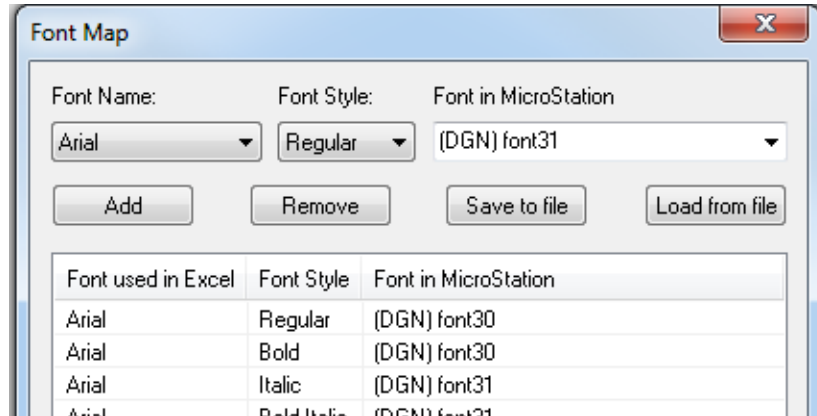


**Figure 5** “Specific” Font Map dialog box

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### “Default” Dialog: Font Mapping Area

The Font Mapping Area allows the user to pre-set the translation of specific TrueType fonts used in Excel to specific MicroStation fonts. For example, in Figure 6 below, Arial Regular is to be placed as Font 30 in MicroStation. This section allows the user to modify/create the mapped fonts using the Add, Remove, Save to file, and Load from file buttons.



**Figure 6**

The buttons and drop-down lists shown in Figure 6 are used in the following manner:

#### **Add**

This feature allows the user to add a “mapping” of a TrueType font to a MicroStation font. The TrueType font name and style is selected along with the MicroStation font from the drop downs lists at the top of the dialog. Then, click on the “Add” button to add your selections to the display list. Note that the drop downs correspond to the column headers in the display list – the left-most two boxes (*Font Name*, *Font Style*) describe the “from” (Excel) font, and the right-most box (*Font in MicroStation*) describes the “to” (MicroStation) font.

#### **Remove**

To remove a font mapping from the display list, select the mapping and click on the “Remove” button.

#### **Save to file**

To save the currently displayed font mappings to a file, click on the “Save to file” button.

#### **Load from file**

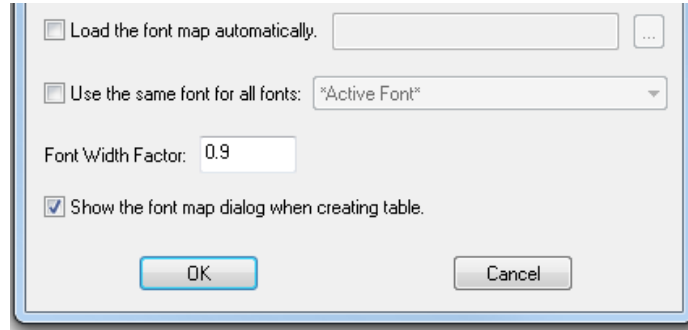
To load a previously saved font mapping, click on the “Load from file” button, then, in the resulting file open dialog, navigate to the desired subdirectory and file to make your selection.

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### “Default” Dialog: Override Font Area

This section of the dialog contains three toggles, as shown in Figure 7, below. The top-most toggle controls whether or not the design file’s “Active Font”, or a font selected from the available drop-down list, will be allowed to override the font-mapping displayed in the upper part of the dialog. The last toggle controls whether or not the import-specific version of the Font Map dialog box (Figure 5), will display before an Excel import can be placed/updated.

**Figure 7**



(Note that the figure shows the toggles’ settings as per ODOT’s recommended practice for AutoTable.)

When option “Use the same font for all fonts” is toggled on, the font mapping area shown in the upper portion of the dialog is grayed out (made inactive) and the font selection drop-down list to the right of the toggle becomes active. The font selected from the drop-down will override the font map settings in all table placements until such time as the option is toggled off or, for a specific import/update, the user chooses to ignore the override via his/her selections in the import-specific version of the Font Map dialog (see the next section).

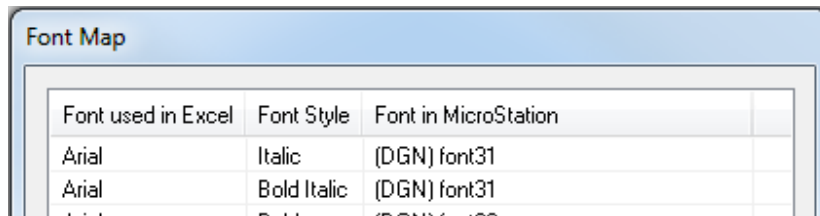
When the option “Show the font map dialog when creating table” is checked on, the “import-specific” version of the Font Map dialog box (see Figure 5), will be displayed before the user is allowed to place or update an Excel table in a design file.

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### “Specific” Dialog: Font Map Display Area

The import-specific Font Map Display Area section, shown in Figure 8 below, displays *ALL* TrueType fonts that were found in the Excel file and MicroStation font to which they will be mapped. For example, if only Arial normal is used in the Excel table then only “Arial -Regular - (DGN) font30” will display.

If other Excel fonts are later added to the worksheet but are not provided for in the default mapping, those Excel fonts will be shown as being translated to the design file’s active font. If no font mapping has been defined, all TrueType fonts found in the Excel file will be displayed as being mapped to the design file active font.

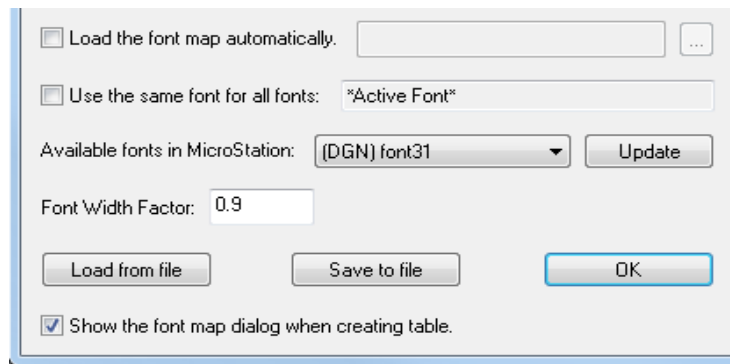


Font used in Excel	Font Style	Font in MicroStation
Arial	Italic	(DGN) font31
Arial	Bold Italic	(DGN) font31

Figure 8

### “Specific” Dialog: Font Control Area

This section of the import-specific Font Map dialog, as shown in Figure 9 below, allows the user to: load font maps from, or save font maps to, a file; modify the Font Display Area, and; control whether a single MicroStation font will be used for all text placed in the design file. These controls will override any similar settings made in the “default” Font Map dialog.



Load the font map automatically.  ...

Use the same font for all fonts: \*Active Font\*

Available fonts in MicroStation: (DGN) font31

Font Width Factor:

Show the font map dialog when creating table.

Figure 9

The toggle, “Use the same font for all fonts” function identically to their counterparts on the “default” Font Map dialog (see the previous section).

The buttons and drop down lists are used in the following manner:

#### Load from file

This button loads a previously created font mapping file. After clicking on the button, use the resulting file open dialog to navigate to and select the desired file.

#### Save to file

Click on this button to save the currently displayed font mapping to a file.



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## OK

Select the "OK" button to accept the dialog's settings. The user may then proceed with the import/update at hand.

## Update

This button is used in conjunction with the two font fields above it:

- When the "Use the same font for all fonts" field is toggled *off*, the user may select a mapped font in the Font Display Area, then change its "mapped-to" MicroStation font by making a selection in the "Available fonts in MicroStation" drop-down and then clicking on the "Update" button.
- When the "Use the same font for all fonts" field is toggled *on*, the mapped font display area and the "Load from file" and "Save to file" buttons are grayed out (made inactive). The user may then select a font from the "Available fonts in MicroStation" pull-down. The "Use the same font for all fonts" field may then be updated with the selected font by then clicking on the "Update" button.

## Excel Features

### General

When an Excel table is imported into MicroStation, the Excel features (e.g. border weights, border line styles, font characteristics, some AutoShapes, cell (color) shading etc.) are translated to MicroStation elements. The following paragraphs detail the various means by which these translations are effected for the Excel features of most significance to ODOT plan work, specifically, those found in Excel's Format Cells dialog box.

### Border Weights/Line Styles

Borders weights/line styles in Excel have an established equivalent weight/line style in MicroStation. Even though items imported from Excel to MicroStation are translated by ODOT ByLevel standards, the border weights/styles are *always* interpreted as shown in Figure 10. The "Excel Border Type" lines shown in Figure 10 correspond to those shown in the Excel Format Cells dialog box's Border tab, shown in Figure 11.

Excel Border Type	MicroStation	
	Line Style	Weight
None	N/A	N/A
Finely Dotted Line	0	0
	1	0
	6	0
	4	0
Finely Dashed Line	3	0
	0	0

Excel Border Type	MicroStation	
	Line Style	Weight
	6	2
Dashed Line with Diagonal Dots	No Equivalent	
	4	2
	3	2
	0	2
	0	4
	0	0

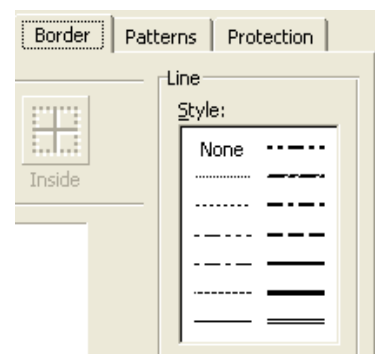


Figure 11

Figure 10

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An imported line's color is defined by the design file's ByLevel setting or the option selected in the Excel AutoTable [Options](#) dialog box.

### Fonts

The MicroStation text elements from an imported Excel table will automatically receive some font features from the Alignment and Font tabs (per the Excel Format Cells dialog box settings) used with the original table.

- **MicroStation Font Justification**

This is determined by the settings in the Alignment tab i.e. a Horizontal setting of Center and a Vertical setting of Top will result in a Center-Top justification in MicroStation. Only the Left (Indent), Center, and Right (Indent) Horizontal settings should be used. The Horizontal settings of General, Fill, Justify, and Center Across Selection along with the Justify and Distributed Vertical settings are usable but the resulting MicroStation justification may vary upon whether text or numbers are used. Use the recommended settings of Left (Indent), Center, and Right (Indent) for the Horizontal settings and Top, Center, and Bottom for the Vertical settings.

- **Underline**

This feature is found under the Font tab; only the Single Underline and the Color selection menu of this tab will be honored in MicroStation.

Font weight is determined by the ByLevel setting of the design file's active level.

### Patterns

All Excel patterns available from the Patterns tab in the Excel Format Cells dialog box are displayable in MicroStation. The design file level to which a pattern is translated is determined by the defined level in the Excel AutoTable Options dialog box (see below). The weight of the lines in the pattern is determined by the pattern itself. Patterns with thin lines will be placed at a weight of 0, thicker lines will be placed at a weight of 2. A line style code of 0 is used for a solid line pattern while any dotted or dashed line patterns will display with a line style code of 1.

### Cell Shading

Any cell shading used in the Excel table will also carry over to MicroStation.

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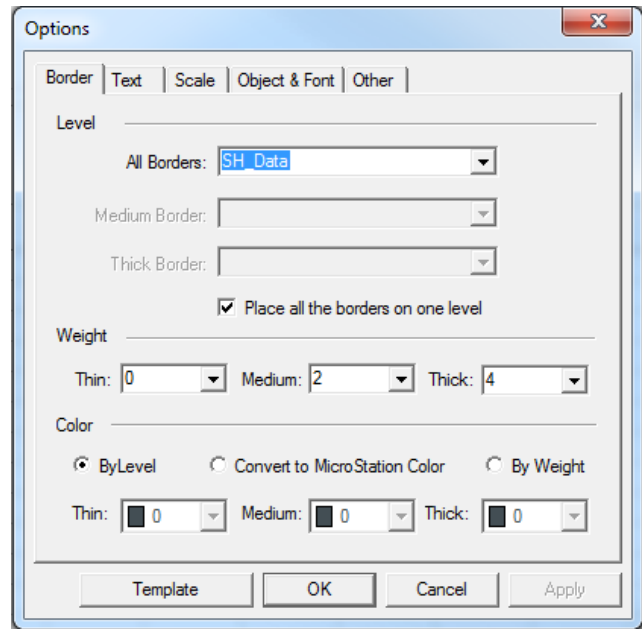
## Excel Auto Table Options

### General

The Auto Table Options button on the Excel AutoTable tool bar (see page 18) opens the Current Auto Table Options dialog box, as shown in Figure 12. Note that the dialog will appear with the caption "Options" prior to being imported to MicroStation.

This dialog allows the user to set the desired preferences for translation of Excel elements and/or features into the MicroStation design file.

The default settings for the dialog are set by the ODOT standards loaded by the user (see [User Standards Setup](#)).



Excel AutoTable Options

**Figure 12**

The dialog contains five tabs for controlling the translation of items from Excel to MicroStation. The tabs are labeled as "Border", "Text", "Scale", "Object & Font", and "Other". These tabs will be discussed individually in the following sub-sections.

### Buttons

The Template, OK, Cancel, and Apply buttons, as shown in Figure 12, appear regardless of the tab selected.

The Template button opens a drop-down list that allows the user to load predetermined settings from a file, via the "Load from file" selection, or save the current options to a file using the "Save to file" selection.

The OK and Apply button save any changes made to the options. The OK button closes the dialog box, as well.

The Cancel button closes the dialog box and ignores any changes.

### Border Tab

The Border tab, as shown in Figure 12, controls the translation of Excel borders to MicroStation levels and colors.

#### Level

The Level section controls which MicroStation levels the Excel borders are to be written too. The user keys in the desired named/numbered level in the appropriate key-in field.

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*If no levels are defined, the table and its contents are placed on the design file's active level.*

### Weight

This section has drop down for selecting or typing in line widths for thin, medium and thick borders.

### Color

The radio buttons in this section control the color for all borders imported to the design file. These elements can be placed at the ByLevel, MicroStation equivalent, or a defined color when the "By Border Lineweight" toggle is used. If the "By Border Lineweight" is checked on, the color drop down lists for "Thin/Medium/Thick" borders become active, allowing the user to select the desired colors for borders and text.

## Text Tab

The Text Tab, as shown in Figure 13, controls the translation of Excel Text to MicroStation Levels and colors.

### Level

The Level section controls which MicroStation levels the Excel text is to be written too. The user keys in the desired named/numbered level in the appropriate key-in field

*If no levels are defined, the table and its contents are placed on the design file's active level.*

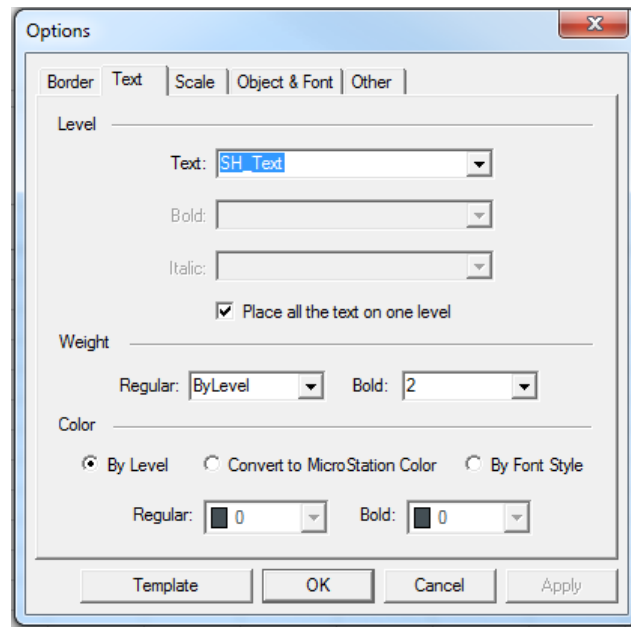
### Weight

This section has drop down for selecting or typing in line widths for thin, medium and thick borders.

### Color

The radio buttons in this section control the color for all borders imported to the design file. These elements can be placed at the ByLevel, MicroStation equivalent, or a defined color when the "By Border Lineweight" toggle is used. If the "By Border Lineweight" is checked on, the color drop down lists for "Thin/Medium/Thick" borders become active, allowing the user to select the desired colors for borders and text.

**Figure 13**



## Scale Tab

The Scale tab, shown in Figure 14, has two sections; Cell Scale and Text. These sections control the height of the text and the interline spacing of the rows in the table.

### Cell Scale and Text

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The "Scale:" and "Custom:" fields represent 1 design file unit (foot) to 1 Excel point. For example, an Excel row height of 12.75 points at 1:1 would equal a row height of 12.75 feet in MicroStation.

The factors shown in the "Custom:" sections of Figure 14 are designed to give the user a MicroStation text height of exactly .1400 from an Excel Arial 10Pt, and a row height of exactly .2800 in MicroStation from an Excel cell height of 12.75 points. The interline spacing of .2800 was chosen as the standard in order to conform to the forth-coming row spacing size for all ODOT standard sheets containing charts. If a larger text size is desired, for, say, a table header, the font point size should be changed. Acceptable point sizes to use for such purposes are 12Pt, 14Pt and 18Pt. These sizes provide the closest approximation to the MicroStation text heights of .1700, .2000, and .2500, respectively.

The scale factors shown in the figure have a direct relationship with the Excel cell height (default 12.75) and font size (default Arial 10Pt) used in the worksheet. They are calculated in the following manner:

$$\begin{aligned} \text{Desired MicroStation Interline} \\ \text{Spacing/Excel Row Height} &= \text{Cell} \\ &\text{Scale Factor} \\ 0.2800/12.75 &= 0.0219608 \end{aligned}$$

$$\begin{aligned} \text{Desired MicroStation Font} \\ \text{Height/Excel Font Size} &= \text{Text Scale} \\ &\text{Factor} \\ 0.1400/10 &= 0.014 \end{aligned}$$

Text width (TW) is calculated as the Text Height (TH) minus 0.1 times the Final Text Height.

In this case, the Final Text Height is .1400 so the Text Width is .1260. In the two following examples, the Text Heights shown are for a 10Pt font and a 14Pt font, respectively:

- (1) **0.1400 TH – (0.1 x 0.1400 TH) = 0.1260 TW**
- (2) **0.1960 TH – (0.1 x 0.1960 TH) = 0.1764 TW**

The "Autofit Cell to font height" and "Autofit Font height to cell" will disable the fields in their respective section *and* only the corresponding Autofit toggle in the other section. These sections do as they imply, by establishing the row height or text height automatically by referencing the alternate section's settings.

### Object and Font Tab

The Object and Font Map tab, as shown in Figure 15 below, controls the type of font placed and which objects from the Excel worksheet will be translated to the design file.

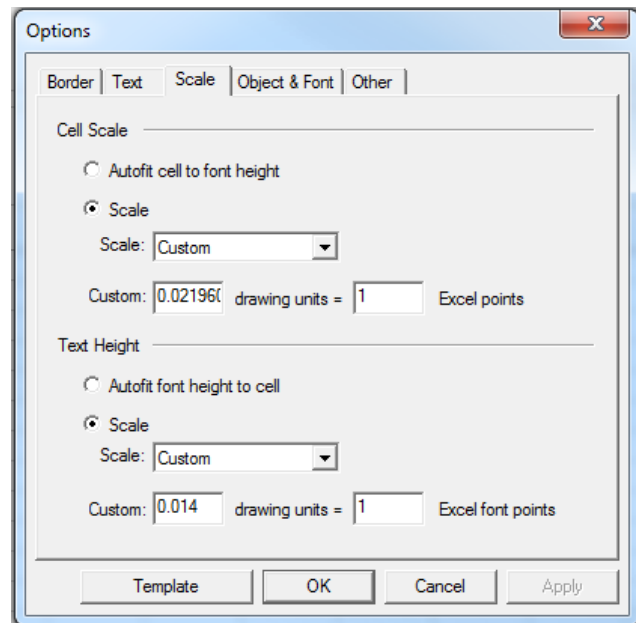


Figure 14

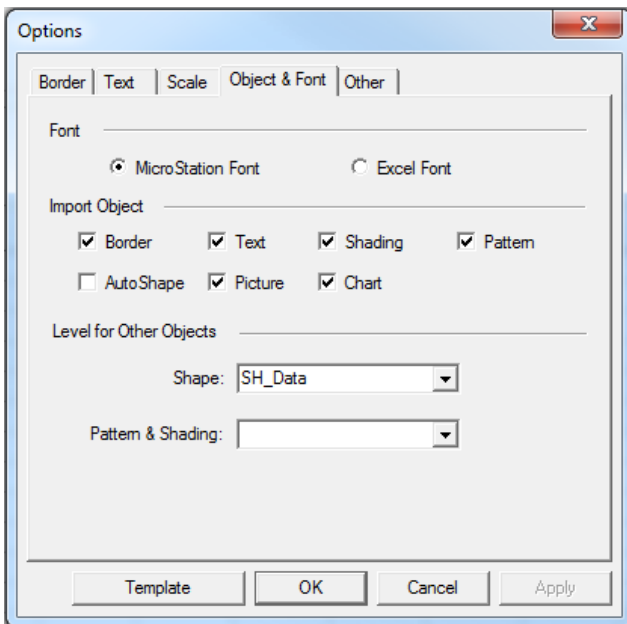
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### Font

The Font Map section controls whether a MicroStation font or an Excel font will be used when the table is placed in MicroStation. The ODOT standard requires this choice to be set to MicroStation Font.

### Import Object

This section controls which items in the Excel worksheet will be translated to the design file. In Figure 15, all Excel Borders, Text, Cell Shading, Excel Patterns, AutoShapes, Pictures, and Charts that exist in the worksheet will be imported into the design file.



**Figure 15**

### Level for Other Objects

This section has drop down lists the user can select a MicroStation level to display Shape and Pattern & Shading as.

The Borders and Text are placed on the levels designated in the Border and Text tabs. Any Excel Charts and Pictures (images) located in the worksheet are attached (relative to their position in the Excel file) automatically to the design file using Raster Manager in MicroStation. These images may be adjusted using any of the Raster Manager commands *BUT* on a table update all images will be reset to their original settings. A previously placed table can also be moved, copied, scaled, rotated, etc. using the appropriate MicroStation commands; any images placed with this table will also be moved, copied, scaled, rotated etc. once the table is updated.

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### Other Tab

The Other tab, shown in Figure 16, has several key-in fields, a drop-down menu, and a "Browse" icon. They are used in the following manner:

**Rotation Degree:**

Defines the rotation of the table when placed in the design file (default is 0).

**Link Path Type:**

This drop-down contains the Full path, Relative path, and No Path options. AutoTable uses the Link Path Type designation to search for the Excel file's directory.

The ODOT standard is set to Relative path. This option is ideal for use with a standardized directory structure, like ODOT's, where spreadsheets are in one directory and design files in another. Relative path ensures that the design file and Excel table will remain linked if the directories and files are moved to another location.

The option for No path should never be used.

**Pictures Folder:** and **Browse icon**

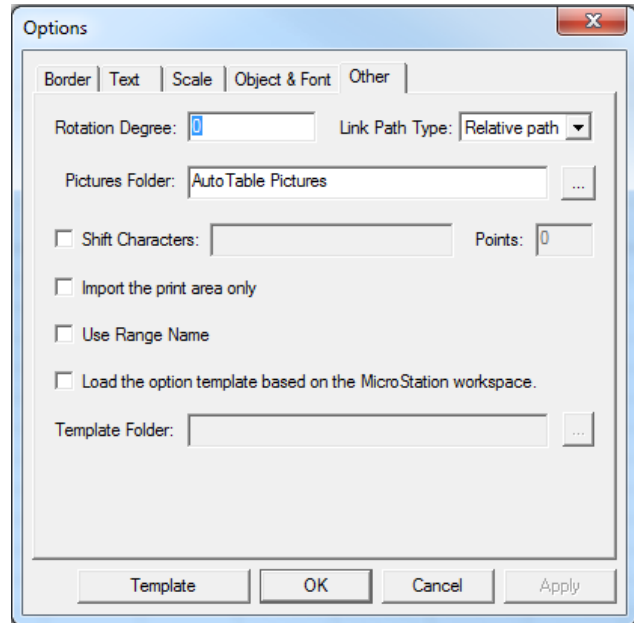
This Pictures Folder field contains the name of the folder that will hold the raster images of any chart or picture from the worksheet. The folder is created automatically, placed in the same directory with the design file and is to be named such that there are no questions about its existence and/or contents. The browse icon can be used to browse for the folders location.

**Shift Characters:** and **Points:**

These fields are for AutoCAD use only.

**Import the Print Area Only, Use Range Name, Load the option template based on the MicroStation workspace,** and **Template Folder:**

These options are not currently used in ODOT's standards.



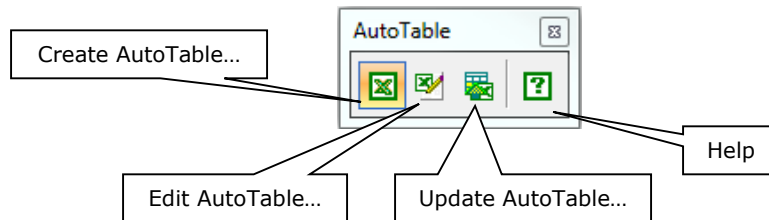
**Figure 16**

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## Using AutoTable

### MicroStation Toolbar

There are four icons displayed on the dockable MicroStation AutoTable toolbar, as per **Figure 17** below. These same commands are also accessible from the Cadig pull-down menu, located on the MicroStation menu bar, and by MicroStation key-in entries.



**Figure 17**

### Create AutoTable

The Create AutoTable command opens a blank worksheet in Excel, allowing the user to fill in the worksheet with the desired information and features. When finished, the user selects the appropriate icon in the Excel AutoTable toolbar (see sheet [18](#)) to return to the MicroStation design file and import the newly-created Excel table as a cell in the design file.

Before placement in the design file, the table/cell will float on the cursor, allowing the user to accurately place or reject the table/cell using the Reset button.

This command also allows the user, once the blank worksheet is opened, to select a previously created worksheet (for example, an ODOT standard Excel sheet).

#### Notes:

- All imported text and borders become native elements in MicroStation and are fully editable with the applicable MicroStation tools. *Important* – Since the Excel worksheet is linked to the MicroStation design file, any modifications made to the attributes of the orphan cell containing the table *from MicroStation* will be lost when the table is updated using the AutoTable update commands.
- Level, color, line weights, text and font styles, etc. of the imported table are as determined by the user settings in the MicroStation-side [Font Map](#) dialog and the Excel AutoTable [Options](#) dialog.
- When the linked Excel file is placed in a MicroStation design file, it is placed as an orphan cell. If the cell is dropped, all linkage will be lost and the contents will no longer be updatable.



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### Edit AutoTable

The Edit AutoTable function allows the user to edit a previously created worksheet that has already been imported into a MicroStation design file. When the command is selected, the user will be asked to identify the table in the design file (with a data point). This action starts Excel and takes the user to the identified table's worksheet for editing. The edits are made to the design file table when the [Finish](#) or [Range Import](#) icon is selected from the Excel AutoTable toolbar.

Caution: When using the Edit AutoTable command to revise a worksheet in a multiple worksheet Excel file, and using the "Finish" command from the Excel AutoTable tool bar to perform the update, AutoTable assumes that the *active* worksheet displayed contains the information to which the design file's table will be updated.

Example:

Edit AutoTable is selected, Worksheet "2" is identified in the design file, and changes are made to that table in the Excel file. Those changes will be reflected in the design file when the user selects the "Finish" command from the excel AutoTable toolbar. However, if the user switches to worksheet "1" before issuing the AutoTable "Finish" command, the update in the design file will reflect worksheet "1" and not worksheet "2" as intended.

### Update AutoTable

The Update AutoTable command is used to allow the user to update a previously imported table without re-opening the Excel file. The command allows one user to edit the Excel file and another user, working in the design file, to update the table with the new changes.

If a table is duplicated in a design file using the Create AutoTable function only the selected table will be updated, not both.

### Notes:

- To update multiple tables in a design file, use PowerSelector in MicroStation to select the desired tables, then select the Update AutoTable command (or select Cadig>AutoTable>Update All from the Cadig pull down menu) to update ALL tables in the selection.
- When a table is imported in MicroStation, the options used in the Excel AutoTable Options dialog box are written to the resulting orphan cell's header attributes. If the standards for those options change at a later date and the previously placed cell table is updated with the Update AutoTable command, the "original" attributes will not be over-ridden by the new settings. If the Edit AutoTable command is used, however, then the cell (table) will be rewritten using the new settings.

### Help

The Help function opens the basic AutoTable help loaded with the software.

## The ODOT User Guide for AutoTable

### Excel Ribbon

When an Excel worksheet is opened by using the Create AutoTable or the Edit AutoTable command from MicroStation, the Excel AutoTable Ribbon is displayed. The Ribbon also contains four icons, as shown in Figure 18 below.

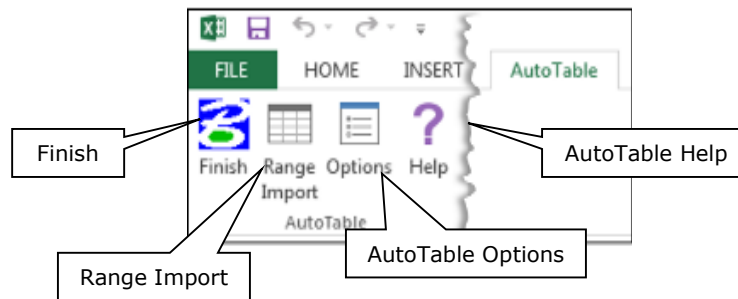


Figure 18

### Finish

Finish automatically sets the High and Low range block of the elements found in the Excel worksheet and returns the user to the design file. If the user has not already saved the Excel changes, he/she will be asked to save the changes to the worksheet before returning to the design file. If the user does not save the Excel changes, the changes will be shown when the table is imported into MicroStation. However, when the table is updated from MicroStation, the table contents will be modified with the last *saved* changes.

When the Finish command is used in Excel and the finished table is imported into a design file, it is placed as a cell and therefore has a cell origin. This cell origin is always the upper-left corner of the first used cell in the Excel file. If no Excel cells are used -- for example, AutoShapes are not tied to cells -- then the upper-left corner of the worksheet, the upper-left corner of cell A1, becomes the basis for the MicroStation cell's origin. Also, if there is a border between the upper-left first used cell and the next cell to the left of it, the import assumes the cell origin to be at upper-left of the cell that is to the left of the border.

It is recommended that, for importing with "Finish" any created tables or standard sheets always work from the upper-left corner of the worksheet to avoid any confusion about where the import will be placed relative to where you wish it to go. For those sheets whose imported content do not start in A1, and this includes the standard Excel sheets for automated general summaries, the Range Import command should be used.

### Range Import

The Range Import command is similar to the Finish command except that it only places the user selected range block from the Excel worksheet.

The Range Import command always places the cell origin at the upper-left of the range of cells selected (i.e. upper-left of table) no matter where the table is located in the Excel worksheet. Use this option when importing from the ODOT standard spreadsheets for automated general summaries.

# The ODOT User Guide for AutoTable

## AutoTable Options

This command brings up the dialog that allows the user to set the desired preferences for translation of Excel elements and/or features into the MicroStation design file. Detailed information is provided in the section on the [Excel AutoTable Options](#) dialog in the Activation and Settings portion of this document.

## AutoTable Help

The AutoTable Help icon opens the basic AutoTable help loaded with the software.

## Cadig Menu

The Cadig pull-down menu located on the MicroStation menu bar contains all of the commands shown in the MicroStation Toolbar and then some. The options in the pull-down menu are discussed below. Key-ins are also provided for those commands which are of significance to ODOT plan work.

## Create AutoTable

A detailed discussion of this command is provided previously in this document. See the [Create AutoTable](#) topic in the MicroStation Toolbar section.

Key-in: autotable create

## Edit AutoTable

A detailed discussion is provided in the [Edit AutoTable](#) topic in the MicroStation Toolbar section.

Key-in: autotable edit

## Update AutoTable

Refer to the MicroStation Toolbar section, sub-topic [Update AutoTable](#), for a detailed discussion of this command.

Key-in: autotable updatetbl

## Update All

The Update All option, when selected, updates all tables found in the design file. Multiple tables in multiple files can be updated using the MicroStation Batch process.

Key-in: autotable updateall

To make a file for batch processing, first create a text file (command file) with the words "autotable updateall" in the first line and save. Next, open a design file and key-in "MDL load autotable" key-in, then select the Batch Process utility from the MicroStation pull-down menu. When the dialog box opens, select the command file previously created along with the files to be updated. This process updates all tables in a file regardless of whether or not their source excel files have been modified. Files created in an earlier version of the AutoTable software may need to be updated individually.

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### Manage Link

The Manage Link command opens the Link Manager dialog, which allows the user to perform a number of procedures with regard to the location, name, and area specified (Range Import only) in the worksheet. The user may also redefine the folder where the Excel files are kept.

The Link Manager dialog, as shown in Figure 19 below, displays the Workbook name, Worksheet name, and, if the Range Import command was used to bring the file into MicroStation, the Selection range.

When an Excel file is selected in the list box at the top of the dialog's screen form, the information is then redisplayed in the associated fields below the list box. The user may then use these fields to modify the Workbook name, folder location, Worksheet, and Selection area. To save a modification, the user selects the Update button. The changes should then be displayed in the list box.

The Browse button to the right of the Workbook field allows the user to browse for a file name instead of keying it in. The user must select a worksheet shown in the display area of the Link Manager dialog box before using this button.

The user may also use the "Open workbook in Excel" button to make any modifications to the selected Excel file prior to updating it in MicroStation via any of the MicroStation-side AutoTable update commands.

The Folder Replace area allows the user to redefine the location of any/all tables in the design file by selecting them from the list displayed in the Link Manager dialog box.

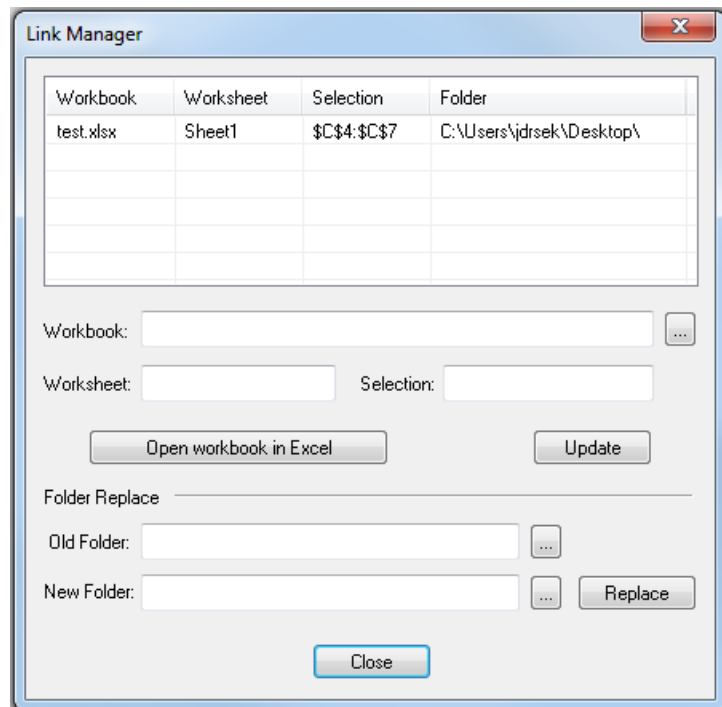


Figure 19

Key-in: autotable managelink

### Font Map

See the [Font Mapping](#) section of this document for a detailed discussion of the dialog associated with this command.

Key-in: autotable fontmap

### Turn Auto-Update On/Off

The Auto-Update feature is either on or off (default is off). If set to "on", an AutoTable cell/table that is located within a MicroStation design file will automatically be updated when

## The ODOT User Guide for AutoTable

the design file is opened, provided that AutoTable has been loaded prior to the MicroStation File>Open command.

See Update All, above, for information on multiple file/table updates via MicroStation Batch Processing.

Key-in: autotable autoupdate

### **Other Key-ins not available from the pull-down menu**

To redisplay the MicroStation toolbar, key-in the following:

Key-in: autotable addmenutoolbar

To update all tables in the active file and then all tables in other design files when the MicroStation File>Open command is issued, enter:

Key-in: autotable updateallonfileload

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### Plan Sheet Design

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Several Standard Plan Sheets were loaded with the installation of the AutoTable software. These sheets are located in the *ODOTcadd\Standards\Cadig\Excel Standard Sheets* directory and should not be modified unless copied to another directory or copied and then renamed in the same directory.

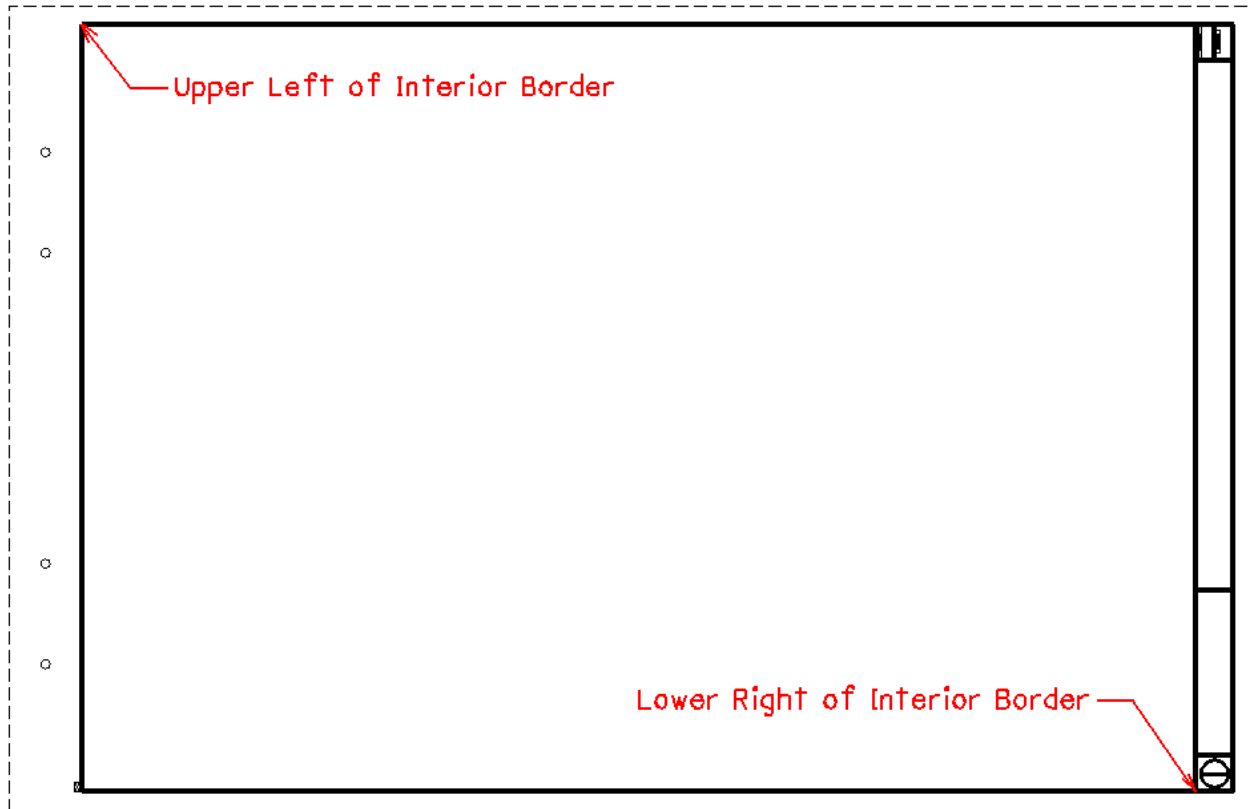
Any Excel [printable] AutoShapes, borders, and text are translated to the MicroStation levels designated by the Excel AutoTable Options dialog box. The default settings for the Options dialog are from the file *ODOT AutoTable Options.opt*, which is provided with the *Standards\Cadig* directory and is "loaded" to the Options dialog via the user set-up batch file *AutoTableSetup\_v8i.bat*. (See [Installation and Licensing](#)).

There are several procedures that should be followed when designing a plan sheet.

- A blank design file with a non-printing, cell-independent "drawing area" border has been developed as a guide for new sheet development. It is located in the Excel Standard Sheets sub-directory of the *Standards\Cadig* directory. This file, named *Blank Design Sheet.xls*, contains a rectangular AutoShape showing the limits of the interior border of an ODOT standard plan sheet. The shape's size is based upon the ODOT standards for: Excel font (10Pt), row height (12.75 Pts) and import settings, and; a MicroStation sheet cell placed as a scale of 1. All elements in the Excel worksheet must be within the boundaries of the AutoShape in order for the imported information to be entirely within the drawing area of the MicroStation sheet cell into which it they are to be imported.
- Check the column/cell font alignment and justification in the Excel worksheet. Is it set to the desired justification? Does the text need to be presented vertically or horizontally?
- As discussed previously, when the Finish command is issued in Excel and the table is imported into a design file, it is placed as a cell and therefore has a cell origin; this cell origin is always the upper-left corner of the first used cell in the Excel file. If no cells are used in the Excel file then the upper-left corner of the worksheet cell, A1, is used. AutoShapes are cell independent, so if, for example, the upper-left corner of the AutoShape is at or near cell G17, the cell origin will be the upper-left corner of the cell A1 in the worksheet and not cell G17. Therefore, it is recommended that any tables or standard sheets created in Excel always start from the upper-left corner of cell A1 to avoid any confusion when importing via the "finish" command.
- For those sheets whose imported content do not start in A1, and this includes the standard Excel sheets for automated general summaries, Range Import should be used.
- All Excel worksheet Row Heights, for tables to be imported into MicroStation, must be set to 12.75. Column widths may vary. This row size and the scale factor in the Excel AutoTable Options dialog box will make the line spacing .2800 between lines, which, in turn, gives the designer exactly 75 rows within the drawing border.
- For full-sheet charts, start by placing a blank sheet cell in the design file at a *scale of 1*. Use ODOT sheet cell BLKWO (title bar without North arrow) or BLKW (title bar and

## The ODOT User Guide for AutoTable

North arrow). The upper-left corner of the interior border of the sheet cell will correspond to the upper left corner (cell origin) of the imported Excel table. *All Excel standard sheets are designed for initial import into a MicroStation sheet cell placed at a Scale of 1.* After the import is complete, the sheet cell and its contents may be scaled as desired without any resulting problems. Any later updating of the worksheet will accommodate the revised scale in MicroStation.



**Figure 20**

- If the Excel spreadsheet Row Height needs to be increased due to a larger text size, etc., the designer should *merge* adjoining cells together *rather* than increase the height of the row. In order to center text, etc. in a table header, then, the number of rows needed for (merging cells) in the table header should be taken into account. See Figures 21 and 22 below for an example of cells merged in Excel and the resulting file in MicroStation.

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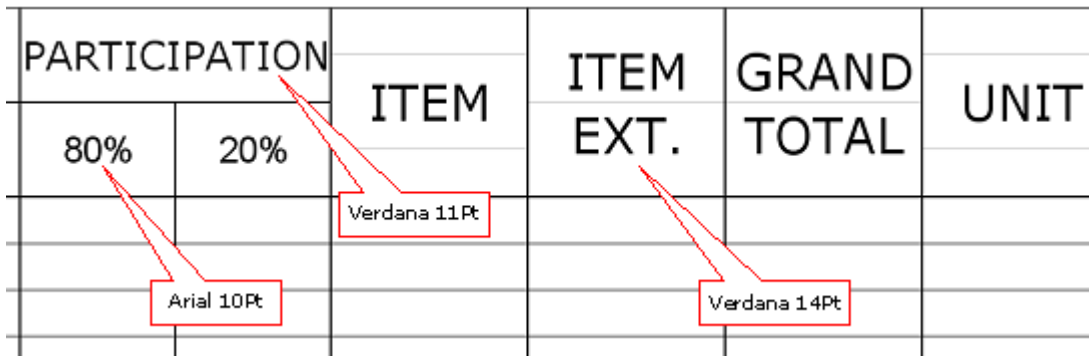


Figure 21 shows an Excel table header with four rows. The first row contains 'PARTICIPATION', 'ITEM', 'ITEM EXT.', 'GRAND TOTAL', and 'UNIT'. The second row contains '80%' and '20%' under 'PARTICIPATION'. Red arrows point to text boxes indicating font types: 'Arial 10Pt' for '80%', 'Verdana 11Pt' for 'ITEM', and 'Verdana 14Pt' for 'ITEM EXT.'. Horizontal gray lines indicate merged cells in the first row.

PARTICIPATION		ITEM	ITEM EXT.	GRAND TOTAL	UNIT
80%	20%				

**Figure 21**

Figure 21 shows four rows used in the Excel table header so that any text in the column could be centered in the column allowing a larger text size to be used by merging the cells. Notice the horizontal gray lines showing the merged cells in the column headers.

The font types shown in Figure 21 are as per the ODOT standard Font Map mentioned earlier in this document. The point sizes shown were selected to duplicate the current General Summary (hard copy) sheet text sizes. These text sizes are discussed in the [Excel AutoTable Options | Scale](#) section of this document.

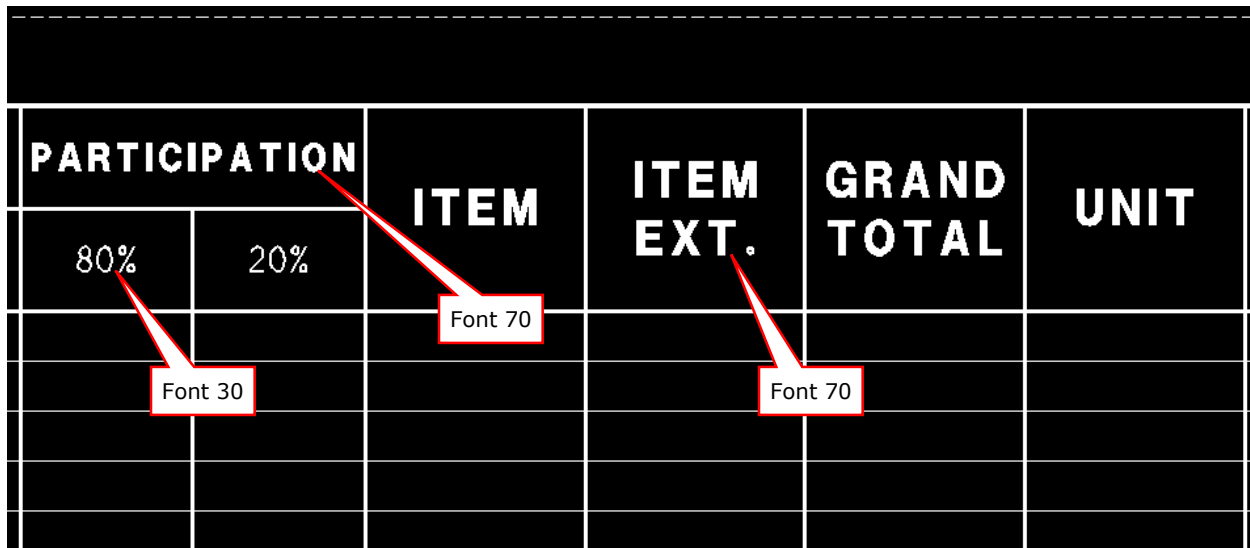


Figure 22 shows the resulting import from the Excel file shown in Figure 21. The table has a black background with white text. Red arrows point to text boxes indicating font sizes: 'Font 30' for '80%', 'Font 70' for 'ITEM', and 'Font 70' for 'ITEM EXT.'. The text is centered in the columns.

PARTICIPATION		ITEM	ITEM EXT.	GRAND TOTAL	UNIT
80%	20%				

**Figure 22**

Figure 22 shows the resulting import from the Excel file shown in Figure 21. Notice the resulting sheet header showing the text, as specified in the Font Map, centered in the columns.



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### Recommendations/Limitations

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- Screen resolution *must* be set at 96 dpi for AutoTable to work properly with the ODOT standards. Other dpi settings will result in inaccurate import scaling.
- Currently, AutoTable does not support stacked fractions for imported text. Fractions displayed as text in the Excel worksheet will be placed in MicroStation as one line of text.
- Third party software or software Add-Ins, such as Microsoft Equation Editor, that insert elements into an Excel worksheet may import incorrectly or not at all.
- A picture and/or pie chart may be imported into the design file as a raster image via the Create AutoTable command. The imported image can be seen in the Raster Manager dialog box in MicroStation. There is, currently, no means by which such an image placed from an Excel worksheet containing *only* that image can be updated using the Edit AutoTable or the Update AutoTable commands from the MicroStation AutoTable toolbar. A simple workaround for this situation is to place a small piece of text (for example, a period) in the cell behind the image or to add something that will become snappable in MicroStation to the picture in Excel (for example, a title).
- Those working in Excel 2007 need to keep in mind that the default row height for a new sheet is not 12.75 points as in earlier versions. Therefore, all cells from a user-created Excel 2007 spreadsheet that will be imported into MicroStation must have their row heights changed to 12.75 for the ODOT standard settings to work correctly.
- Excel 2007 does not necessarily display rows in direct to proportion to their height. For example, if you double the row height, what you actually see may be 2.1 times larger. The floating border, however, is displayed correctly. Therefore, the location of the last row of your chart relative to the floating border may be totally different than how it will appear relative to the bottom of the sheet's inner border once it is imported into MicroStation. To ensure that your Excel 2007 chart fits within a standard ODOT sheet cell's drawing area, the cumulative row height should be no more than 959.5 points.
- Cadig recommends that, when a user prepares a worksheet in Excel using the Format Cells option, he/she format only the cells needed for input within the Excel worksheet to prevent possible placement of the entire worksheet.

# The ODOT User Guide for AutoTable

## Trademarks

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AutoTable is a registered trademark of Cadig Incorporated.

Excel is a registered trademark of Microsoft, Incorporated.

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## Contact Information:

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If you have any questions, suggestions, or problems please contact the ODOT Office of CADD and Mapping Services, CADD Support team or use the following form on the ODOT web site at:

[https://odot.formstack.com/forms/cadd\\_servicerequest](https://odot.formstack.com/forms/cadd_servicerequest)