



# 4

## Raster Editing

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### Preview

In this lesson, you will learn how to edit a raster document. These skills are useful in workflows where the objective is to update a raster document and where there is no need to convert raster objects into vector elements.

In the raster drafting portion of this lesson, you will learn how to:

- Erase Selected Portions of Document
- Stamp Previously Drawn Vectors into a Raster Document
- Draw Raster Linework Using MicroStation Vector Tools
- Create Raster Text Using MicroStation Vector Text Tools
- Create Raster Cells Using MicroStation Vector Cell Tools

In the brush and paint portion of this lesson, you will learn how to:

- Set up a Brush to Paint
- Use the Paint Tools to Alter a Document

## Updating a Raster Document

### ► Set up MicroStation Descartes

1. From the MicroStation Manager dialog box, select Workspace > dcartes.



2. Open the LESSON4.DGN supplied with the tutorial. The file is in the ... \dcartes\tutorial directory.
3. From the MicroStation Tools menu, select Image and the

following tool boxes:

*Image Control tool box*



*Undo tool box*



*Paint tool box*



*Color Filter tool box*



*Stamp Vector tool box*



*Copy/Paste tool box*



*Local Transform tool box*



*Erase tool box*

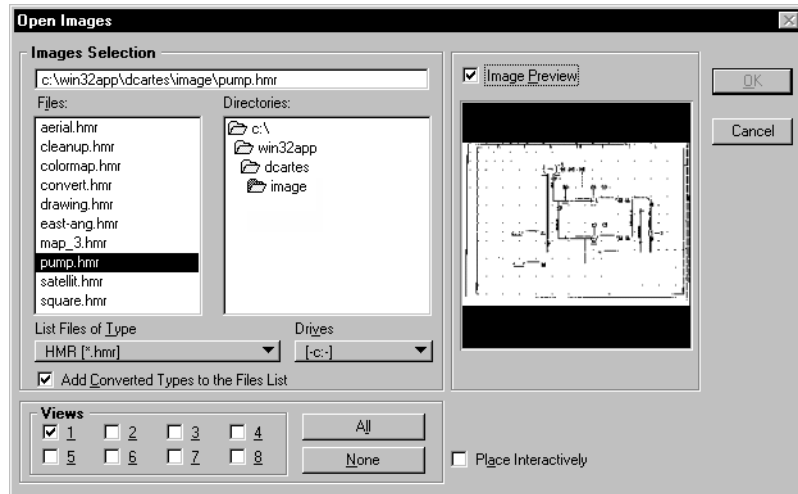


► **Open an image**

1. From the MicroStation File menu, select Open > Image.  
The Open Images dialog box opens.
2. Find the PUMP.HMR image that is supplied with the tutorial.  
The file is in the ...\\dcartes\tutorial directory.

### 3. Set Image Preview on.

Notice the display of a thumbnail of the image in the Preview window.

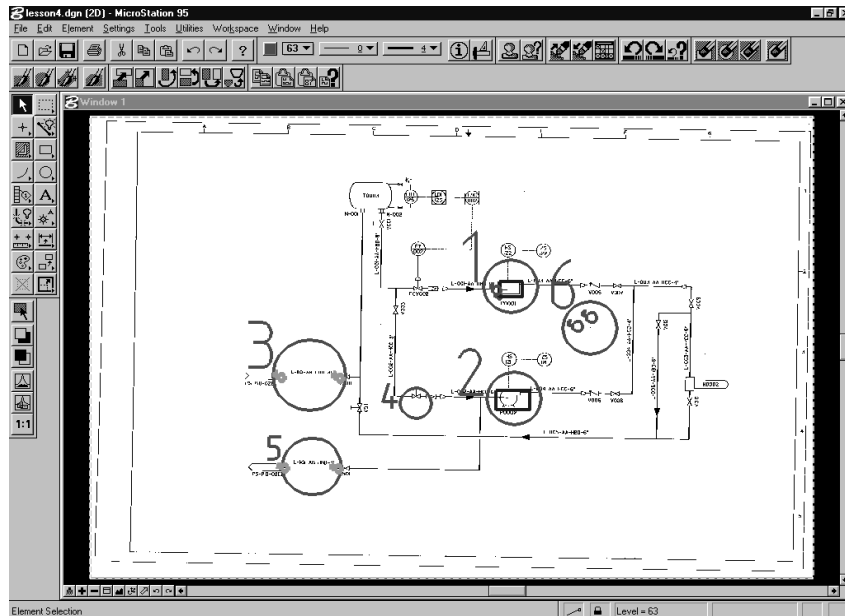


### 4. Check that View 1 is set to on. Click OK to open the image.



### 5. Using the *Select Images/Active Image* tool, double-click on PUMP.HMR to make it the active image.

### 6. Dock the tools and arrange the screen as shown below.



## Erasing to Prepare a Document for Editing

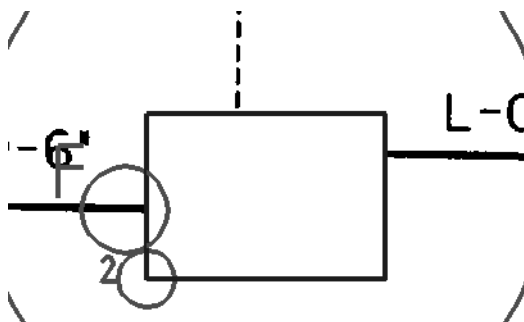
Although the tools are the same, the objective of erasing selective parts of a document to prepare for editing is very different than cleaning up a document for conversion. In this lesson, you will erase part of a raster document that you will then redraft in raster to create a revised and updated raster document.

### ► Erase a section of a drawing

You will use the *Erase* tool to remove a specific section of a drawing.



1. *Window Area* around location **1**.
2. From the Erase tool box, select *Erase Area*.  
The Erase Area settings box opens.
3. From the settings box, set Area to Element.
4. Proceed by entering a data point on the block, identified by location **2**, as shown below, and accept.



The inside of the block is erased.



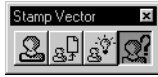
5. Delete the block.
6. From the Image Control tool box, select *Fit Images to View*.  
Click in Window 1.

## Drawing or Drafting in Raster

### ► Stamp Vectors into an image

You will now edit the image to redraft missing sections that were not detected by the scanner. First, you will add vectors on the

image and then you will stamp the vectors into the image by using the Stamp Vector tool.



1. From the Stamp Vector tool box, select the *Stamp Vector Settings* tool.

The Stamp Vector Settings dialog box opens.

**Stamp Vector Settings**

System Units for Line Weight and Line Style

Units: Working Units Scale: 1.000000

**Line Weight**

0:	0.1695	1:	0.3390	2:	0.5085	3:	0.6780
4:	0.8475	5:	1.0170	6:	1.1864	7:	1.3559
8:	1.5254	9:	1.6949	10:	1.8644	11:	2.0339
12:	2.2034	13:	2.3729	14:	2.5424	15:	2.7119

**Line Style**

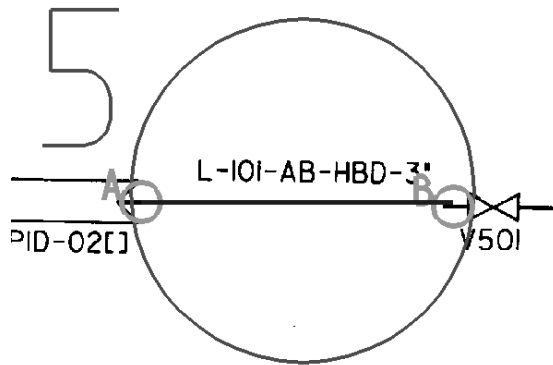
	Dash	Gap	Dash	Gap	Dash	Gap	Dash	Gap
0:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1:	0.3390	0.8475	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2:	1.1864	0.5085	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3:	1.8644	0.5085	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4:	1.5254	0.5085	0.3390	0.5085	0.0000	0.0000	0.0000	0.0000
5:	0.6780	0.5085	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6:	0.3390	0.5085	1.3559	0.5085	0.3390	0.5085	0.0000	0.0000
7:	1.6949	0.5085	0.6780	0.5085	0.0000	0.0000	0.0000	0.0000

Automatic Vector Stamping
  Confirm Stamping
  Convert 2 colors images to 256 colors

OK Cancel

2. Set the parameters as follows and click OK when done:
  - Units:* Pixels
  - Scale:* 1.0
  - Line Weight #7:* 8.0
3. *Window Area* around location **5**.
4. Select the MicroStation *Place Line* tool.
5. From the Primary Tools tool box, set the Line Weight to 7 and Active Color to Blue.

- Place the line using snap/data point to locations **A** and **B** as shown below.



- Reset to terminate the line.
- From the Stamp Vector tool box, select the *Stamp Vector* tool. Make sure the tool settings are set as follows:

*View:* 1

*1 Bit Image Mode:* Foreground

- Enter a data point on the line you have just added and confirm with a second data point. The design element is processed and stamped into the raster image.

- From the MicroStation Main tool box, select *Delete Element* and delete the vector line you have just drawn.

- Update View* to see the result.

- From the Image Control tool box, select *Fit Images to View*. Click in Window 1.



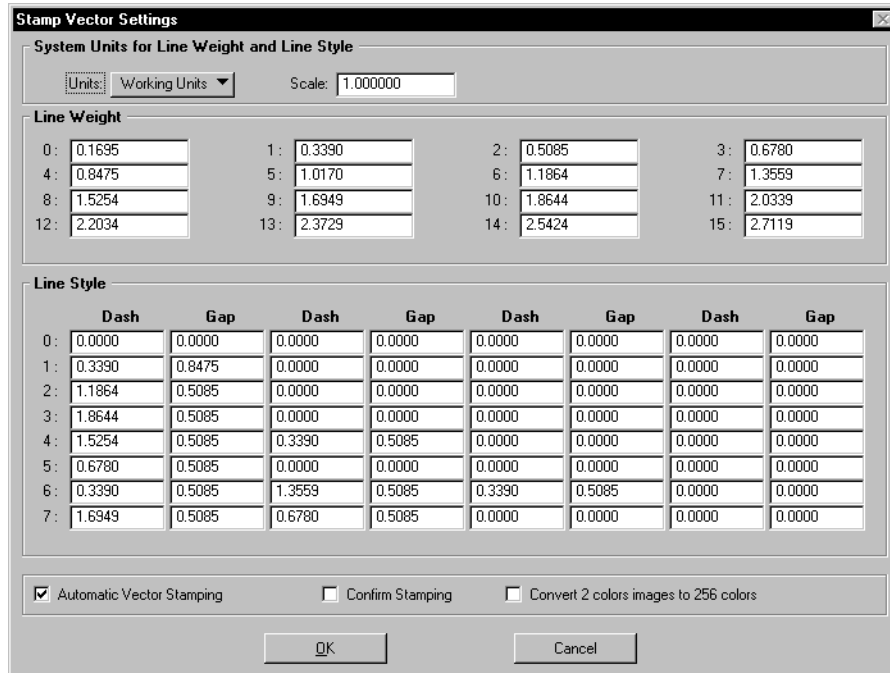
### ► Draw in raster using MicroStation vector tools

You will now draw directly in raster using standard MicroStation vector drawing tools.



1. From the Stamp Vector tool box, select the *Stamp Vector Settings* tool.

The Stamp Vector Settings dialog box opens.



2. Set the parameters as follows:

*Units:* Pixels

*Scale:* 1.0

*Line Weight #7:* 8.0

3. Set Automatic Vector Stamping to on and click OK.

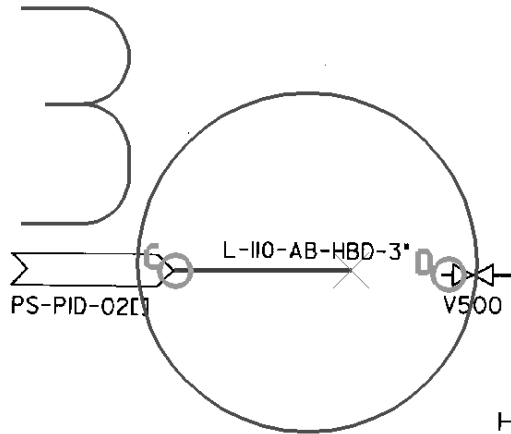
With this feature on, any newly created vector element is automatically converted into raster. The element is not created in the design file.

Draft the elements in vector using the standard MicroStation tools. Keep in mind that you can use this technique to draw in raster using any MicroStation vector tool.

4. *Window Area* around location **3**.



5. From the MicroStation Main tool box, select the MicroStation *Place Line* tool.
6. Place the line using snap/data point to locations **C** and **D** as shown below.



7. Reset to terminate the line.
8. From the Image Control tool box, select *Fit Images to View*. Click in Window 1.

The design element is stamped into the image. Note that the vector element was not created.



► **Type in raster using MicroStation vector text tools**

You will now type directly in raster using standard MicroStation Text tools. Since the Automatic Vector Stamping setting is set to on, the text you create using the standard MicroStation vector tools will be created in raster.

1. *Window Area* around location **4**.
2. Set the Line Weight to 4.
3. From the MicroStation Main tool box, select *Place Text*.

4. Set the tool settings as follows:  
*Text Node Lock:* OFF  
*Method:* By Origin  
*Height:* 25  
*Width:* 25  
*Font:* 106 - INTL\_ISO\_EQUAL  
*Justification:* Center  
*Active Angle:* 0
5. In the Text Editor dialog box, type V004.
6. Place the text by snapping to location **4**.  
 The design text is stamped into the image. Notice that the vector text was not created.
7. From the Image Control tool box, select *Fit Images to View*.  
 Click in Window 1.



## Copying and Pasting Raster Objects

Often the objective of editing is to move one area of an image to another area, to move a specific raster object to another location or to update information on the image using existing raster objects. The Local Transform tools are useful for such tasks. In this exercise, you will replace the block that you erased earlier by copying and then moving a pump.

### ► Copying and pasting an image object

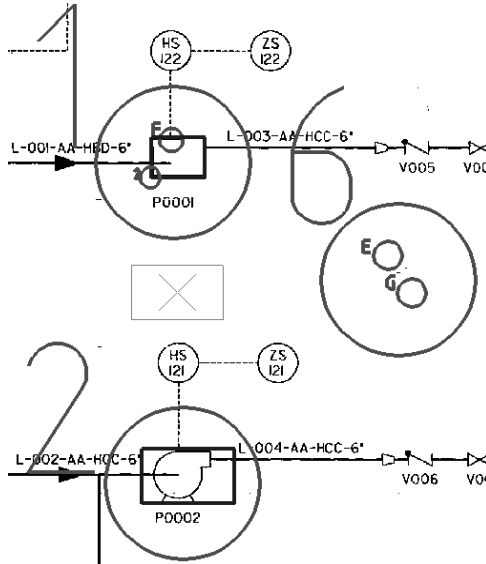
1. *Window Area* around locations **2** and **6**.  
 Notice that a block has been positioned around the pump.  
 You will use this block to copy the pump.
2. From the Copy/Paste tool box, select the *Copy* tool.
3. Set Area to Element.
4. Enter a data point on the block and a second data point to accept.



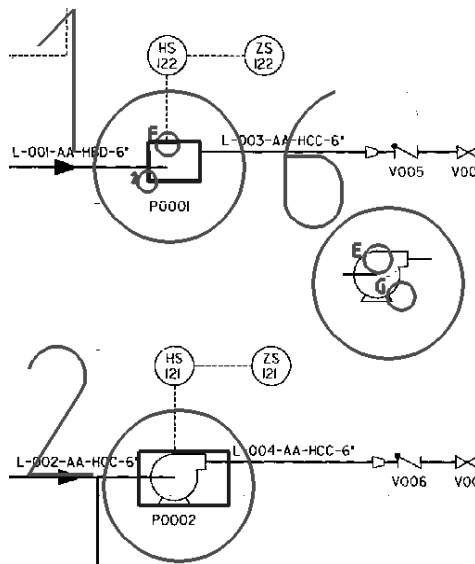


- From the Copy/Paste tool box, select the *Paste Image Area* tool.

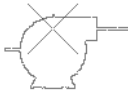
An outline appears around the pointer that is now an X shape.



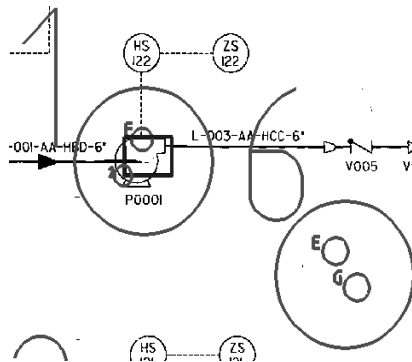
- Snap/data point at location **6**.



### ► Move an image object



1. From the Local Transform tool box, select the *Move Image Area* tool.
2. Set the Area to Raster Object.  
The first data point defines the object by selecting continuous pixels.
3. Snap/data point at location **G**.  
An outline is drawn around the entire raster pump.
4. Accept the selection by entering a data point.  
The next data point defines the location where the pointer will be attached to the pump in order to move it.
5. Snap to location **E** and enter a data point.  
An outline defines the pump and is attached to the pointer.
6. Snap to location **F** and enter a data point.  
The raster pump is pasted in place and removed from location **6**.



8. From the Settings menu, select Level > Display.  
Turn off level 1, click Apply and close the View Levels dialog box.

Congratulations! You have successfully updated the drawing.

## Painting a Raster Image

To complete the following exercises, open a new window and another image.

### ► Setting up for painting raster images

1. Open Window **2** and maximize it.
2. From the MicroStation File menu, select Open > Image.  
Find the COLORMAP.HMR image that is supplied with the tutorial. The file is in the ...\\dcartes\tutorial directory.
3. Set View **2** to on and click OK.
4. Using the *Select Images/Active Image* tool, double-click on COLORMAP.HMR to make it the active image.
5. *Fit Images to View* in Window **2**.



In MicroStation Descartes, you paint by using a brush. The brush changes the resident colors in the defined area to a target color. The resident colors that will be changed can be defined by you in a Filter. The defined area for the paint operation is determined interactively by your movements with the brush.

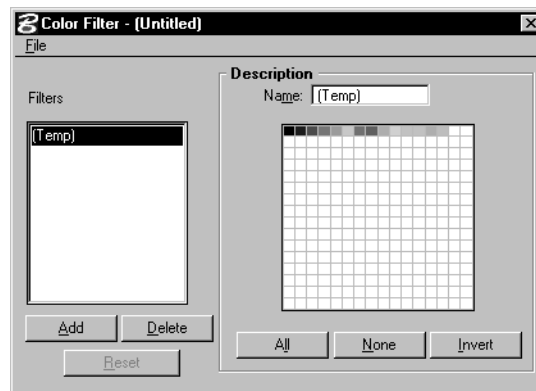
In the next exercise, you will set up a Filter and apply a brush to change the colors in an image.

### ► Setting up the filter

1. From the Color Filter tool box, select the *Color Filter Dialog* tool.



The Color Filter dialog box opens.



2. From the Filters list box, select (Temp) as the active filter.

- From the Description option group, click on the second color (blue).

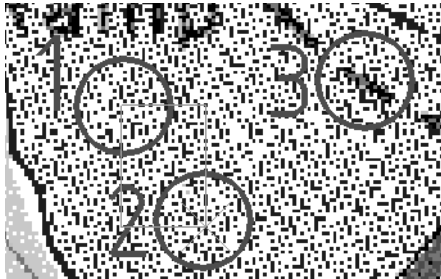
The Temp filter is now defined as containing the blue color.

- Click on the index again and notice that the index is turned off.
- Now, from the Color Filter tool box, select the *Add to Filter* tool.

Leave the Tool Settings unchanged.

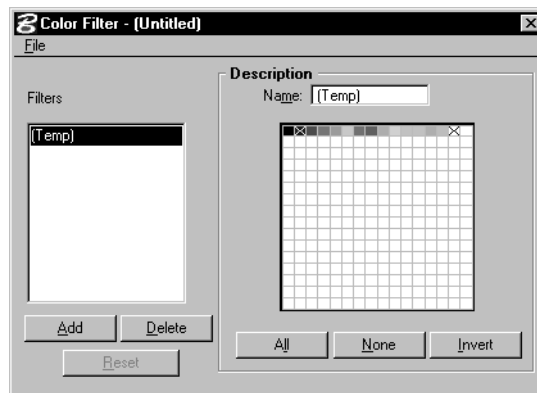
You will use this tool to interactively capture a color from the image to be added to the Active Filter.

- Extend your selection by using locations **1** and **2**.
- Snap/data point at location **1** and move towards location **2** where you will snap/data point again.

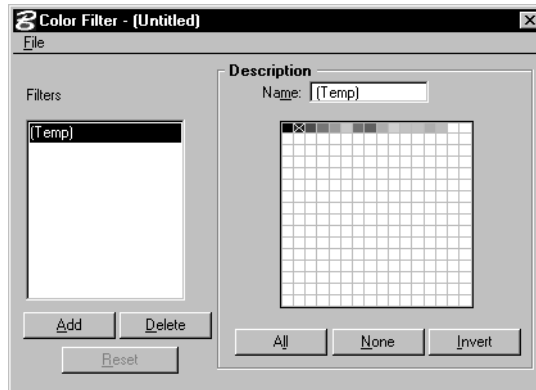


Notice that the index and white color are now turned back on.

All colors found under the selected area are automatically added to the filter.



- Turn off the white color by clicking on the index.  
The Color Filter dialog box should now look as shown below.



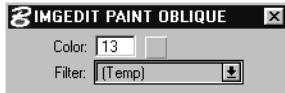
- Close the Color Filter dialog box.  
You have just specified that only the blue color contained in the filter should be modified by the brush.

► **Setting up the brush and target color**



- From the Paint tool box, select the *Paint with Oblique Brush* tool.  
Notice that your pointer changes to a cross.
- Define the angle of your brush by using locations **1** and **2**.
- Snap/data point at location **1**, then at location **2**. You have defined the angle. An outline is currently attached to your pointer. Using this outline as a guide, snap/data point at location **3**. This defines the length and the thickness of the brush.





- From the Tool Settings box, set:

*Color:* 13

*Filter:* (Temp)

You have just specified that the color to be applied by the brush is Light Blue(Index 13).

### ► Paint the image

In this exercise, you will change the color of the river. You will then simultaneously move and paint a building within the image.

- Move your pointer(brush) over the river and enter a data point to activate the brush. Move the brush over the river area and then move all around the image.



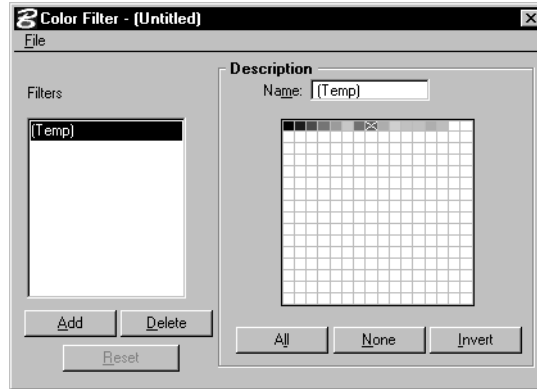
Notice that only the blue color that is in the filter is changed to the light blue color and that all other colors remain unaffected.



- From the Undo tool box, select *Undo Image* tool.
- From the Color Filter tool box, select the *Color Filter Dialog* tool.



- In the Color Filters dialog box:  
Click on the purple color (seventh index in the color table).  
Click on the magenta color (twelfth index in the color table).  
Click off the blue color (second index in the color table).  
The Temp filter is now defined as containing the purple and magenta colors.



- ☞ Whenever possible, it is more efficient to manually select the colors in the Color Filter Dialog box rather than using the Add/Subtract tools.

- Window Area* around locations **A** and **B**.
- From the Local Transform tool box, select the *Move Image Area* tool.

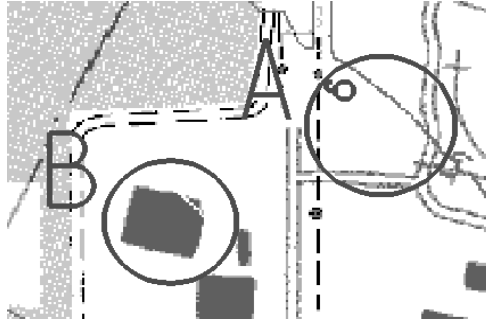


- The next step is to select a raster object to move.
- Set the tool setting as follows:  
*Area:* Raster Object  
*Color:* White (14)  
*Filter:* Temp
  - Enter a data point at location **C** which is just outside of the purple building (colors of the (Temp) filter).  
An outline appears to indicate what is selected.
  - Enter a data point to accept the selection.  
You are then prompted to Pick a Move Point.
  - Snap/data point at location **A**.  
You will then get dynamic feedback of the area that you are moving and are prompted to Pick a New Position.

**11. Snap/data point at location B.**

The building is removed from its original position and pasted in the new position.

The result of these transactions is shown below.

**12. Turn off level 2 for Window 2 and *Update View* to get a better look at the results.**

Try this operation with different filters and different target colors.

**Practice**

This lesson does not cover all of the functions related to Updating a Raster Document. You should further explore other functions by reviewing chapter 9 “Preparing and Managing Color Filters” and chapter 10 “Editing Images” of the *MicroStation Descartes User’s Guide*.

Here are a few of the functions you should explore:

- Color Filter File
- Scale, Rotate, Mirror, and Place Image Area
- Merge Images into One Image
- Cut Out a Section of an Image with Corridor
- Erasing and Painting with Different Brush Shapes