

12

Preparing Theme Symbology

This chapter presents a set of tools used to prepare or edit themes, and to manage Theme files. By attaching a theme to a vector element, you automatically assign a symbology to this element and a set of parameters that defines its characteristics and meaning.

Overview

Themes are user-definable presentation attributes that can be assigned to elements of a design file. Each theme is given a name which represents the common feature that the elements represent and identifies the associated symbology set.

Themes are particularly useful in applications such as mapping that require symbolic representation of data. An unlimited number of themes are supported on each level and they are used to display the elements in MicroStation's views with various sets of visual display attributes. You can assign a theme to any element or attach a centroid cell and an associated theme to a closed element.

The theme concept allows you to automatically and easily assign a symbology and a set of parameters or attributes to all elements with the same characteristics and meaning. With themes, you can classify elements. All elements belonging to the same class will be attached to the same theme and will have the same symbology.

When you place elements with the Vectorize tool box or when you convert raster objects into design line strings, text or symbols, you can select the appropriate themes that correspond to the objects and automatically assign classes to the elements you create. If the None theme is selected, the MicroStation element settings for color, style, and weight are used, and no theme tag is given to the element.

Examples of parameters or attributes connected to a theme are line weight, line style, pattern, hatch, color, or class name (road, street, pipe, etc.). A theme can have specialized attributes for text such as font type, height, width, line spacing, line length, intercharacter spacing, justification, angle, underline, or slant.

This chapter describes the following tool boxes:

- Theme — used to tell the theme attached to an element, to change the theme of elements, or to select all elements with a given theme.
- Theme File — used to manage Theme files.

It also describes the following dialog boxes:

- Theme Styler — used to prepare or edit themes and to manage Theme files.
- Hatch Editing — used to produce or edit hatch items, and to manage Hatch files.
- Pattern Editing — used to produce or edit patterns, and to manage Pattern files.
- Text Attributes — used to set theme parameters related to text.
- Cell Attributes — used to set theme parameters related to cells.
- Update Design File dialog box — used to selectively replace the element symbology in the active design file with the theme symbology.

Definitions

In order to use themes and the related tools efficiently, you should be familiar with some important definitions:

Theme	A theme is assigned to an element in order to classify and graphically represent it in the same manner as all other elements of the same class. A theme is specified by a set of graphical characteristics common to all elements assigned the same theme, such as the color, the type or weight of a line, a pattern, a hatch, and so forth.
Theme File	A Theme file is a set of themes saved together in a file. In a Theme file, an individual theme is identified by a name and a number.
Hatch	A hatch fills a closed space with repeated hatch lines. A hatch is defined by a set of parameters such as the type (hatch or crosshatch) the color of lines, the spacing between lines, the direction of lines, and so forth.
Hatch File	A Hatch file is a set of hatch items saved together in a file. In a Hatch file, an individual hatch is identified by a number.
Pattern	A pattern fills a closed space with repeated cells. A pattern is a set of parameters such as the cell to be repeated, the spacing between cells, the size and the direction in which they are repeated, and so forth.
Pattern File	A Pattern file is a set of pattern items saved together in a file. In a Pattern file, an individual pattern is identified by a number.
Cell	A cell is a drawing template with its own graphical attributes, which can be copied to various places and at various scales. In a pattern, a cell can be copied repeatedly to fill a closed surface.
Symbology	A symbology is a set of graphical attributes used to display elements. Symbology can be associated with the elements themselves, with levels, or with themes. An element can be displayed differently according to the symbology used in a specific situation.

Theme tool box



Theme tool box

The Theme tool box is used to show the theme attached to an element, to change the theme of elements, to select all elements with a given theme, or to open the Theme Styler dialog box.

Tools in this box work with the following MicroStation element types: Cell, Line, Line String, Shape, Complex Shape, Complex Chain, Text Node, Text, Curve, Ellipse, Circle, Arc and B-Spline.

Change Theme tool



Change Theme tool

Used to change the theme of an element or the theme of all elements in a selection set.

► To change the theme of an element

1. Select *Change Theme*.
2. Select the new theme in the tool settings window.
3. Identify the element by clicking on it.
4. Accept the element (or reject and retry).

☞ The *Change Theme* tool does not apply the theme symbology to the design file. You must update the design file to do so.

► To change the theme of the elements in a selection set

1. Select the elements with the MicroStation *Element Selection* tool.
2. Select *Change Theme*.
3. Select the new theme in the tool settings window.
4. Accept the selection (or reject and retry).

Query Theme tool



Query Theme tool

Used to report what theme is attached to an element.

► To find the theme of an element

1. Select *Query Theme*.
2. Identify the element by clicking on it.
3. Accept the element (or reject and retry).
4. Reset to accept the query.

Select by Theme tool



Select by Theme tool

Used to create a selection set from a specified theme.

► To select all elements associated with a theme

1. Select the *Select by Theme* tool.
2. Select the theme in the tool settings window.
3. Accept (or reject and retry).

The resulting selection set contains all elements of the design file associated with the selected theme.

Theme Styler Dialog tool



Theme Styler Dialog tool

Used to open the Theme Styler dialog box. (See "Theme Styler dialog box" on page 12-6.)

Theme File tool box



Theme File tool box

The Theme File tool box includes all necessary tools to manage Theme files (THM files). A Theme file is used to save a set of themes. It can be opened later and be edited or used with various converting operations. The same functions can also be accessed from the File menu of the Theme Styler dialog box.

Any time unsaved changes to themes are going to be lost, a warning message displays giving you the option to save the file.

New Theme File tool



New Theme File tool

Choose *New Theme File* to create a new Theme file. The temporary name *Untitled* is given to the new theme set, which contains two themes: (def) and (none). The theme set becomes a Theme file when it is saved and given a name. If a Theme file is open, it closes before the new theme set is created. If changes have been made to the previous theme set, you are warned to save your changes. Press OK in the warning box to do so, or Cancel to remove the previous theme set without saving the changes.

Open Theme File tool

Choose *Open Theme File* to open an existing Theme file. If a Theme file is open, it closes before the new theme set is opened.



Open Theme File tool

If changes have been made to the previous theme set, you are warned to save your changes. Press OK in the warning box to do so, or Cancel to remove the previous theme set without saving the changes.

Save Theme File tool



Save Theme File tool

Choose *Save Theme File* to save the current theme set with the present name, in the same directory, and on the same disk. If the theme set is Untitled, or if the current Theme file is write protected, a dialog box allows you to save the theme set under any filename, in any directory, and on any disk. The file is created and becomes the current Theme file.

Theme Styler Dialog tool



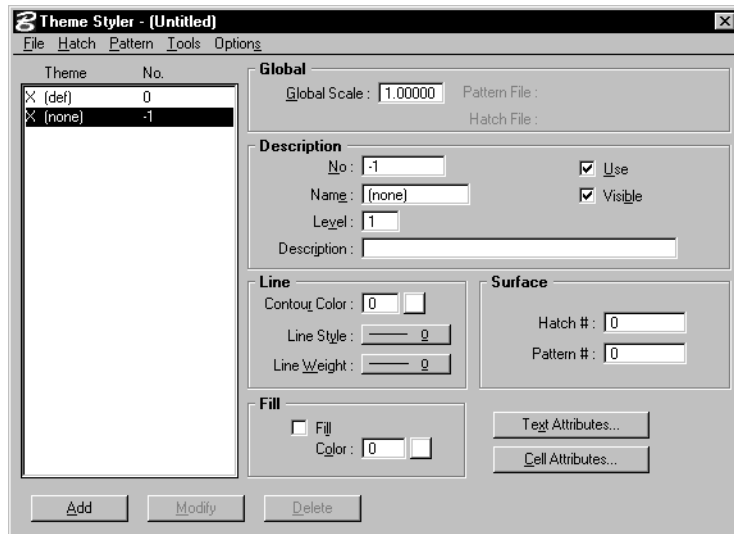
Theme Styler Dialog tool

Used to open the Theme Styler dialog box. (See “Theme Styler dialog box” on page 12-6.)

Theme Styler dialog box

The Theme Styler dialog box is used to create and edit themes, and to manage Theme files. The title bar of the dialog box displays the name of the active Theme file. If a Theme file is not open, Untitled displays as the filename.

Theme Styler dialog box



Add

Used to add a new theme to the Theme file.

► **To add a theme**

1. Enter a new number in the No. field.
2. Enter or edit all other parameters.
3. Click Add.

The new theme now displays in the Theme list box.

W When themes are added, modified, or deleted, the theme set in memory is changed, but the Theme file does not automatically update. To update it, use Save from the File menu or the *Save Theme File* tool.

Modify

Used to modify any descriptive parameter of the selected theme.

► **To modify a theme**

1. Select a theme by clicking the corresponding line in the Theme list box.
2. Edit all appropriate parameters.
3. Click Modify.

Delete

Used to delete the selected theme from the current Theme file.

► **To delete a theme**

1. Select a theme by clicking the corresponding line in the Theme list box.
2. Click Delete.

The deleted theme is then removed from the Theme list box.

👉 The (def) and (none) themes cannot be deleted.

Global parameters

Global Scale

Used to select a display scale for the Theme file. This scale will be applied to all hatch items, patterns, or cells in the Theme file.

Hatch File

The Hatch File field displays the name of the Hatch file attached to the Theme file. If no Hatch file is attached to the current Theme file, Hatch File is dimmed.

Pattern File

The Pattern File field displays the name of the Pattern file attached to the Theme file. If no Pattern file is attached to the Theme file, Pattern File is dimmed.

Description**No**

The No field indicates the number of the selected theme. To add a new theme, enter a new number into this field. This number must be unique in a Theme file.

Name

Used to enter or to display the name of the selected theme. The name is a code assigned to a theme.

Level

The Level field specifies the MicroStation level assigned to the selected theme and is a value ranging from 1 to 63.

Description

Use the Description field to enter a short description for the selected theme.

Use

Indicates whether the selected theme can be used or not. If it is turned off, the selected theme does not display in the Theme menu options with various tools. It is not removed from the theme file and can be enabled later by turning on the Use check button for this individual theme.

Visible

Used to selectively display themes. Elements that belong to themes with the Visible status turned on are displayed. If the status is turned off for an individual theme, all elements that belong to this theme are not displayed. To turn on or off the Visible status of a theme, select this theme in the Theme list box and click the Visible check button.

Line

Contour Color

Use the Contour Color field to specify the color contour assigned to the selected theme. The color is applied to linear elements and to the perimeter of polygons and is a value ranging from 0 to 255. The color is chosen by entering the number into the field next to the color button, or selected with the color picker that pops up when you click the color button.

Line Style

Use the Line Style option menu to choose the line style assigned to the selected theme. The line style is applied to linear elements and to the perimeter of polygons. It is a value ranging from 0 to 7.

Line Weight

Use the Line Weight option menu to choose the line weight assigned to the selected theme. The line weight is applied to linear elements and to the perimeter of polygons. It is a value ranging from 0 to 15.

Surface

Hatch

Use the Hatch # field to assign a hatch number to a selected theme. Hatch items, as well as pattern items, are used to fill closed elements. The Hatch # "0" yields no hatch.

Pattern

Use the Pattern # field to assign a pattern number to the selected theme. Pattern items, as well as hatch items, are used to fill closed elements. The Pattern # "0" yields no pattern.

Fill

Fill toggle and Color

If Fill is on, closed elements are automatically filled. The color is chosen by entering the number into the field next to the color button or selected with the color picker that pops up when you click the color button.

You can also fill (as a background color) a closed area which has previously been patterned or hatched. If the Display toggle in the Options menu is on, the Fill color does not cover the hatch or the

pattern associated to the design elements in the display. When the Display check button is off (default), the Fill color can hide the hatch or pattern associated with the design elements. To avoid this situation, update your design file. (See “Update Design File dialog box” on page 12-19.)

If you want to update your design file with a fill, turn on the Fill check button in the Update Design File dialog box. If the Fill check button is on, the Fill color is updated in the design file. If the Hatch/Pattern check button is off, you are warned that the fill color can cover the hatch or pattern of your closed elements.

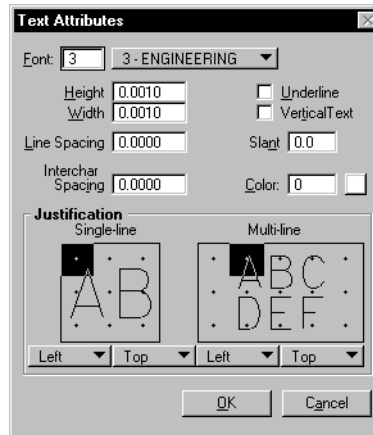
W The fill does not take into account an element that is marked as a hole.

Text Attributes

This button opens the Text Attributes dialog box.

Use the Text Attributes dialog box to define the parameters of the font belonging to the selected theme.

Text Attributes dialog box



Font

A theme can be attached to text. Use the Font field to enter the font number that corresponds to the desired MicroStation font.

Color

Use the Color field to specify the color, a value ranging from 0 to 255, assigned to text in the selected theme. The color is chosen by entering the number into the field next to the color button, or selected with the color picker that pops up when you click the color button.

Height

Used to set the height of the font.

Width

Used to set the width of the font.

Line Spacing

Used to select the line spacing.

Interchar Spacing

Used to select the spacing between characters.

Slant

Used to select the slant.

Underline

Used to underline text.

Vertical Text

Used to align text vertically in columns.

Single Line Justification

Use the Horizontal and the Vertical buttons to select the single-line justification, horizontal and vertical.

Multi Line Justification

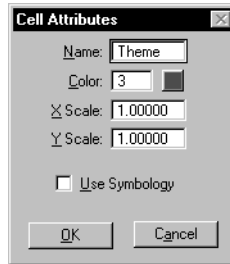
Use the Horizontal and the Vertical buttons to select the multi-line justification, horizontal and vertical.

Cell Attributes

This button opens the Cell Attributes dialog box.

Use the Cell Attributes dialog box to define the parameters of the cell belonging to the selected theme.

*Cell Attributes
dialog box*



Name

Use the Name field to assign a cell to the selected theme. Specify it by providing the name of a cell from the cell library that is attached to the active design file. The cell library can be examined with the Cell Library dialog box which is accessed by choosing the Cells option from the MicroStation Element menu.

- ☞ The cell connected to the selected theme can be placed in the design file with the Convert Cell tools from the Text/Cells tool box. If you assign a theme to an existing cell, this cell is replaced by the cell connected to the new theme.

Color

Use the Color field to specify the color, a value ranging from 0 to 255, assigned to the cell in the selected theme. The color is chosen by entering the number into the field next to the color button, or selected with the color picker that pops up when you click the color button.

X Scale

Used to set the scale of the x-axis.

Y Scale

Used to set the scale of the y-axis.

Use Symbology

Turn on the Use Symbology toggle to display the cells that belong to the current theme with the theme symbology: Level, Line Style, and Line Weight. Turn it off to display the cells with their own symbology.

- ☞ Turning on the Use Symbology toggle does not affect the display of a cell used as a MicroStation Descartes pattern item.

Theme Styler menu

File > New

Choose New to create a new Theme file. The temporary name Untitled is given to the new theme set, which contains two themes: (def) and (none). The theme set becomes a Theme file when it is saved and given a name. If a Theme file is open, it closes before the new theme set is created. If changes have been made to the previous theme set, you are warned to save your changes. Press OK in the warning box to do so, or Cancel to remove the previous theme set without saving the changes.

File > Open

Choose Open to open an existing Theme file. If a Theme file is open, it closes before the new theme set opens. If changes have been made to the previous theme set, you are warned to save your changes. Press OK in the warning box to do so, or Cancel to remove the previous theme set without saving the changes.

File > Save/Save As

Choose Save to save the current theme set with the present name, in the same directory, and on the same disk. If the theme set is Untitled, or if the current Theme file is write protected, this feature functions identically to Save As. Choose Save As to save the theme set under any filename, in any directory, and on any disk. The file is created and becomes the current Theme file.

Hatch > Select

Choose Select from the Hatch menu to open the Select Hatch File dialog box. Use this dialog box to open and attach an existing Hatch file to the current Theme file. If a Hatch file is open, it closes before the new one opens. After a Hatch file opens, its filename displays in the Hatch File field of the Theme Styler dialog box.

Hatch > Edit

Choose Edit to access the Hatch Editing dialog box, which is used to set the parameters to produce or edit hatch items, as well as to manage Hatch files. A Hatch file can contain several hatch items. A hatch is the repeated placement of hatch lines filling a closed area at specified intervals and angles (See "Hatch Editing dialog box" on page 12-16).

Pattern > Select

Choose Select from the Pattern menu to open the Select Pattern File dialog box. Use this dialog box to open and attach an existing Pattern file to the current Theme file. If a Pattern file is open, it closes before the new one opens. After a Pattern file opens, its filename displays in the Pattern File field in the upper part of Theme Styler dialog box.

Pattern > Edit

Choose Edit from the Pattern menu to open the Pattern Editing dialog box. Use this dialog box to set all the parameters used to produce or edit pattern items, as well as to manage Pattern files. A Pattern file can contain several pattern items. A pattern is the repeated placement of a cell to fill a closed area at a specified interval and angle (See “Pattern Editing dialog box” on page 12-18).

Tools > Theme

Selecting Theme from the Tools menu gives access to the Theme tool box which allows you to change the theme of an element, to display the theme of an element, to select the elements associated with the current theme, or to open the Theme Styler dialog box (see “Theme tool box” on page 12-4).

Tools > Theme File

Selecting Theme File from the Tools menu gives access to the Theme File tool box which allows you to create a new Theme file, to open an existing Theme file, to save changes in a Theme file, or to open the Theme Styler dialog box (see “Theme File tool box” on page 12-5).

Options > Display (toggle)

This toggle controls if the theme should be applied to the elements at display time. If off, the theme attributes are ignored and the display of elements follows MicroStation conventions. If on, the elements display using the theme symbology, provided that the MicroStation view attributes are set properly with the View Attributes dialog box.

If you assign a theme, change the theme of an existing element, or if you modify the symbology of a theme, the new theme symbology correctly displays if the Display toggle is on. If it is off, you must update your design file to see the new symbology. (See “Update Design File dialog box” on page 12-19.)

- ☞ Turning on Display can increase the time for updating a view. In any situation where time is critical, turn off Display.

Options > Set All Use

Used to activate all current themes. The names and numbers of all themes can be used with tools that require a theme. It sets the Use toggle for each theme in the set.

Options > Clear All Use

Used to disable all current themes, except the themes (def) and (none). The names and numbers of all other themes are not accessible when using commands requiring a theme, but they are not removed from the theme file. It clears the Use toggles for each theme in the set.

Option > Set All Visible

Used to make all themes visible. It sets the Visible toggle for each theme in the set.

Option > Clear All Visible

Used to make all themes invisible. It clears the Visible toggle for each theme in the set.

- ☞ The Visible toggle in the Theme Styler dialog box is used to selectively display themes. Elements that belong to themes with the Visible status are displayed. If the Visible status is off for a theme, all elements that belong to this theme are not displayed. To turn on or off the Visible status of an individual theme, select the theme in the Theme list box and click the Visible check button. You can also turn on or off the Visible status of all themes by using the Set All Visible and Clear All Visible items in the Options menu.

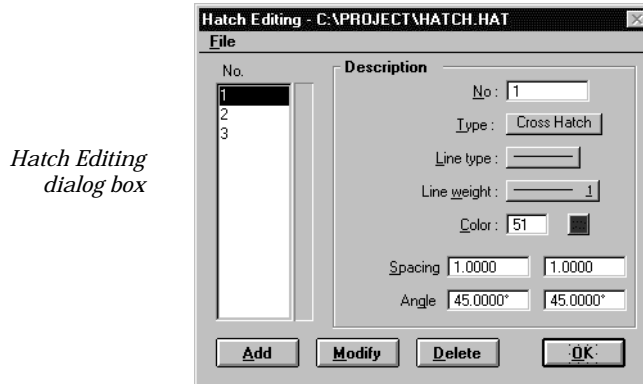
Options > Update Design File

Use Update Design File to update element attributes in the active design file with the theme attributes of the active Theme file. Choose this item from the Options menu to identify the attributes that should be taken into account in the update of the design file.

This operation applies a selection of theme attributes to the design file by changing the element symbology of the individual elements in the design file to a new symbology corresponding to the theme attributes. (For more information see “Update Design File dialog box” on page 12-19.)

Hatch Editing dialog box

The Hatch Editing dialog box is used to set the parameters to produce or edit hatch items, and to manage Hatch files. A Hatch file can contain several hatch items. A hatch is the repeated placement of hatch lines filling a closed area at specified intervals and angles.



The No. list box displays a list of hatch items sorted by numbers. A hatch is selected by clicking on the corresponding line in the list, which then highlights. To add a new hatch item, enter a new number into the No field, enter or edit all other parameters, and click Add. A highlighted hatch item is deleted by clicking the Delete button or modified to the current attribution set by clicking the Modify button.

When hatch items are added, modified, or deleted, the hatch set in memory is changed, but the Hatch file does not automatically update. To update it, use Save from the File menu.

The following hatch parameters are available to define a new hatch item or to edit an existing one.

No (field)

Used to display the number of the selected hatch item, or to enter a new number to insert a new item into the Hatch file. The number entered into this field is the one used to specify the hatch number in the Theme Styler dialog box.

Type

Used to choose between two types of hatch items: Hatch or Cross Hatch. Hatch is the repeated placement of a line through a closed area at a specified interval and angle. Cross Hatch is the repeated

placement of two series of hatch lines through a closed area at a specified interval and angle.

Line Style

Use the Line Style option menu to choose among eight styles of lines for a hatch. The Line Style is a value ranging from 0 to 7.

Line Weight

Use the Line Weight option menu to specify the width of the line used for a hatch. The Line Weight is a value ranging from 0 to 15.

Color


The Color field specifies the color used for the hatch lines. It is a value ranging from 0 to 255. The color is chosen by entering the number into the field next to the color button, or selected with the color picker that pops up when you click the color button.

Spacing

Use the Spacing field to set the repeated interval between the hatch lines.

Angle

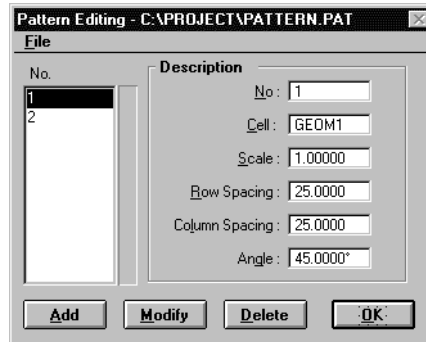
Hatch lines can be drawn at a specified angle from the design plane positive x-axis. For the Cross Hatch, set the angle of the two series of hatch lines by entering the values in degrees, in the range 0 to 360.

 The Hatch file name is saved with a Theme file.

Pattern Editing dialog box

The Pattern Editing dialog box is used to set all the parameters needed to produce or edit pattern items, as well as to manage Pattern files. A Pattern file can contain several pattern items. A pattern is the repeated placement of a cell to fill a closed area at a specified interval and angle.

Pattern Editing dialog box



The Pattern No. list box displays a list of pattern items in numerical order. A pattern is selected by clicking on the corresponding line in the list, which then highlights. To add a new pattern item, enter a new number into the No field, enter or edit all other parameters, and click Add. A highlighted pattern item is deleted by clicking the Delete button or modified to the current attribution set by clicking the Modify button.

☞ If the pattern number you key in to the No field already exists, a pattern item will not be added.

W When pattern items are added, modified or deleted, the pattern set in memory is changed, but the Pattern file does not automatically update. To update it, use Save from the File menu.

No (field)

The No field displays the number of the selected pattern item, or is used to enter a new number for inserting a new item into the Pattern file. The number entered is the one that is used to specify the pattern number in the Theme Styler dialog box.

Cell

Use the Cell field to assign a cell to the selected pattern item. The cell is assigned by entering the name of a cell from the cell library attached to the active design file. The cell library can be examined with the Cells setting box. It is accessed by choosing the item

Cells in the MicroStation Element menu. (See the *MicroStation User's Guide*.)

Row Spacing and Column Spacing


Use the Column Spacing field to set the interval between cells repeated along a row, i.e., the interval between columns. Use the Row Spacing field to set the repeated interval between rows.

Scale

Use the Scale field to set a scale factor which is applied to cells when displaying patterns. The scale factor resizes a cell at appropriate dimensions according to the scale of the active design file. A scale factor greater than 1.0 scales size upward. A scale factor less than 1.0 scales size downward. A factor of 1.0 prevents rescaling.

Angle

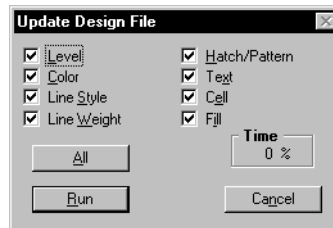
Use the Angle field to specify the angle between the design plane positive x-axis and a row of repeated patterns.

 The Pattern file name is saved with a Theme file.

Update Design File dialog box

Used to update element symbology in the active design file with the theme symbology set of the current Theme file. Check the appropriate boxes to identify the attributes that should be taken into account in updating the design file.

Update Design File dialog box



With this operation, you apply a selection of theme attributes to the design file by changing the symbology of individual elements in the design file with a new symbology corresponding to the theme attributes.

Level

If on, the level of the elements in the design file is replaced with the level associated with the themes attached to these elements.

If off, the levels of elements in the design file remain unchanged.

Color

If on, the color attribute of the elements in the design file is replaced with the color associated with the theme of these elements.

Line Style

If on, the line style attribute of the elements in the design file is replaced with the line style associated with the theme of these elements.

Line Weight

If on, the line weight attribute of the elements in the design file is replaced with the line weight associated with the theme of these elements.

Hatch/Pattern

If on, the existing hatch or pattern associated with the elements in the design file is replaced with the hatch or pattern associated with the theme of these elements. If off and if the Fill check button is on, you are warned that the fill color can cover the hatch or pattern of your closed elements.

W Patterns and hatches already present in the design file are NOT affected when Update Design File is run. All patterns and hatches created with Theme Styler are ADDED to the design File.

Text

If on, the text assigned to the theme is saved in the design file.

Cell

If on:

- The cells in the design file that are associated to a theme are replaced with the cell indicated (if there is one) in the Name field in the Cell Attributes dialog box.
- If Use Symbolology in the Cell Attributes dialog box is off, all cells that are associated to a theme are saved in the design file with their own symbolology.

- If Use Symbology in the Cell Attributes dialog box is on, the theme symbology (level, color, line style, and line weight) is applied to the cells.

If off, the cells in the design file remain unchanged.

W If Use Symbology in the Cell Attributes dialog box is on, the existing Shared Graphic Cells are replaced by Normal Graphic Cells in the design file and the size of your file increases.

Fill

If on, the fill color is updated in the design file. If off, you are warned that the fill color can cover the hatch or the pattern of your closed elements.

Time

Displays the percentage of progress when updating elements in the design file.

All

Used to turn on all options.

Run

Used to start the design file updating process.

