

## USING ORTHO IMAGERY IN A DRAWING

---

There are several ways to use aerial photos in a CAD drawing. NRCS uses two options:

1. Bring the aerial photo into CAD with coordinates so it can underlay points shot with a coordinate system (i.e. GPS). This can be done by **referencing** the entire photo to your CAD drawing or by **inserting** a “clipped” portion of the aerial photo into your drawing.

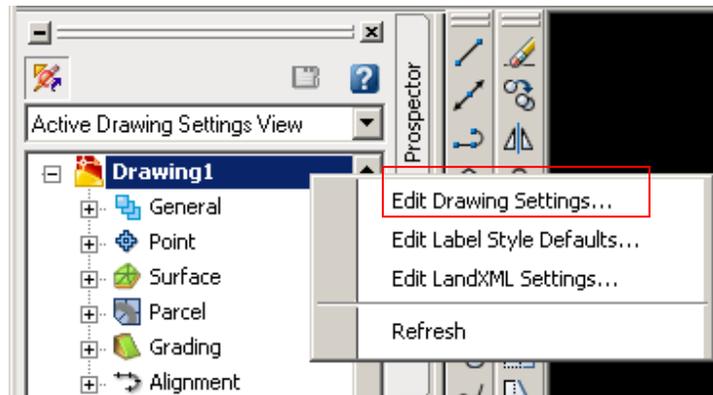
OR

2. Use Arcmap to export part of the photo out and save as an image (usually a jpg) and insert into CAD. The photo will not have coordinates so it is just a “dummy” image that can be used on the cover page or just viewed while you are designing.

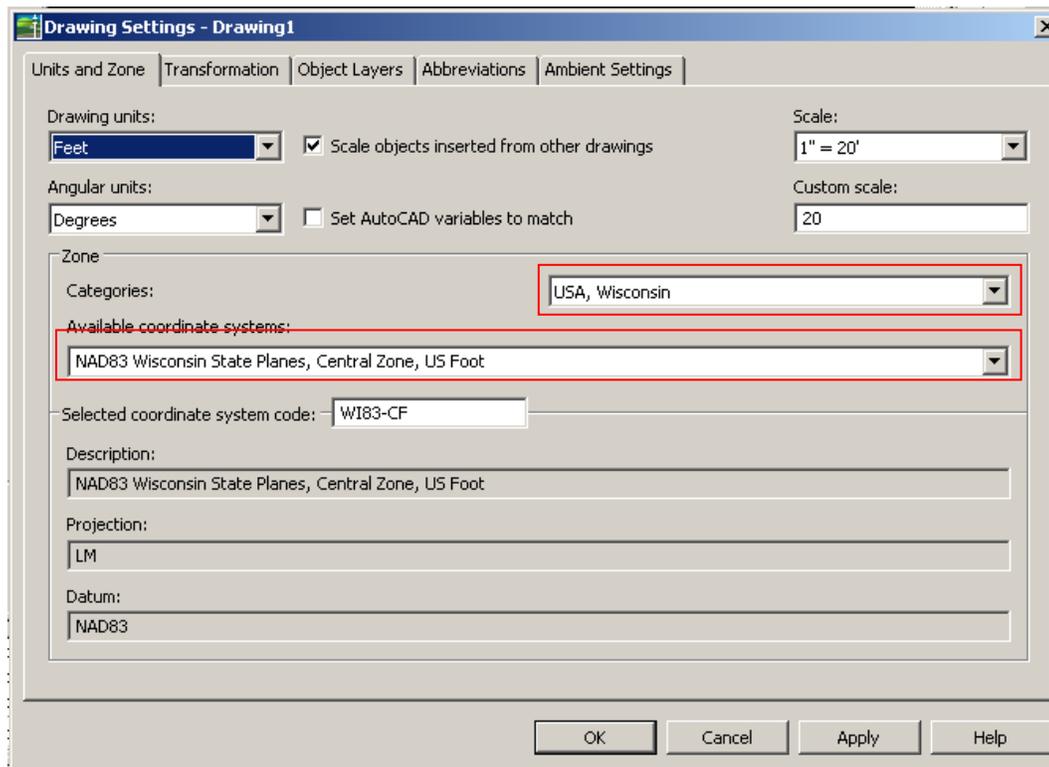
**This help sheet defines 2 methods of option 1 – inserting or referencing a photo with coordinates.**

Both of these methods requires setting the CAD drawing(s) to the appropriate coordinate system by using the following steps.

1. In Civil 3D select the *Settings* tab in the toolspace, right click on the drawing name
2. Select **Edit Drawing Settings**



3. Select the Coordinate System and select **OK** (the following is just an example, you need to know what your coordinate system is (i.e. county coordinates, state plane, UTM, etc.)

**USING ORTHO IMAGERY IN A DRAWING**

Now you are ready to proceed with using aerial photography.

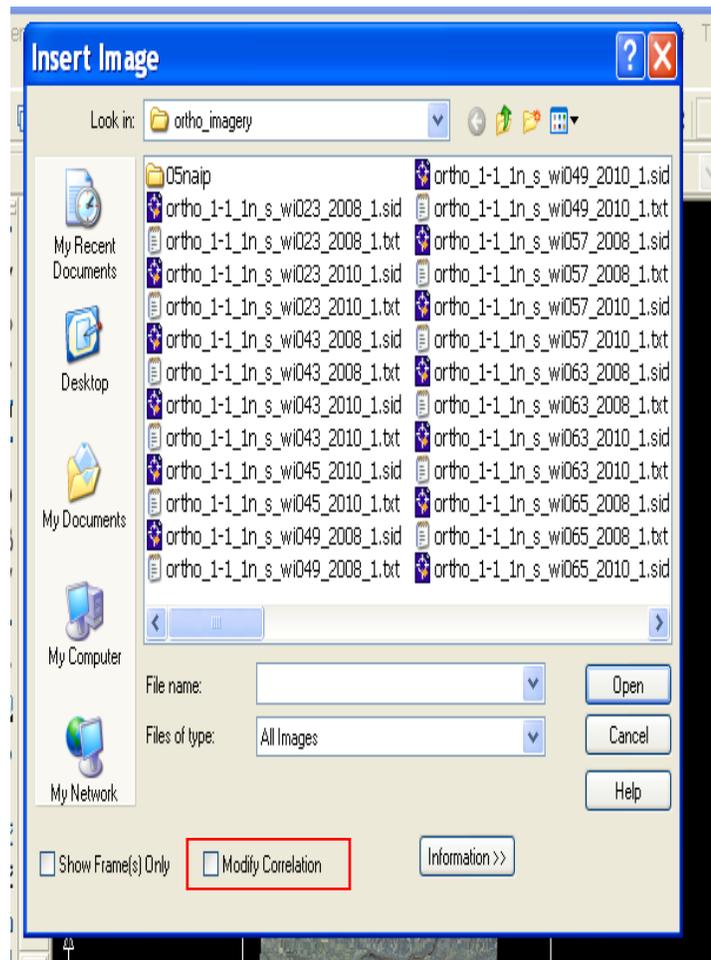
**I. METHOD 1 - REFERENCING AERIAL PHOTO INTO YOUR CAD DRAWING****1. Create Reference Drawing with Aerial Photo in it**

- a. Open your Autodesk Civil 3D template and set the coordinate system to that of your aerial photo by using the steps above.

Note: If you are using NRCS aerial photos, they are in UTM

If you are using a county aerial photo, they are in county coordinates

- b. Select Map, Image, Insert and navigate to where the aerial photo (SID file) is saved and highlight
- c. In the window that pops up, turn “modify correlation” off and then select Open

**USING ORTHO IMAGERY IN A DRAWING**

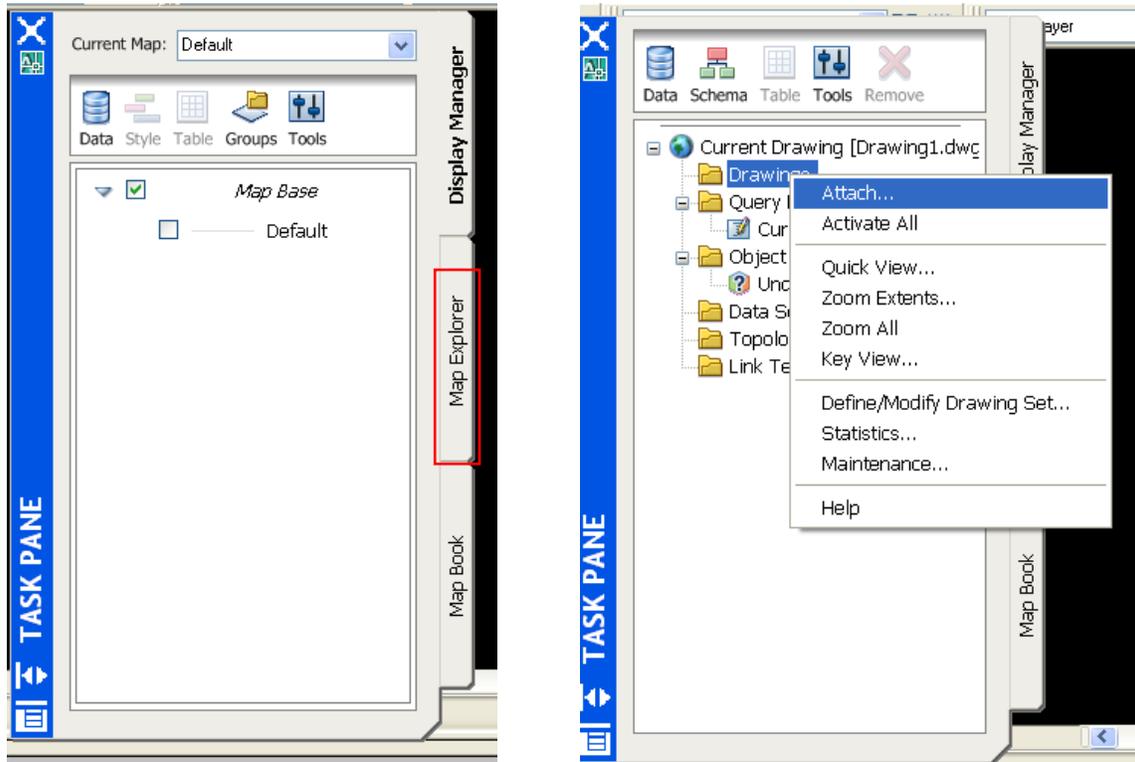
- d. Save this drawing with a new name and remember where you saved it. Since this will be a referenced drawing, make sure you put it someplace where it can stay permanently. Naming recommendations are *countyname NAIP year.dwg* (ex. Sauk NAIP 2008.dwg).
- e. You can now close this drawing.

## 2. Attaching the aerial photo to your CAD drawing

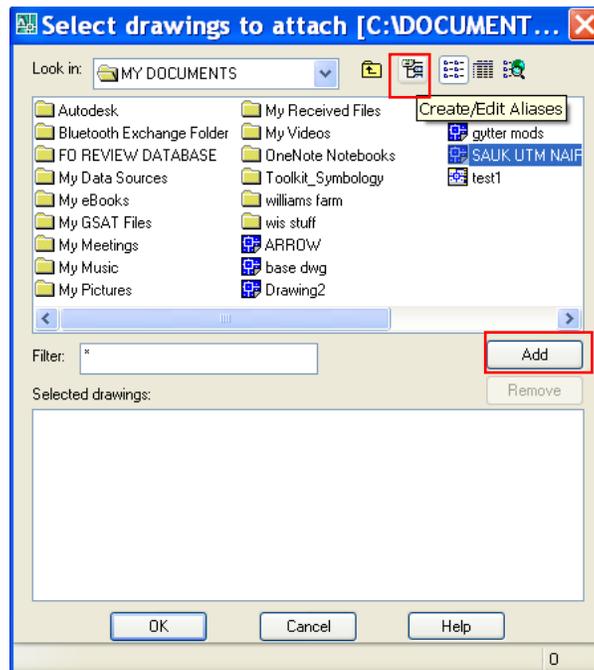
- a. Open an existing CAD design drawing or start a new drawing
- b. Make sure the coordinates of your design drawing are set to what you surveyed in (usually county coordinates or SPC) by using the instructions above.
- c. Type MAPWSPACE at the command line and hit enter to open the map workspace task pane

**USING ORTHO IMAGERY IN A DRAWING**

- d. In the first window, select the MAP EXPLORER tab
- e. In the second window, right click DRAWINGS and select ATTACH
- f. Navigate to where you saved the aerial photo drawing



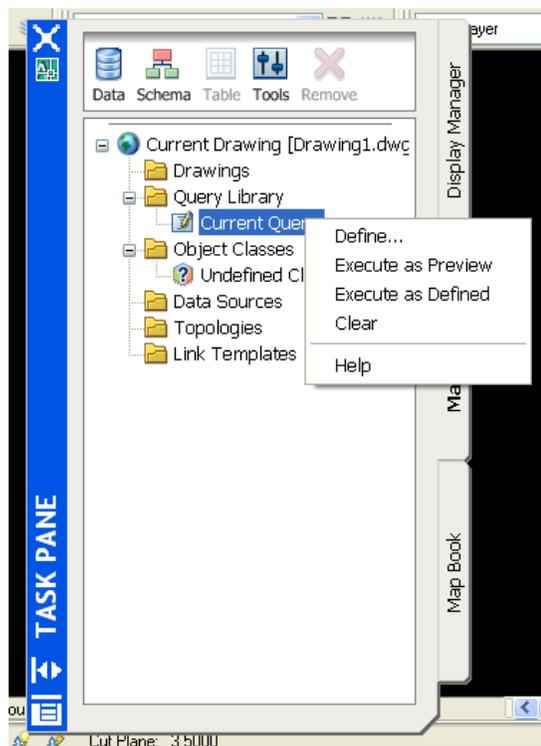
Note: you may need to use CREATE/EDIT ALIASES to get to where your drawing photo is saved.

**USING ORTHO IMAGERY IN A DRAWING**

g. Select the ADD button and then OK

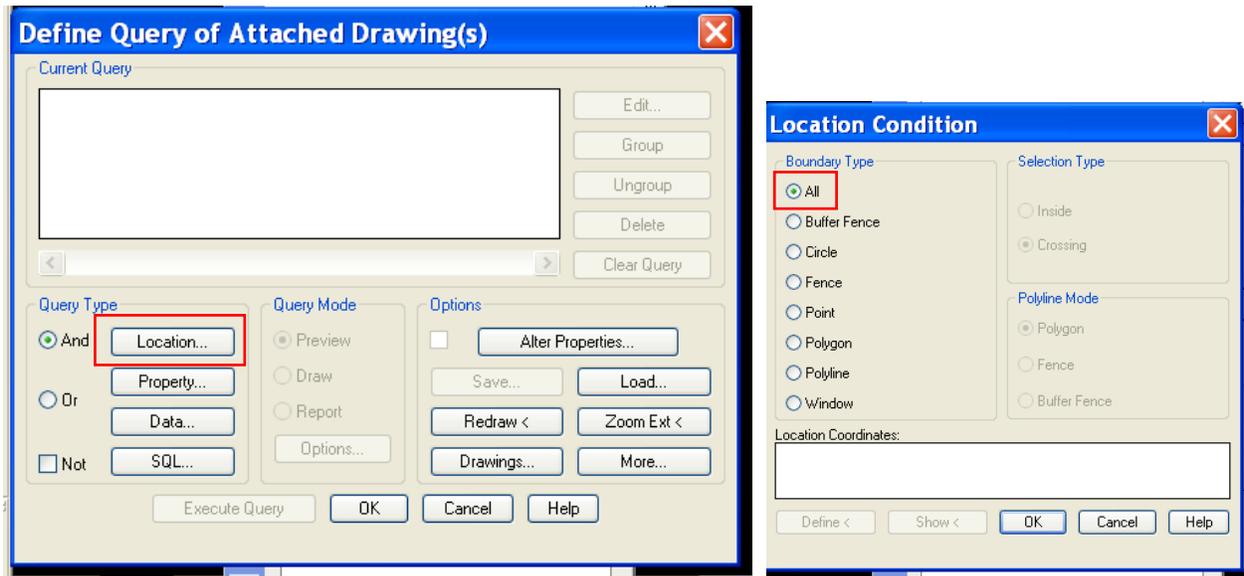
### 3. Referencing the aerial photo into your CAD design drawing

a. In the task pane window, right click CURRENT QUERY and select DEFINE

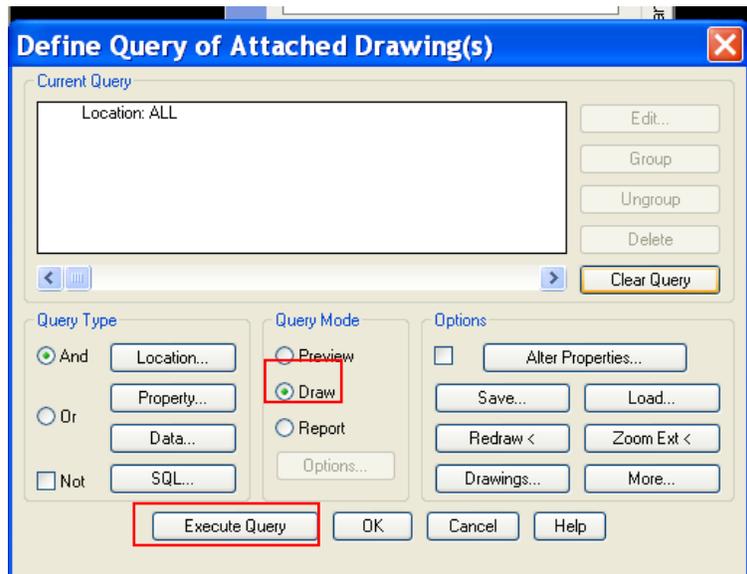


**USING ORTHO IMAGERY IN A DRAWING**

- b. In the window that pops up select the LOCATION button and in the second window, make sure ALL is selected, hit OK to close the first window.



- c. In the first window under QUERY MODE, select DRAW and then select EXECUTE QUERY



- d. You can close the MAPWORKSPACE TASK PANE.

---

**USING ORTHO IMAGERY IN A DRAWING**

---

- e. Now do a ZOOM EXTENTS and the aerial photo should be displayed and be at the coordinate system your drawing is set to.

**4. Clipping the aerial photo to your project area (optional)**

- a. If you want to clip out a smaller portion of the aerial photo, right click on the boundary of the aerial photo and select IMAGE, CLIP
- b. At the command line, type NEW for new boundary and hit ENTER
- c. At the command line, type either P or R for polygon or rectangular
- d. Draw your boundary and hit Enter and it will clip the photo

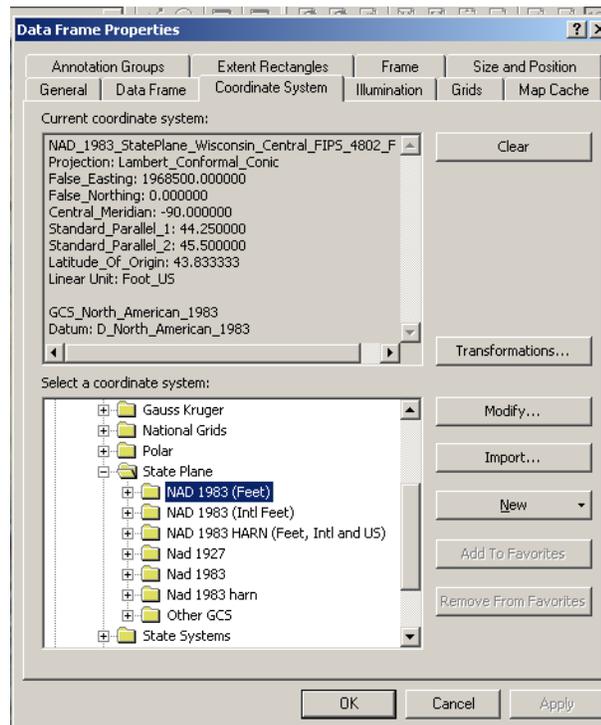
---

**II. METHOD 2 – INSERTING AERIAL PHOTO INTO YOUR CAD DRAWING**

The following instructions assume you are using *Wisconsin State Plane Coordinates* but the process is the same for whatever coordinate system you are using. **Just make sure you export out of Arcmap in the same coordinate system you are using in Civil 3D.**

**A. Exporting from Arcmap**

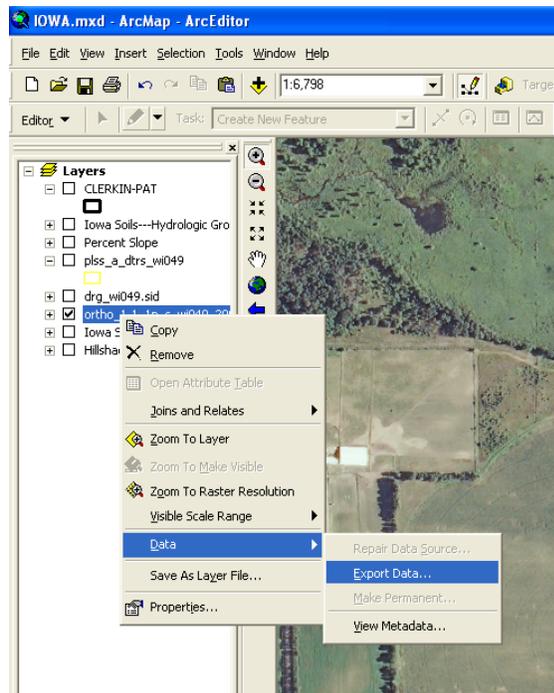
1. In Arc Map locate your project area, zoom into it to the extent you want the photo in Auto Cad.
2. Set data frame into proper coordinates to export to Cad
  - a. Rt. Click on **Layers** and select **Properties**
  - b. Under the *Coordinate System* Tab choose **Predefined**
  - c. Click on **Projected Coordinate Systems**
  - d. Select **State Plane** (or whatever coordinate system you are using in Civil 3D.)
  - e. Open **NAD 1983 (feet)**

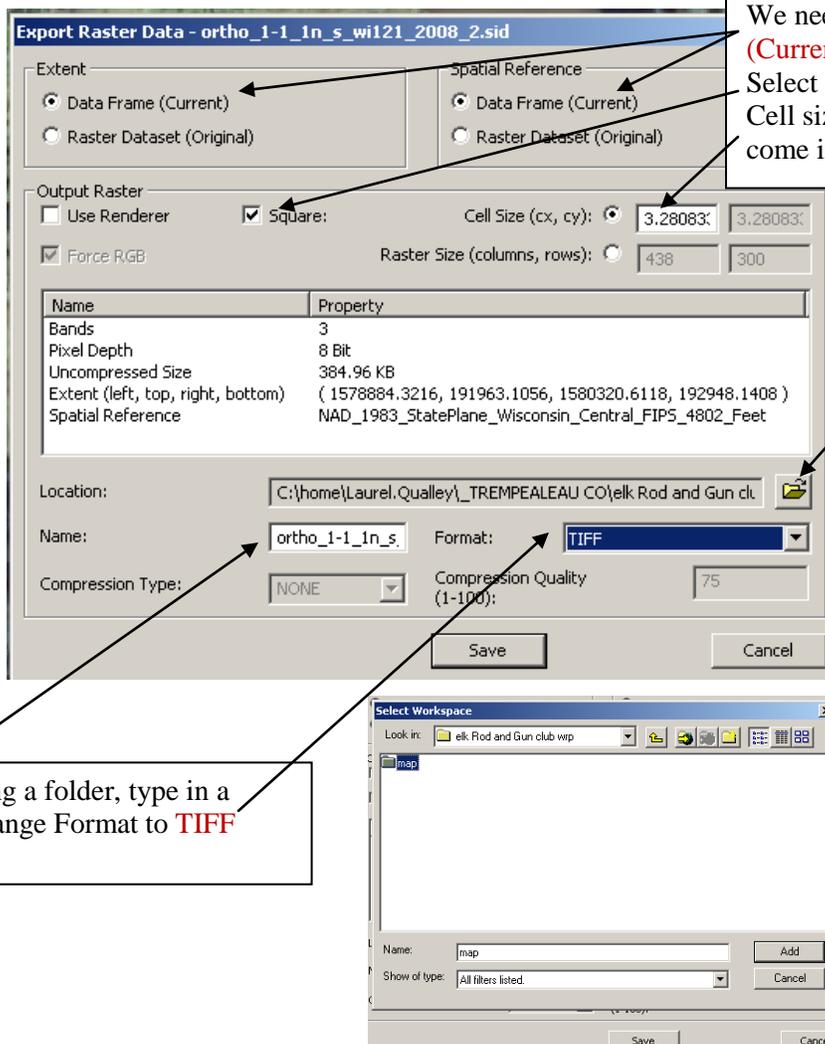
**USING ORTHO IMAGERY IN A DRAWING**

- f. Select **NAD1983 State Plane Wi (your zone) FIPS480?(feet)**

NOTE: for help selecting your zone, access the help sheet titled “Wisconsin State Plane Coordinate Zones” on the NRCS website under “Civil 3D CAD help sheets”.

3. Right click on the *ortho photo* and choose **Data >Export Data**



**USING ORTHO IMAGERY IN A DRAWING**

We need to change to **Data Frame (Current)** on both .  
Select **Square**  
Cell size should be **3.28083** (Should come in automatically.)

Make sure you have **Data Frame (current)** selected or your file size will be huge.

Click on the **folder** button.  
Navigate to the folder where you want to save the file and highlight the folder, click **ADD**

After selecting a folder, type in a **name** and change Format to **TIFF**  
Select **SAVE**

4. A new window will pop up asking to add the new TIFF to the ArcMap document: Just say **NO** to this.

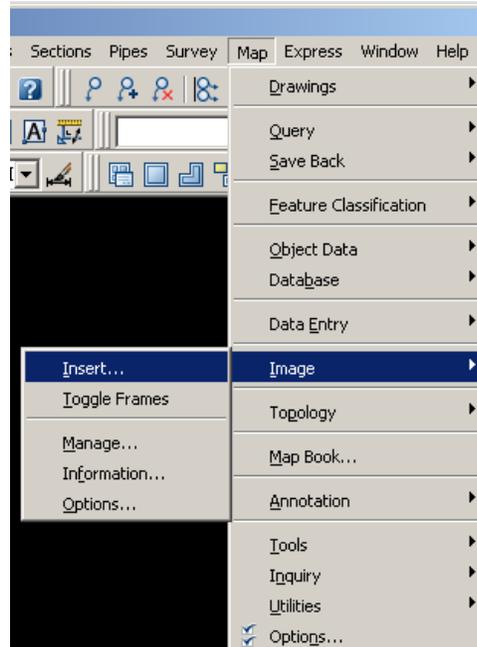
**NOW YOU ARE READY TO INSERT THE TIFF IMAGE INTO A CAD DRAWING.****B. Inserting Aerial Photo Image into Civil 3D**

1. Open an existing drawing or start a new drawing in Civil 3D.
2. Make sure your CAD drawing is set to the coordinate system you surveyed in and you exported your aerial photo in.

**USING ORTHO IMAGERY IN A DRAWING**

---

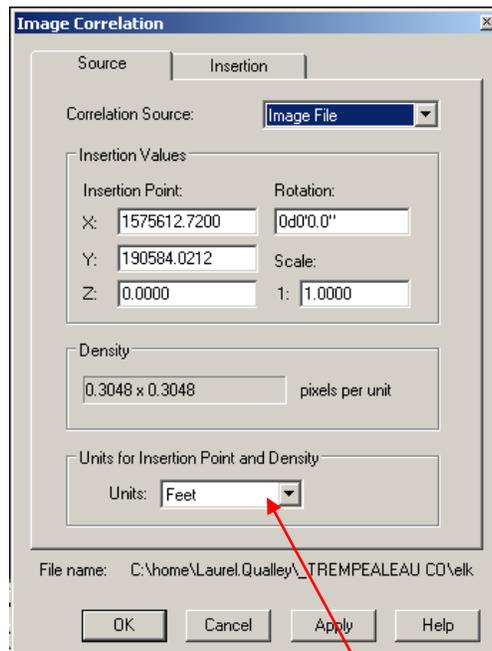
- Now you can insert the image by selecting **Map, Image, Insert** and make sure **MODIFY CORRELATION** is turned off in the window that pops up.



- Browse to where you saved the TIFF image above and select the file. In the window that pops up, keep the **scale at 1:1.00000**, **Units=feet**, select **Apply** and **OK**

**USING ORTHO IMAGERY IN A DRAWING**

---



5. Select Zoom Extents and the photo should be in the proper coordinate location
  - a. **If the aerial photo does not come into CAD in the right location, delete and reinsert by starting with Step 1 above. This time, select “Meters” for the Units, instead of feet. This usually happens when working in county coordinates.**
  
6. **To verify the scale and coordinates are correct, measure a feature (i.e. field, road, or building) in CAD and see if it measures the same or close in Arc Map (it will either be close or way off). Also hover over a location in Autocad , notice the coordinates in the lower left hand corner, do the same in ArcMap, they should be the same or relatively close.**