

CADD NOTE 17

Images that you will be inserting can be either georeferenced or non-georeferenced. A georeferenced image is linked to a defined coordinate system, such as UTM NAD83, either internally in the file or with the use of a world file (e.g., TFW for TIF files). Examples of this type include DRG, DOQQ, and MrSID files. A non-georeferenced image is not linked to any defined coordinate system. Examples of this type include scanned images, digital photos, etc. The procedures for inserting each of these are detailed in the appropriate sections below.

Georeferenced Images

Most of the DRG, DOQQ, and MrSID files that we use are in the UTM (NAD83) coordinate system with the units being meters. This needs to be kept in mind when trying to use this image as a background for your drawing objects. Refer to the table below for instructions to fit your situation.

	Image file	Drawing	Refer to sections
Coordinate system & Units	UTM (NAD83) meters	UTM (NAD83) meters or international feet	A. Setup of current drawing B. Inserting a georeferenced image
	UTM (NAD83) meters	MO State Plane (or any other defined) coordinate system feet UTM (NAD83) US survey feet	C. Convert image/drawing to a different coordinate system.

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A. Setup of current drawing

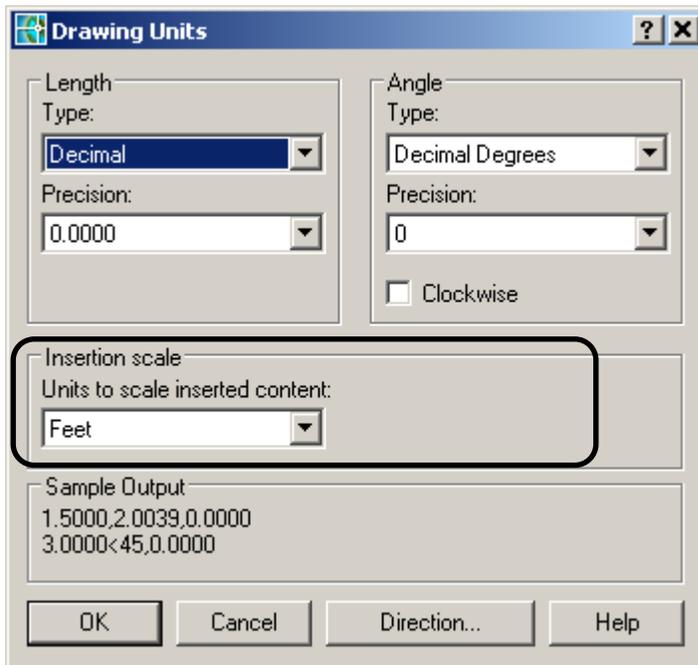
In order for a georeferenced image to be inserted at the correct location, a couple of items need to be set for the current drawing: drawing units and the coordinate system of the drawing.

To set the units for the drawing, do one of the following:

MENU: **AutoCAD, (More>), Setup, More Formatting Options, Units...**

COMMAND: **units**

MENU: **AutoCAD, NRCS_MO, Images, Units...**



Select the desired units under “Drawing units for DesignCenter blocks”. This will most likely be Feet.

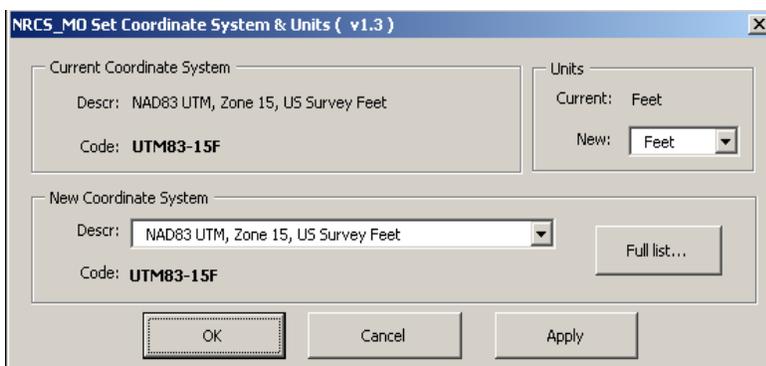
NOTE: If you are inserting an image that is in meters into a drawing that is in US Survey feet rather than International Feet, you will need to refer to section C - *Convert image/drawing to a different coordinate system* later in this document, since the Feet units here are assumed to be International Feet.

To set the coordinate system for the drawing, you have a couple of options. The first option below is simpler and more straight-forward, but is limited to the most common coordinate systems we use. If you want a coordinate system not in that list, you will need to use option 2.

Option 1

MENU: **AutoCAD, NRCS_MO, GIS Tasks, Set Coordinate System...**

ICON: 



If current units are not correct for the current drawing, select the correct units.

If the current coordinate system is not correct for the current drawing, select the correct system from the “New” drop-down list. If the desired coordinate system is not a choice, click on the [Full List] button and follow instructions below under Option 2.

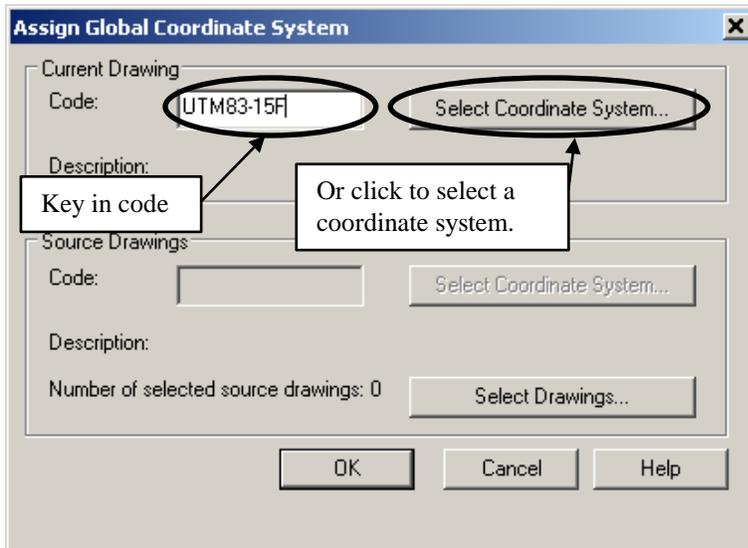
Click **OK** .

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Option 2

MENU: AutoCAD, Setup, Assign Global Coordinate System...

COMMAND: **adesetcrdsys**



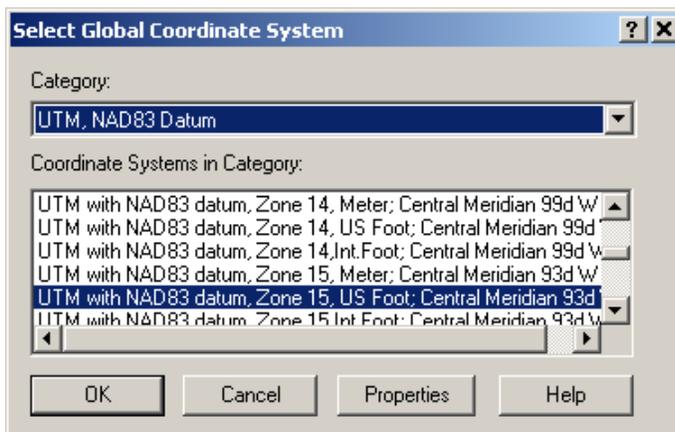
You can either key the code in directly (see common codes below) and click **OK**.

or

click **Select Coordinate System...** to choose a coordinate system from the defined list of systems (see screen below).

Codes for coordinate systems we will most likely use are:

UTM83-15	UTM (NAD83), Zone 15, meters (for Zone 16, replace 15 with 16)
UTM83-15F	UTM (NAD83), Zone 15, US Survey feet
UTM83-15IF	UTM (NAD83), Zone 15, International feet
MO83-WF	NAD83, Missouri State Plane, West Zone, feet
MO83-CF	NAD83, Missouri State Plane, Central Zone, feet
MO83-EF	NAD83, Missouri State Plane, East Zone, feet



First select category (e.g., UTM, NAD83 Datum; USA, Missouri; Lat Longs)

Then select the desired coordinate system.

Click **OK**.

Click **OK** on the Assign Global Coordinate System window..

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B. Inserting a georeferenced image

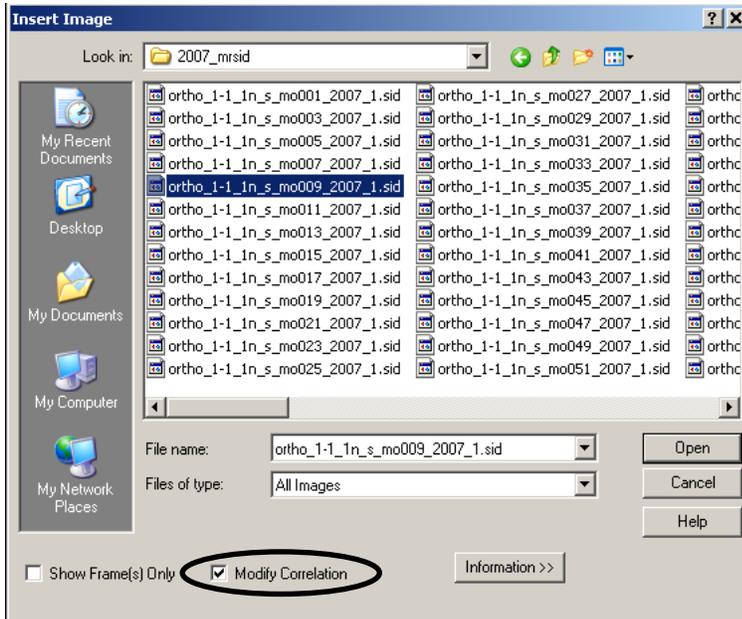
There are 2 different methods you can use to insert (i.e., attach) an image. You can use the "Insert map image" method or you can use the "Data Connect" method.

Method 1 – Insert map image

Use one of the following methods to start the insert map image command.

MENU: **AutoCAD, NRCS_MO, Images, Insert map image...**
MENU: **AutoCAD, (More>), Create, Insert an Image...**

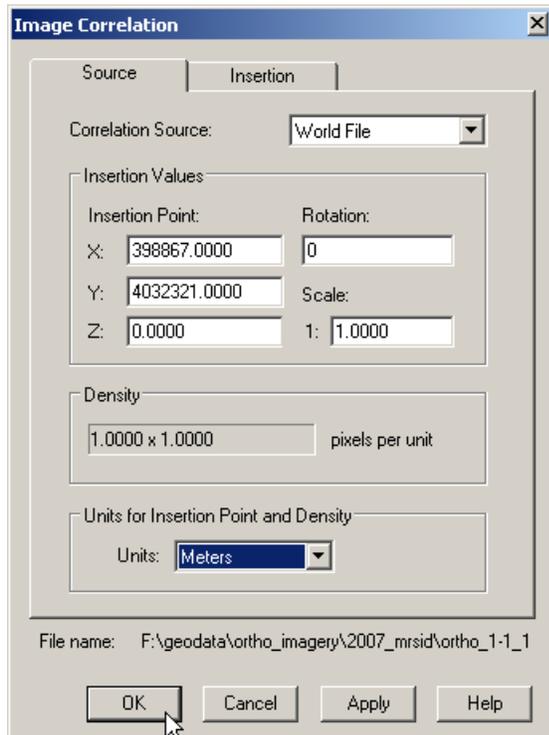
COMMAND: **mapiinsert**



Make sure "Modify Correlation" is checked

Navigate to the desired file.

Click **Open**.



On the "Source" tab of the "Image Correlation" window:

The correlation source and insertion values should fill in automatically if the file is georeferenced (either internally or with a world file).

Select the units of the image file (in most cases this will be "meters").

Click **OK**.

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The image should appear in the correct location. If not, you need to check the coordinates of your drawing objects and of the image. Once you determine the correct coordinate system they are actually in, you can retry the above procedure.

Method 2 – Data Connect

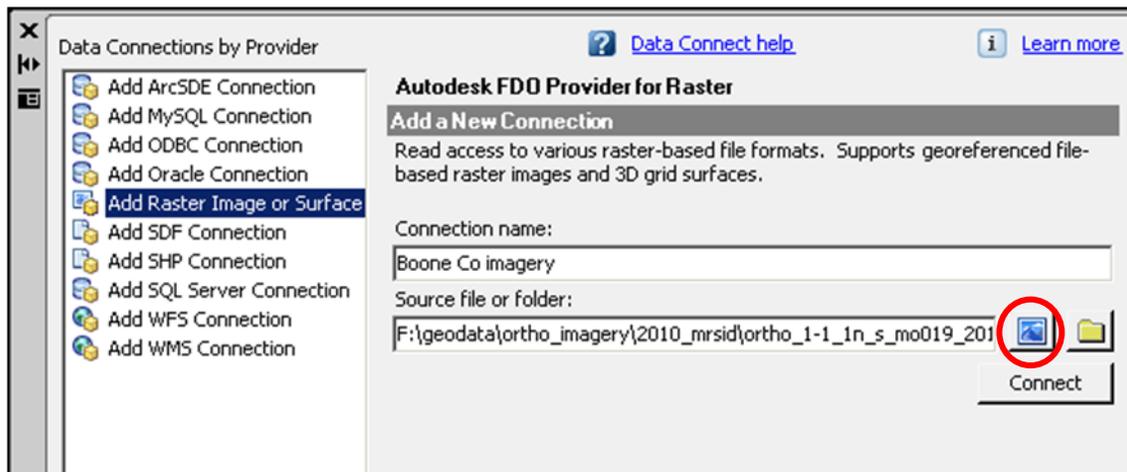
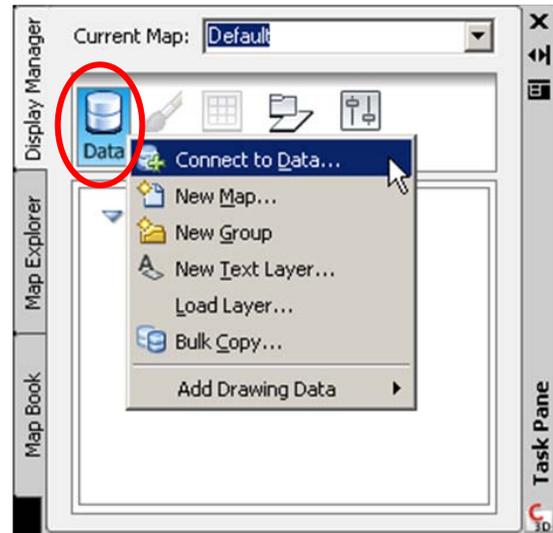
Using this method should do a coordinate system conversion if the coordinate systems differ between the drawing and the image.

Select the "Display Manager" tab on the Task Pane palette (this is usually on the right side of your screen).
If the Task Pane is not there, select *NRCS_MO > GIS Tasks > Task Pane* to turn it on.

Click the Data icon.

Select "Connect to Data..."

You should see the data connect window shown below.



Select "Add Raster Image..." on the left side.

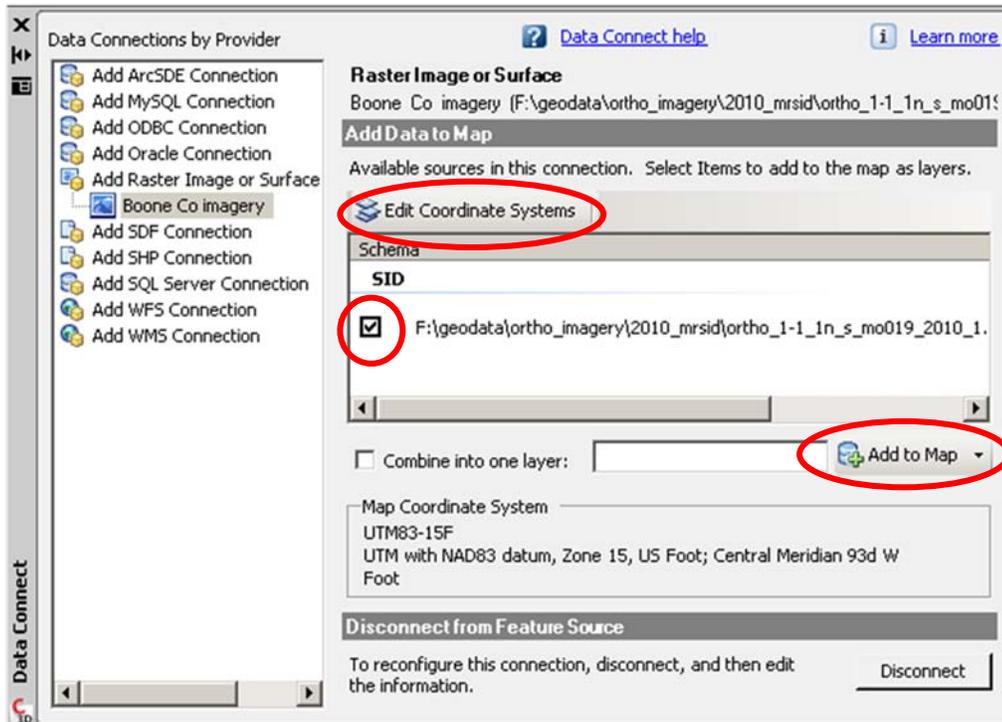
Enter a "Connection name".

Click on the blue icon  just to the right of the source file input box and browse to the desired raster image file (e.g., ortho_1-1_1n_s_mo019_2010_1.sid)

Click .

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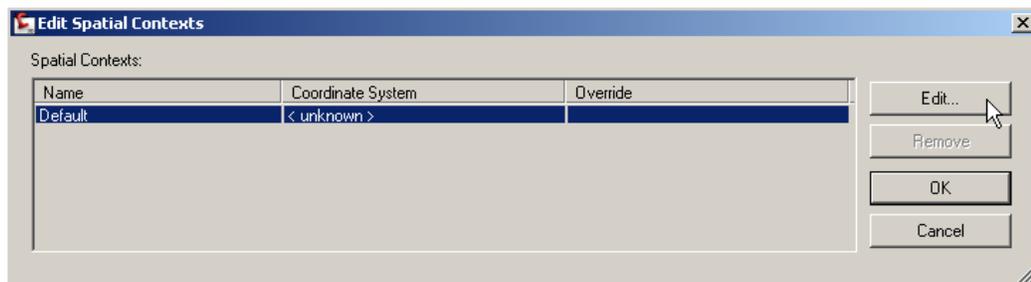
A window similar to the one shown below should appear.



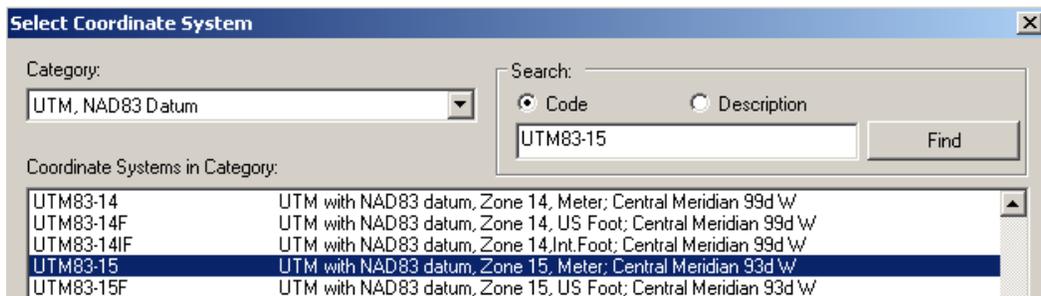
Check the box next to the image file in the middle window.

Click "Edit Coordinate Systems".

- Click on the first line in the table to highlight it. Click .

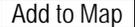


- Use the window below to select the coordinate system of the raster image. This will usually be UTM83-15. Click .



- Click to close "Edit Spatial Contexts" window.

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Back on the Data Connect window, click  button.

You can close the Data Connect window by clicking X at the top of the palette title bar. This may be on the upper left or the upper right of the window depending on which side of the window the title bar is on.

The image should show up in your drawing (may need to zoom to extents). A thumbnail of the image should also show up in the Task Pane window. Note: You can use the checkbox to the left of that thumbnail to turn the display of the image on (checked) or off (unchecked).

NOTE: An image placed in the drawing using this method will have to be managed via the task pane and will not respond to actions like an image inserted using other methods.

C. Convert image/drawing to a different coordinate system

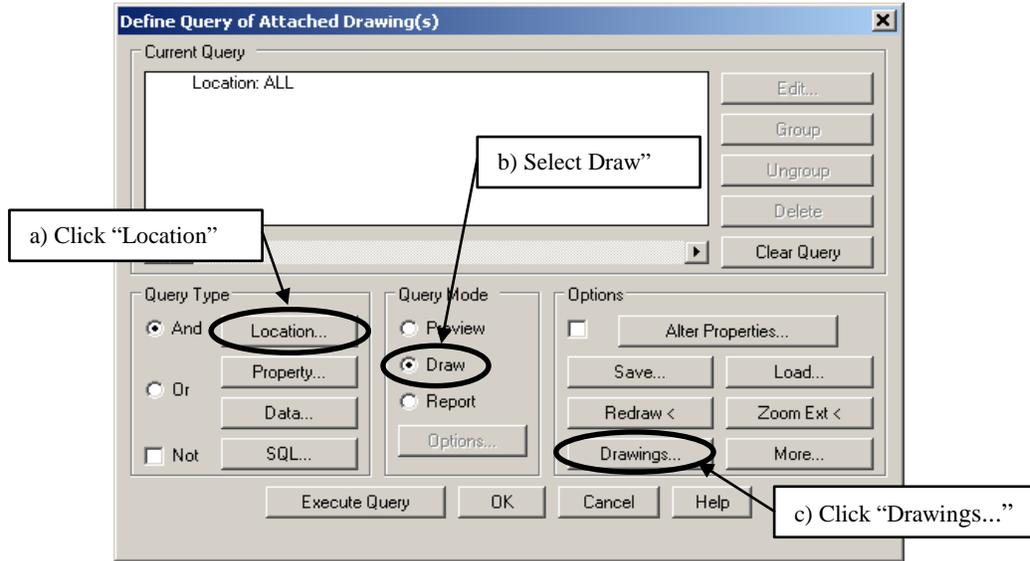
1. If you are converting an image, open a new drawing.
If you are converting a drawing, open the desired drawing file.
2. Do the steps in section A above to setup the drawing.
Make sure you select the units and coordinate system you are converting from.
3. For an image, do the steps in section B (Method 1) above to insert the image into the drawing.
4. Save the drawing and then close it (i.e., *File, Close*).
The following steps will not work correctly if this drawing is open.
5. Open either an existing drawing or a new drawing.
6. Do the steps in section A above to setup the drawing.
Make sure you select the new units and coordinate system you are converting to.
7. The *Define Query* command should then be started in one of the ways shown below.
 - a. MENU: **AutoCAD, (More>), Map, Query, Define Query**
 - b. COMMAND: **adequery**
 - or
 - c. If the Task Pane window is not open, it should be opened by doing
MENU: **AutoCAD, NRCS_MO, GIS Tasks, Task Pane**
Select the “Map Explorer” tab.



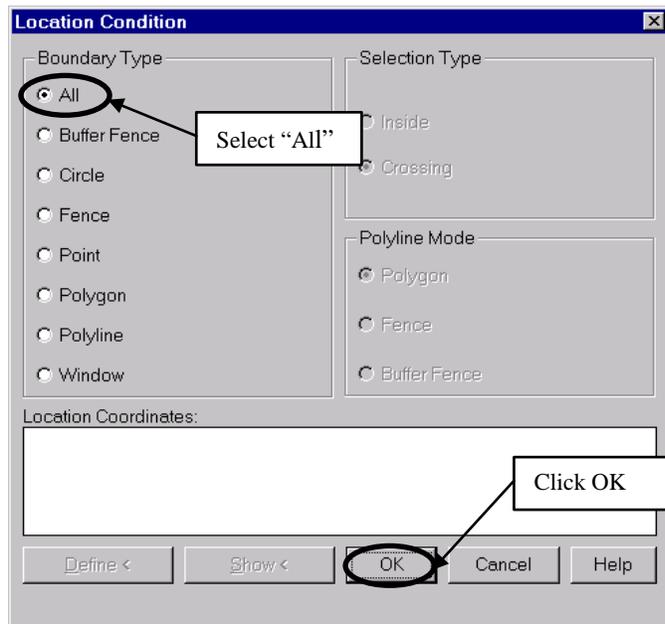
Click the query icon  in the toolbar or double-click “Current Query” under “Query Library”.

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8. The following screen should appear.



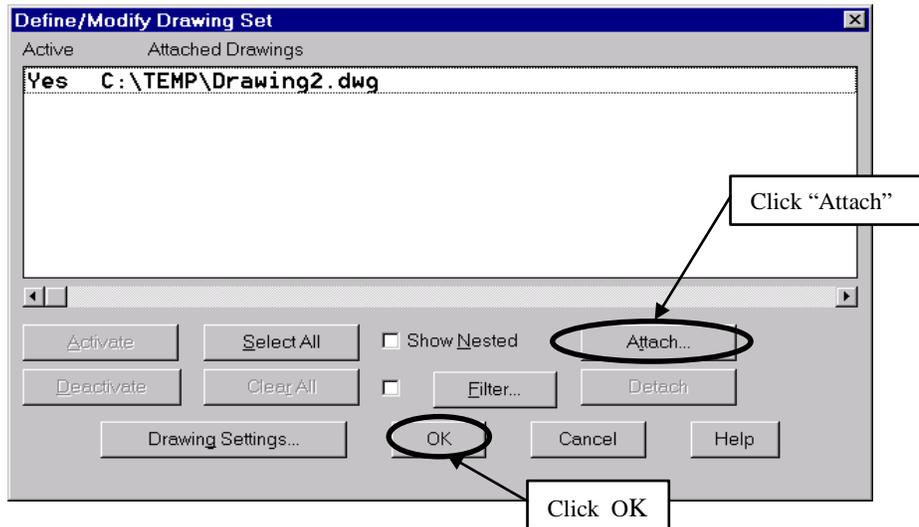
a. Click . The window below appears. Select "All" for Boundary Type. This will select the whole drawing. Click .



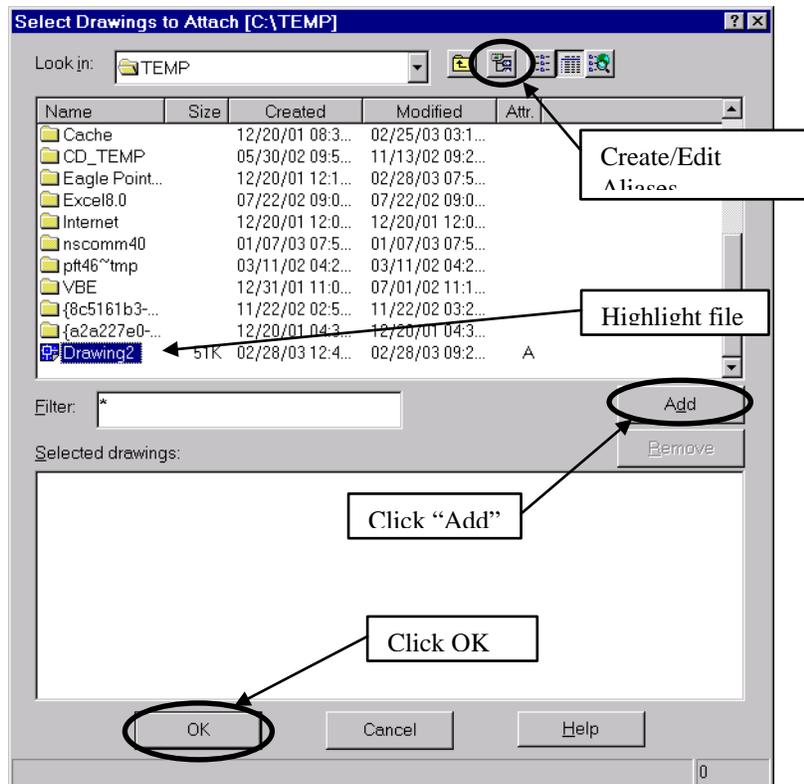
b. Select "Draw" in the Define Query window. This will cause the objects from the old drawing to be converted and drawn into the new drawing at the new coordinates.

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8. c. Click **Drawings...** in the Define Query Window.
The following window appears. Click **Attach...**.

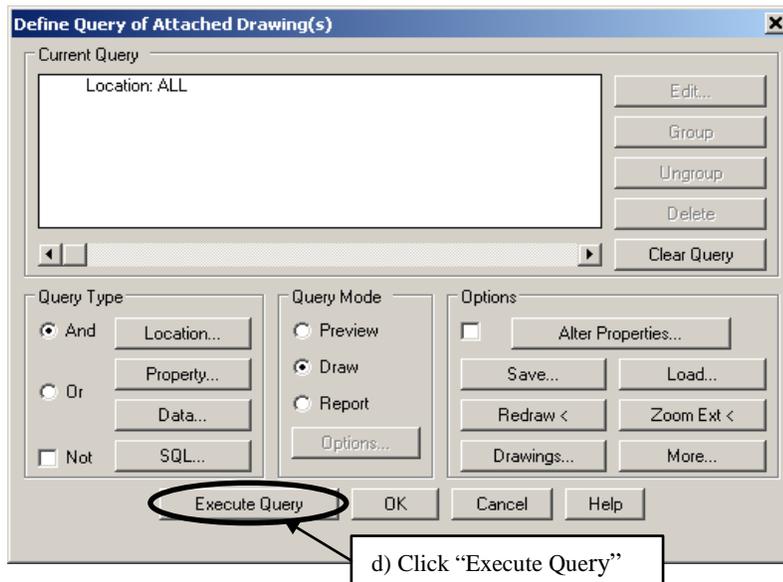


Navigate to the drawing file saved in step C.4. above. (NOTE: If the drawing is on a drive other than C:, you may need to use the "Create/Edit Aliases" button to define an alias for the other drive). Highlight the file and click **Add**. This should add it to the bottom window. Click **OK**. The drawing should then be listed in the Define/Modify Drawing Set window shown above. Click **OK** and you will be returned to the Define Query window.



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8. d) Click **Execute Query** in the Define Query Window. The objects in the old drawing should then be converted and drawn in the new drawing at the new coordinates.



9. Once the drawing objects are transferred to the current drawing and they are at the correct location, you should detach the drawing that was attached in step C.8.c above. This will avoid some prompts that would appear as you continue to work on the drawing. This can be done using one of the following methods:

- a. MENU: **AutoCAD, (More>), Map, Drawings, Define/Modify Drawing Set** or
COMMAND: **adedrawings**
Highlight the file and click the "Detach" button. Click **OK**.

Or

- b. If the Task Pane is open, right-click on the drawing name listed under "Drawings" on the Map Explorer tab and select "Detach".

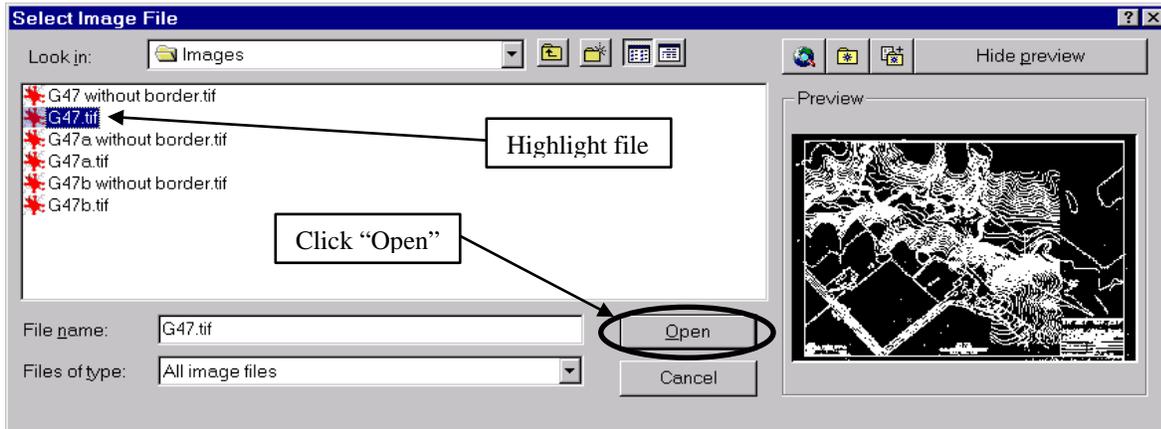
10. You can then save this drawing.

Non-georeferenced Images

1. To insert a non-georeferenced raster image, start the command using one of the following:

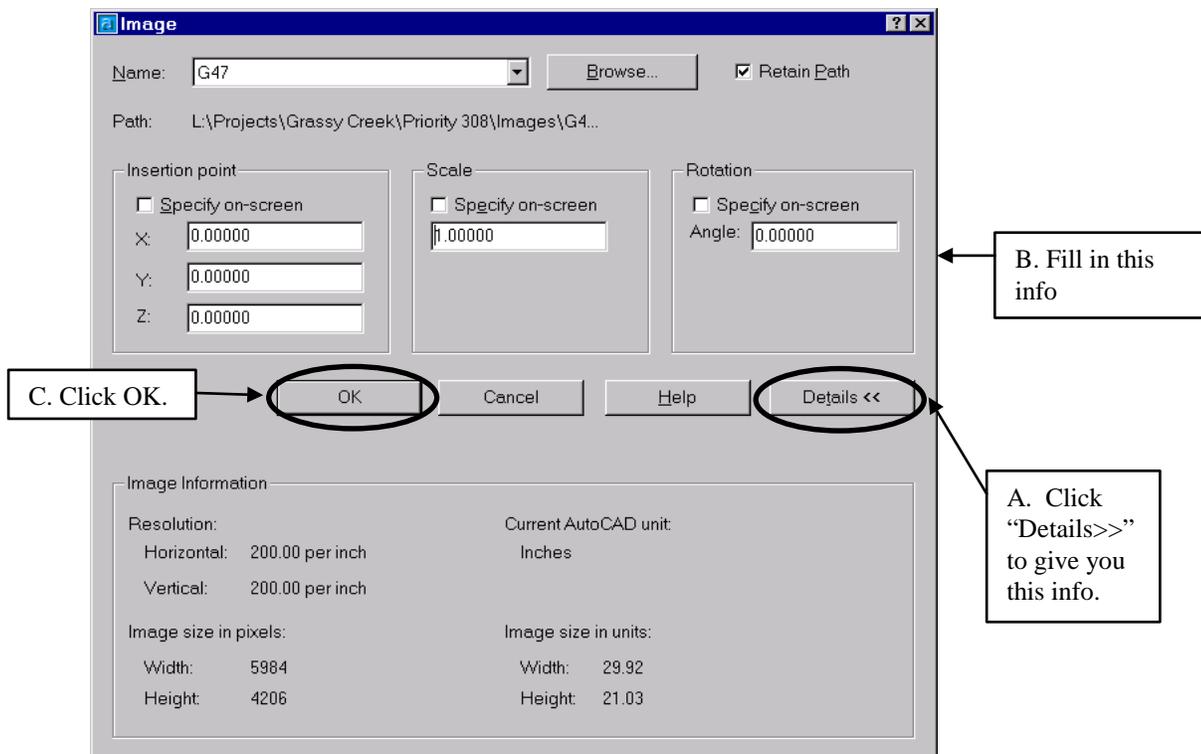
MENU: **AutoCAD, NRCS_MO, Images, Attach raster image...** COMMAND: **imageattach** ICON: 

Navigate to the desired image file. Highlight the file and click **Open**.



2. If you click **Details>>** in the image window, the image information will be displayed as shown below.

This information is helpful in determining the scale to use for insertion. The “Image size in units” times the “Scale” will be the final image size in drawing units.



3. Select “Specify on-screen” or enter desired values for “Insertion point”, “Scale”, and “Rotation”.

Click **OK** to complete the insertion.

Tips on Working with Images

NOTE: Several of these tips will not work on an image placed using the Data Connect method.

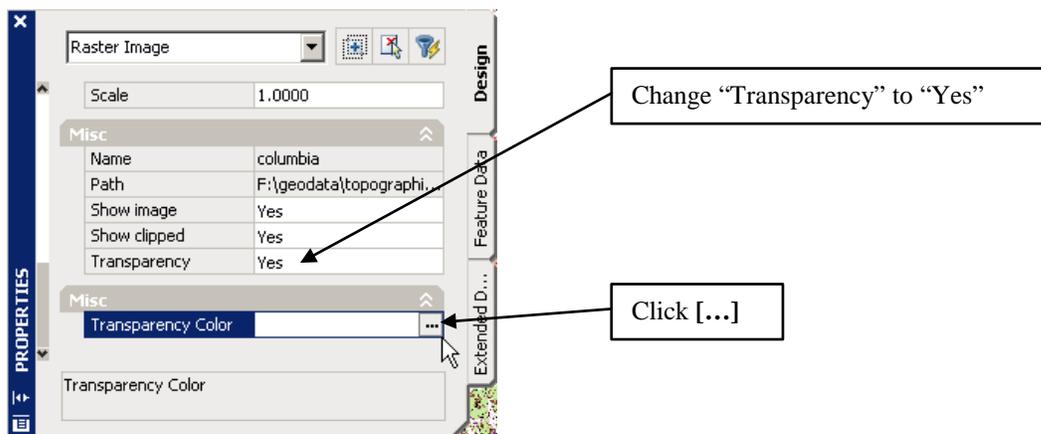
1. If you are zoomed in on an image so that you don't see the frame (i.e., border), you can still select the image by pointing to any part of the displayed image and doing a Shift (on the keyboard) left-click (on the mouse). If this does not seem to work, you may need to change the settings by entering MAPIOPTIONS at the command line; select the General tab; and make sure "Shift+Left Click Image Select" is checked.
2. If you would like for a hatch to display over the image when it is selected, enter *Options* at the command line. On the Display tab, uncheck "Highlight raster image frame only". You might note that this does slow down the display when selecting an image.
3. You may find that an image will hide your drawing objects. If this happens, select the image, then right-click on it and select *Display Order, Send to Back*. If the image happens to hide the drawing again, try doing a REGEN. This will often correct the display. If not, just repeat the "Send to Back" command.

Clip an Image

4. If you would only like to display a portion of a large image, you can "clip" it. It effectively acts like an image the size of the clipped area (i.e., displays quicker, the "extents" of the image is smaller, the boundary of the clipped area becomes the selectable frame). To clip an image,
 - a. start the command using one of following:
 MENU: **AutoCAD, NRCS_MO, Images, Clip image...** COMMAND: **imageclip** ICON: 
 - b. Select the image (by clicking on the frame) or use tip 1 above.
 - c. Enter N for new boundary.
 - d. Enter R for rectangular or P for polygonal depending on the type of clip area you want.
 - e. Select the points for your rectangle or polygon. For polygonal, press Enter when done selecting points.
 - f. To turn off or remove the clipping, repeat steps a and b and enter OFF to display the entire image and leave the clipping boundary or D to delete the clipping boundary.

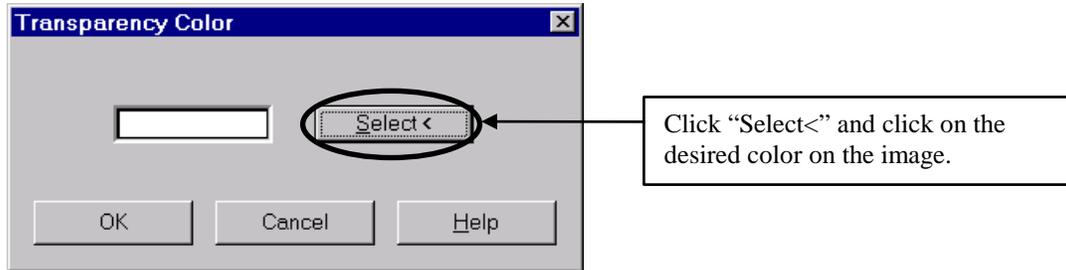
Image Transparency

5. If you would like for a particular color to be transparent on an image (e.g., a DRG with the white background), do the following:
 - a. Select the image and bring up the "Properties" window. Change "Transparency" to "Yes". Click on the [...] button by "Transparency Color". If "Transparency Color" is not there, you may need to load the raster extension. Do this by selecting (*More>*), *Setup, Raster Options* from the AutoCAD menu and then clicking to exit. If "Transparency Color" is not there, the image may not support this feature.



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5. b. On the “Transparency Color” window, click and click on the desired color on the image. Click .



If there are any underlying images or drawing objects, these should now show through the transparent areas where the selected color used to be.

Image Manager

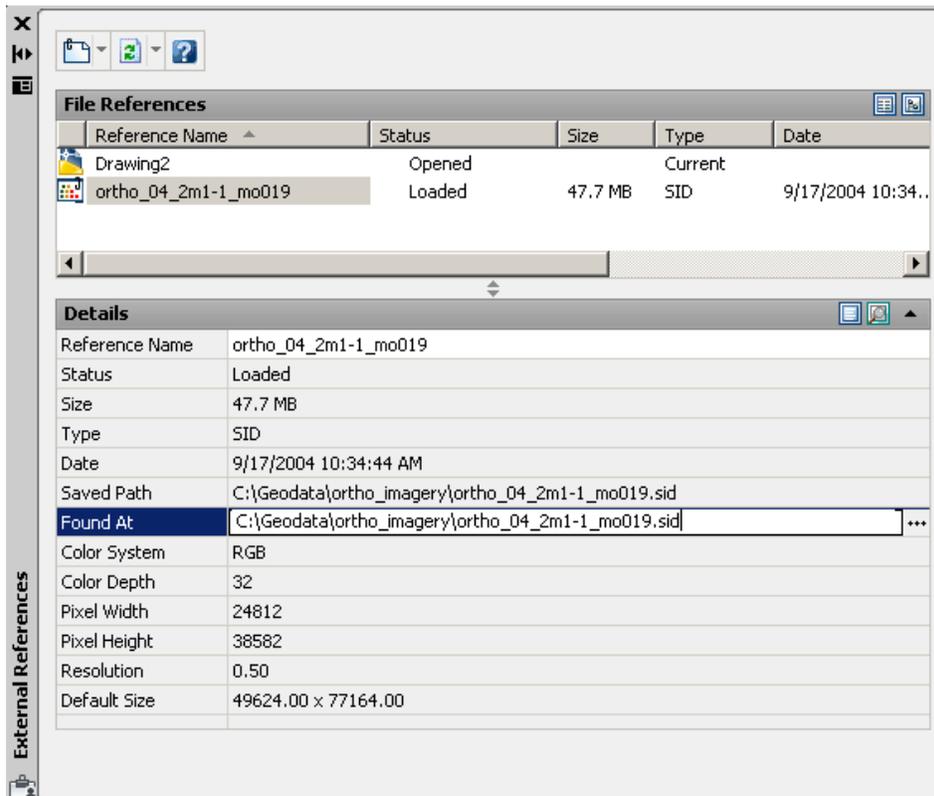
6. Images are actually just linked (i.e., attached) to the drawing. They are not part of the drawing file. To manage any attached images, you can start the image manager by doing one of the following:

MENU: **AutoCAD, NRCS_MO, Images, Image manager...**

COMMAND: **image**



MENU: **AutoCAD, Insert, Image manager...**



When you select an image in the top window, its details are shown in the lower window.

You can open, attach, detach, reload, and unload the selected image by right-clicking on it.

You can also change the path to the image (e.g., in the event the image file was moved and is not found) by clicking in the “Found At” field and then clicking on the button.