

8.0 Editing Images

This chapter describes a set of tools that permit drafting and drawing in raster, erasing raster objects, cleaning images, copying and pasting pieces of images, as well as undoing and redoing image editing operations.

Bentley Descartes provides a rich set of tools to edit images.

Touch-up tools are used to remove unwanted pixels in an image, to improve the quality of raster linework or other objects or to paint images. Simple but powerful brushing tools are used to paint or edit an image. Copy and Paste tools are used to copy a region of an image and paste it to another image.

This set also provides flexible raster drafting tools. Stamp Vector tools are used to stamp design vectors into a raster file, or to draw directly in raster with the full range of MicroStation vector drawing and annotation tools.

With these tools, you can:

- Despeckle an image.
- Fill holes in an image.
- Copy a region of an image.
- Paste a copied region to an image or to a design file.
- Dynamically draw in raster with MicroStation vector tools.
- Stamp vectors into an image.
- Paint an image.

8.1 Touch-up tool box



The Touch-up tool box contains the following tools:

To	Select in the Touch-up tool box
Paint the image inside an area	 <i>Paint Area tool</i>
Erase the image inside an area	 <i>Erase Area tool</i>
Remove speckle from the image inside an area	 <i>Cleanup tool</i>

8.2 Paint tool



Use to apply color to images. Use the Tool Settings to set specific parameters such as the Color Mask to use. Only the selected images are processed with the tools.



The Paint tool modifies only the pixels in the selected mask.

Tool Setting	Effect
Area	<p>Use to select the shape of the brush. Available options are listed below.</p> <ul style="list-style-type: none">• Block: Using the pointer, select two data point to create a block.• Element: Using the pointer, select an element to paint all pixels within the element.• Fence: Using the pointer, the active fence is used to paint all pixels within the fence definition.• Image: Paints the entire image.
Color	<p>Use to specify the paint color.</p>
Paint Mask	<p>Select the mask to use. For more details, please refer to the Color Mask section.</p>

To paint inside an area

1. Select the *Paint Area* tool.
2. For images with more than two colors, select the appropriate color mask to determine the pixels to be painted, and select the target color.
3. Select the Area option.
4. Follow the instructions to define, select, or accept the area.
The pixels inside the area are painted.



When the area is a raster object, this object highlights for acceptance before the paint is executed.

8.3 Erase tool



Select *Erase* from the Touch-up tool box to erase the image inside an area. Only the selected images are processed with the tools.

The Erase tool modifies all the pixels underneath the brush. The color mask "(All)" is used and the paint color is the "(Backfill)" color.

Tool Setting	Effect
Area	<p>Use to select the shape of the brush. Available options are listed below.</p> <ul style="list-style-type: none"> • Block: Using the pointer, select two data point to create a block. • Element: Using the pointer, select an element to paint all pixels within the element. • Fence: Using the pointer, the active fence is used to paint all pixels within the fence definition. • Image: Erase the entire image.

To erase an area on an image

1. Select the *Erase* tool.
2. For images with more than two colors, select the color.
3. Select the Area option.
4. Follow the instructions to define, select, or accept the area.
The pixels are erased inside the area.

8.4 Cleanup tool



Used to cleanup an image area. Remove Speckle or Remove Hole are the available cleanup methods. Only the selected images are processed with the tools.



Tool Setting	Effect
Size	Displays the speckle (or hole) size to be removed in working units. The yellow ruler allows measuring the speckle on the screen.
Method	Select the method to use: "Remove Speckle" or "Remove Hole".
Area	Define the area where the function will be applied.
Color	Select the color to use to paint over the speckles (or holes). For binary images, the backfill color is used for Remove Speckle and the drawing color for Remove Hole.
Cleanup Mask	Select the mask to use.

8.5 Stamp Vector tool box



The Stamp Vector tool box is used to stamp design vector elements into raster images in the specified view.

Use Stamp Vector to:

- Add raster representation of design elements to image files.
- Edit raster using MicroStation vector drawing and annotation tools.
- Create image files that contain raster and vector information and that can be exported easily for use in other applications.

To	Select in the Stamp Vector tool box
Stamp design vector elements into raster images.	 <i>Stamp Vector tool</i>
Sets the Working Units section using the current zoom factor to determine the size for each Line Weight and Style.	 <i>Match Stamp Vector Settings Tool</i>
Opens the Stamp Vector Settings dialog box.	 <i>Stamp Vector Settings tool</i>

8.6 Stamp Vector tool



Use *Stamp Vector* to stamp design vector elements into raster images. Vector elements can be stamped interactively or all selected vector elements can be stamped at once.

To interactively stamp a vector element into images

1. Unselect any selected elements by entering a data point with the MicroStation *Element Selection* tool.
2. Select *Stamp Vector*.
3. Specify the view in the Tool Settings dialog where you want to stamp vector elements.
4. Identify a design vector element.
5. Accept the element (or reject and retry).
If there are no images or only read-only images underneath the vector element, it cannot be stamped and an alert displays.

To stamp a set of vector design elements into images

1. Select the elements you want to stamp with the MicroStation *Element Selection* tool.
2. Place a fence around the elements you want to stamp.
Only the Inside mode is supported.
3. Select *Stamp Vector*.
4. Specify the view where you want to stamp vector elements.
5. Enter a data point to accept the settings.
If there are no images or only read-only images underneath the selected vector elements, no element can be stamped and an alert displays.
With both of the above procedures, stamping occurs on all images which are on in the Raster Manager list box for the specified view. That is done in a WYSIWYG manner. If a vector element is displayed over an image in the specified view, the element is stamped into the non-transparent portion of this image. If two images overlap, the vector elements stamp into both images. Transparent parts of the images are not stamped.



Stamping large elements or a large number of elements may take time.

8.7 Match Stamp Vector Settings tool



Match Stamp Vector Settings provides an efficient way to setup the Stamp Vector Settings. Match Stamp Vector Settings sets the Working Units section using the current zoom factor to determine the size for each Line Weight and Style.

Since Line Weights and Styles always display at the same ratio regardless of the zoom factor, for each level of zoom, the element covers more or less pixels. Therefore, when zoomed far out, the element covers more pixels than when zoomed in. It is this coverage, in Working Units, that is used to modify the Stamp Vector Settings. This allows a constant ratio between View display and Raster Resolution.

To setup Stamp Settings with Match Stamp Vector Settings

1. From the Stamp Vector toolbox, select *Match Stamp Vector Settings*
2. Enter a data point to confirm the current zoom factor.



If you wish another zoom factor, simply select a tool of your choice and then reset to fall back to the *Match Stamp Vector Settings* tool in order to enter the data point conforming the current zoom factor.

3. The Stamp Vector Settings Working Units are now modified to reflect the raster resolution size for each weight at the current zoom factor.



The Stamp Vector Settings for PIXELS are NOT changed.

8.8 Stamp Vector Settings tool

Selecting *Stamp Vector Settings* opens the Stamp Vector Settings dialog box.

Stamp Vector Settings dialog box

The Stamp Vector Settings dialog box is used to set the line weight and line style parameters used for rasterizing the vector elements, to turn on or off the Automatic Vector Stamping toggle, and to set other parameters controlling this function.

Line Weight	
0:	1.0000
1:	2.0000
2:	3.0000
3:	4.0000
4:	5.0000
5:	6.0000
6:	7.0000
7:	8.0000
8:	9.0000
9:	10.0000
10:	11.0000
11:	12.0000
12:	13.0000
13:	14.0000
14:	15.0000
15:	16.0000

Line Style								
	Dash	Gap	Dash	Gap	Dash	Gap	Dash	Gap
0:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1:	12.0000	36.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2:	21.0000	12.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3:	50.0000	17.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4:	33.0000	12.0000	8.0000	12.0000	0.0000	0.0000	0.0000	0.0000
5:	17.0000	17.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6:	25.0000	8.0000	8.0000	8.0000	8.0000	8.0000	0.0000	0.0000
7:	33.0000	8.0000	17.0000	8.0000	0.0000	0.0000	0.0000	0.0000

System Units for Line Weight and Line Style

This group is used to specify the units that will be used with the parameters in the Line Weight and Line Style groups, and to scale all displayed values.

Scale

All parameters in the Line Weight and Line Style group will be affected with this multiplying factor when a vector is stamped.

Line Weight

Use the Line Weight group to define each of the 16 standard line weights (0 to 15) in working units. If you are using a custom line style, the working units settings specified in MicroStation is determined automatically by the Stamp Vector tool. When a vector element is stamped into an image, the weight of a line is translated into the corresponding width specified in working units.

Line Style

Use the Line Style group to define each of the eight styles (0 to 7) in working units. If you are using a custom line style, the working units settings specified in MicroStation is determined automatically by the Stamp Vector tool. When a vector element is stamped into an image, the style of a line is translated into the corresponding set of dashes and gaps specified in working units. You can define a sequence of up to four pairs of dashes and gaps for each line style. This sequence is drawn repeatedly when a line is stamped.

Automatic Vector Stamping

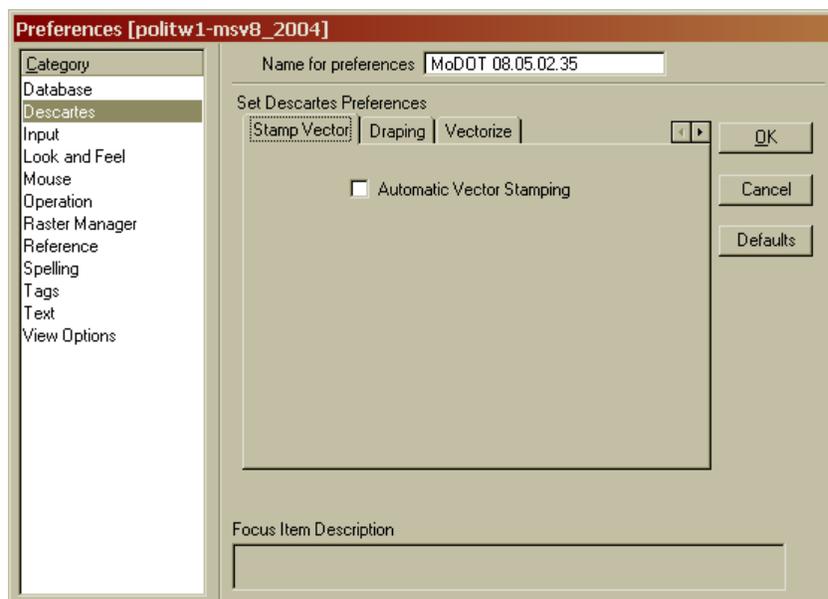
When on, all elements normally written to the design file will be stamped with the present settings.

OK

Use the OK button to save the present settings and close the dialog box.

Cancel

Use the Cancel button to close the dialog box without saving the present settings.



A limited set of Stamp Vector Settings is also located in the Descartes category of the Preferences dialog box. From the MicroStation Workspace menu, select Preferences, then choose "Descartes" in the Category list, and select the Stamp Vector tab.

8.9 Cut/Copy/Paste tool box



The Cut/Copy/Paste tool box is used to copy and paste regions of images, and to set parameters that control the copy/paste capabilities.

Copy only acts on the raster objects inside an area. The pixels inside this area that are not part of the raster objects are treated as transparent when the cut region is pasted into the image.

For two-color images, an image area is defined as all pixels of the foreground color inside an area.

For images of more than two colors, an image area is defined as all contiguous pixels that satisfy the active color filter inside an area.

To	Select in the Copy/Paste tool box
Cut an image area from the active image to the clipboard.	 <i>Cut Image Area tool</i>
Copy an image inside an area from the active image to the clipboard.	 <i>Copy Image Area tool</i>
Paste an image area from the clipboard at a specified location in the active image.	 <i>Paste Image Area tool</i>

8.10 Cut Image Area



Select *Cut Image Area* from the Cut/Copy/Paste tool box to cut an image inside an area from the active image to the clipboard for subsequent pasting.

It is not necessary to select any images to use this tool. Simply select an area on the screen and cut it to the clipboard, no matter which image is currently selected. The function will read sections in as many files as the area overlaps. If the pixel size is not the same in all the files, the images will be resampled to the smallest pixel size to avoid losing information in any files.

To avoid problems caused by images with different color types, the information is kept in 24 bit in the clipboard.

The copy function is WYSIWYG, which means that transparency, contrast, brightness, gamma correction and more will be applied before the data is copied to the clipboard.

8.11 Copy Image Area tool



Select *Copy Image Area* from the Copy/Paste tool box to copy an image inside an area from the active image to the clipboard.

It is not necessary to select any images to use this tool. Simply select an area on the screen and copy it to the clipboard, no matter which image is currently selected. The function will read sections in as many files as the area overlaps. If the pixel size is not the same in all the files, the images will be resampled to the smallest pixel size to avoid losing information in any files.

To avoid problems caused by images with different color types, the information is kept in 24 bit in the clipboard.

The copy function is WYSIWYG, which means that transparency, contrast, brightness, gamma correction and more will be applied before the data is copied to the clipboard.

8.12 Paste Image Area tool



Select *Paste Image Area* from the Copy/Paste tool box to paste an image area from the clipboard at a specified location in the active image.

When Paste Image Area is selected, the outline of the image area in the clipboard displays under the cursor. Move it to the desired location and enter a data point to paste the image area.

It is not necessary to select any images to use this tool. All the selected files touched by the paste will be modified. If one of the touched files is not selected, an Alert appears giving you the option to paste on this image or to automatically select the image.

If one of the touched file does not have a 24 bit color type, each pixel is moved to the nearest color available.

This tool allows you to interactively change the shape of the pasted area (location, scale, rotation, and affinity).