2015 Design Training Expo

Using Aerial Data in Civil 3D and the FDOT State Tool Kit

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Using Aerial Data in Civil 3D and the FDOT State Tool Kit

This session will outline the process of attaching Aerial Data using tools available in Civil 3D and the FDOT State Tool Kit.

But before we get started attaching data, we have to ask the question:

"Where do you get your aerial data from"

Aerial Data is available on-line from a number of sources, three sources widely used are:

LABINS - Florida DEP's Land Boundary Information System

www.labins.org

APLUS - FDOT's Aerial Photo Look-Up System

www.dot.state.fl.us/surveyingandmapping/aerialmain.shtm

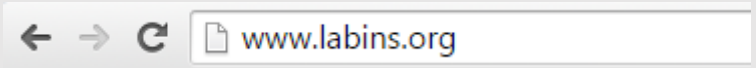
GEOMAP – Civil 3D command which links to Microsoft Maps directly within Civil 3D

Using Aerial Data in Civil 3D and the FDOT State Tool Kit

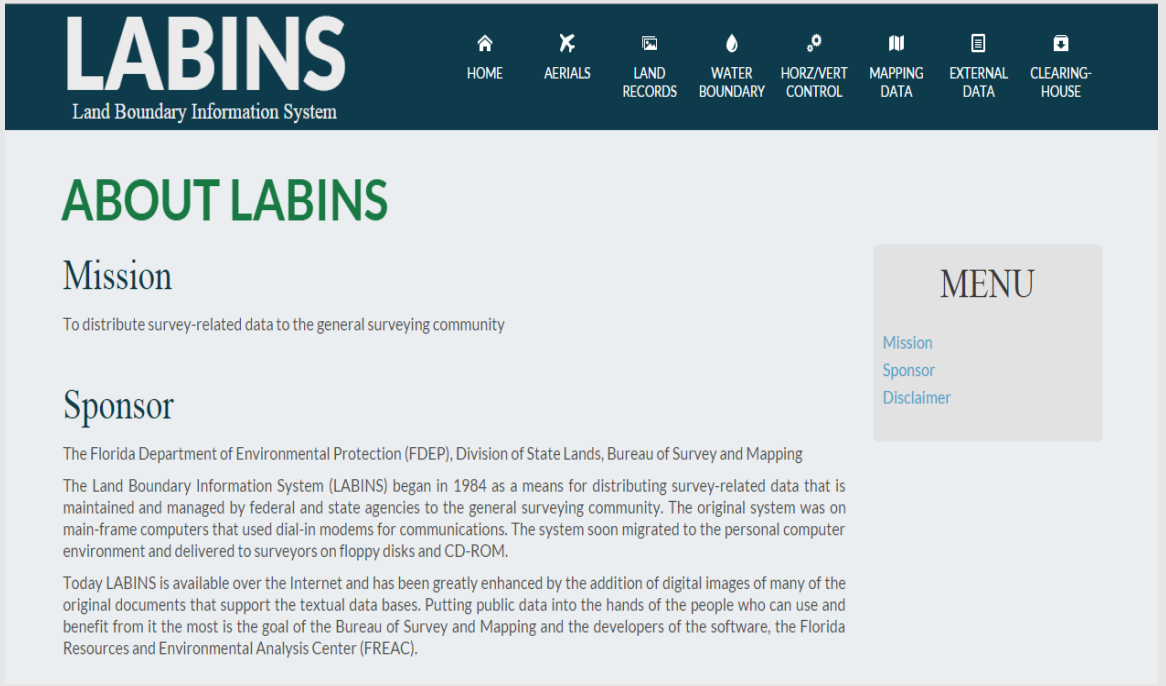
First let's take a look at using LABINS to retrieve Aerial Data for use in Civil 3D and the FDOT State Tool Kit.

LABINS - Florida DEP's Land Boundary Information System

In your web browser enter: www.labins.org

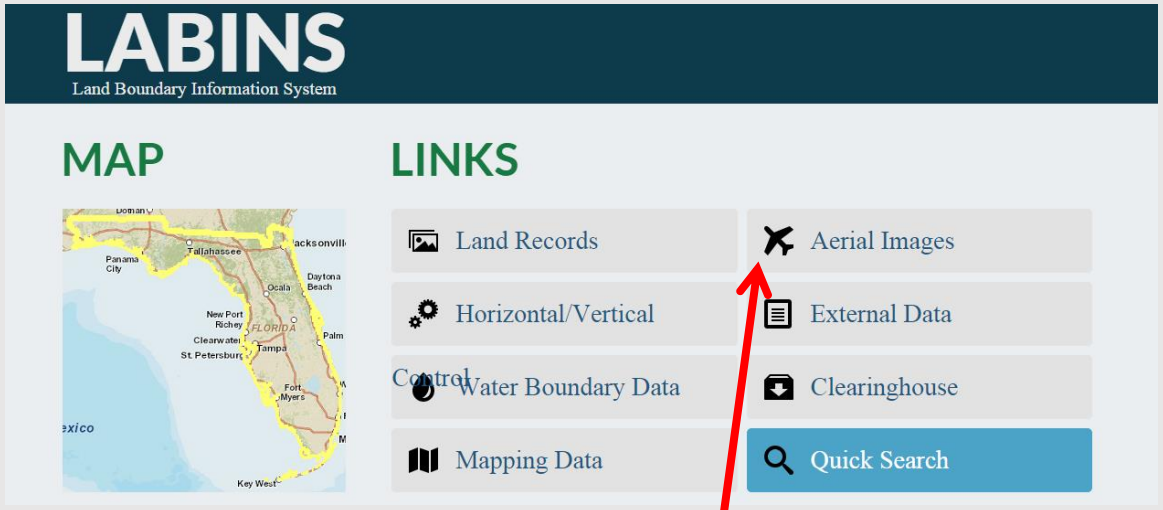


About LABINS

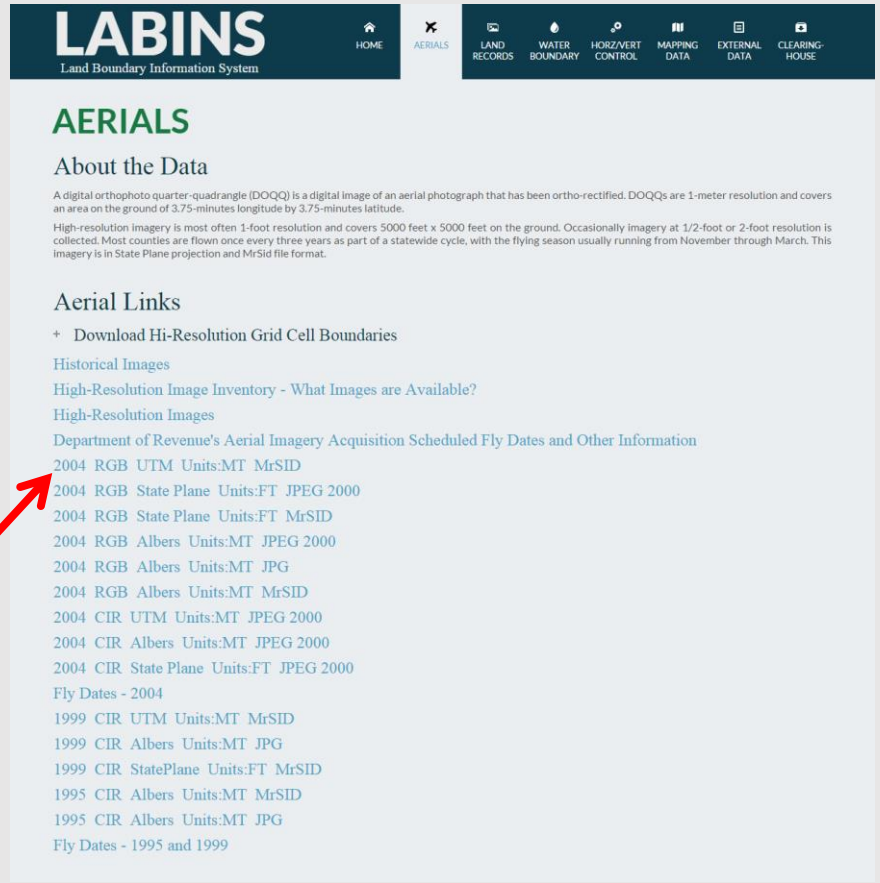


Using Aerial Data in Civil 3D and the FDOT State Tool Kit

Upon entering the LABINS site this screen will appear



Let's first select the Aerial Images link



This page displays links to Images in a various formats, such as 2004 RGB State Plan Units: FT MrSID

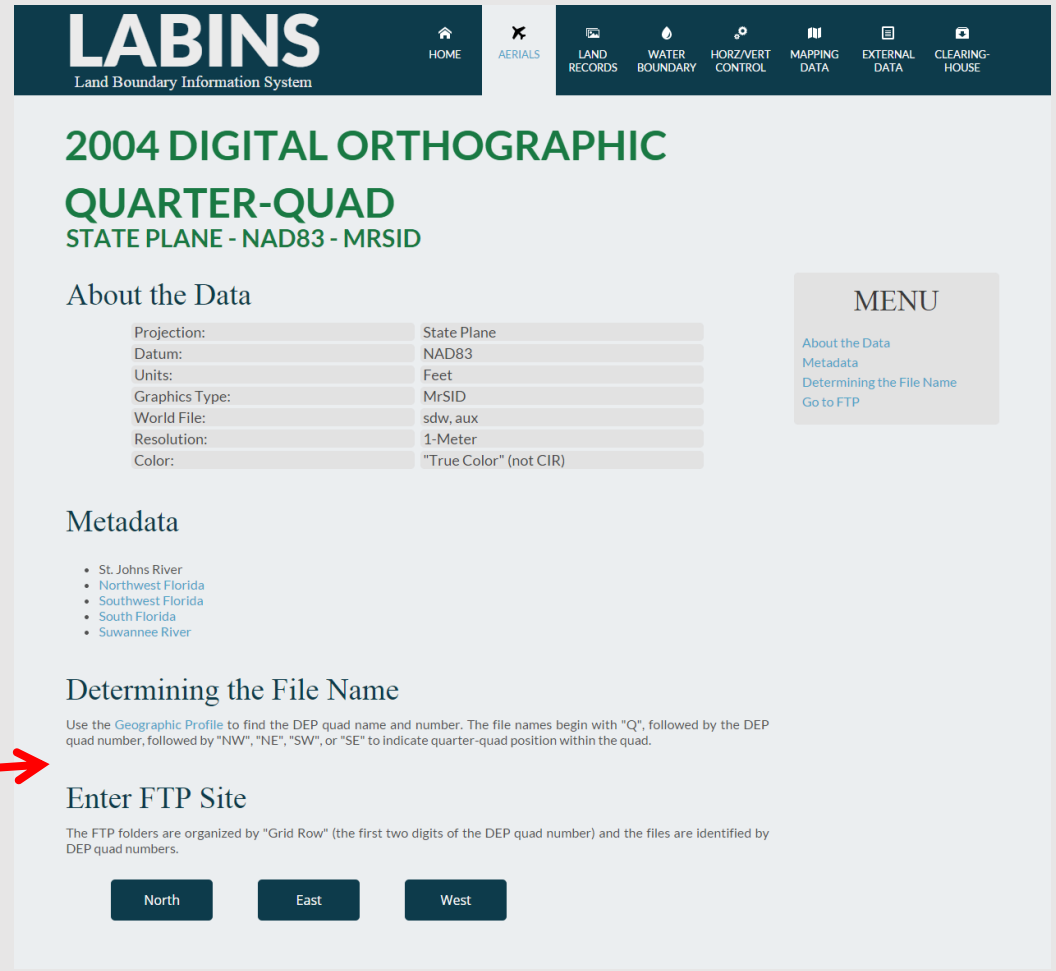
Using Aerial Data in Civil 3D and the FDOT State Tool Kit

From the Aerial Links list,

select 2004 RGB State Plan Units: FT MrSID

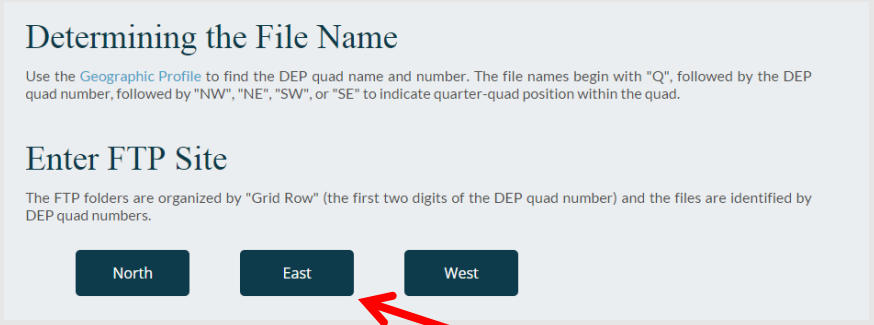
2004 RGB UTM Units:MT MrSID
2004 RGB State Plane Units:FT JPEG 2000
2004 RGB State Plane Units:FT MrSID
2004 RGB Albers Units:MT JPEG 2000

From the 2004 DIGITAL ORTHOGRAPHIC QUARTER-QUAD STATE PLANE – NAD83 – MRSID page, a number of options are available for selection.



Using Aerial Data in Civil 3D and the FDOT State Tool Kit

Lets review two of the options, first from this page



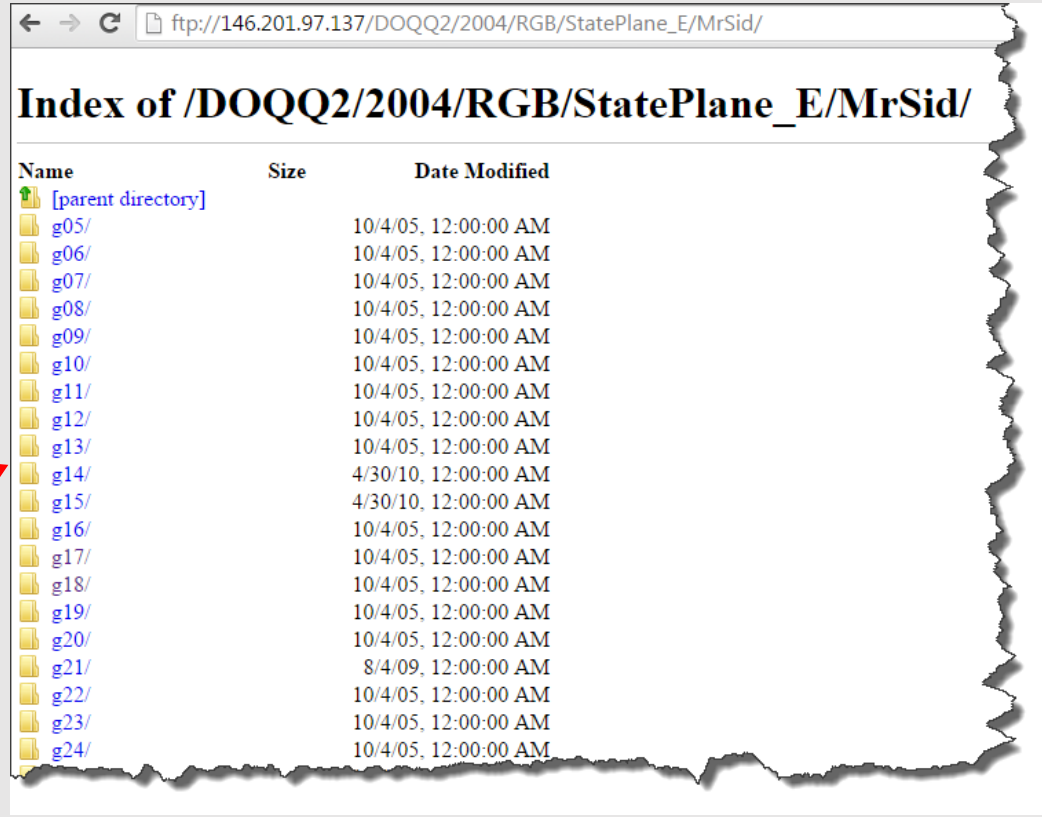
From the Enter FTP Site section, select East

The FTP folders are organized by "Grid Row"

(the first two digits of the DEP quad number)

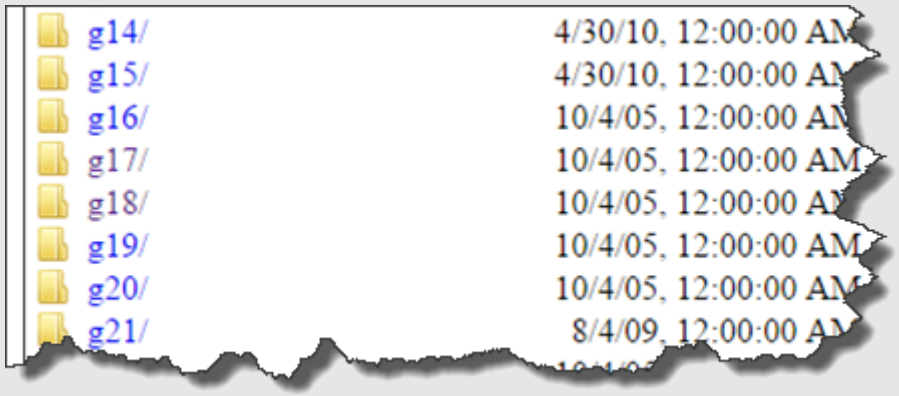
and the files are identified by DEP quad numbers

The Index page of /the DOQQ2/2004/RGB/StatePlane_E/MrSID folder is displayed

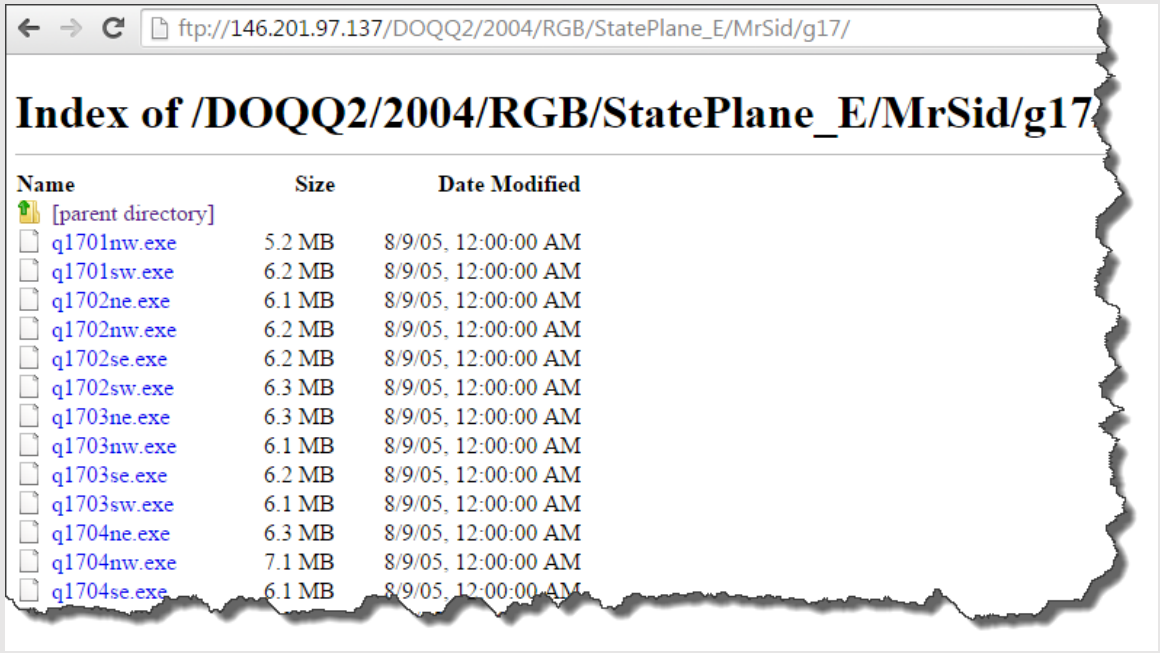


Using Aerial Data in Civil 3D and the FDOT State Tool Kit

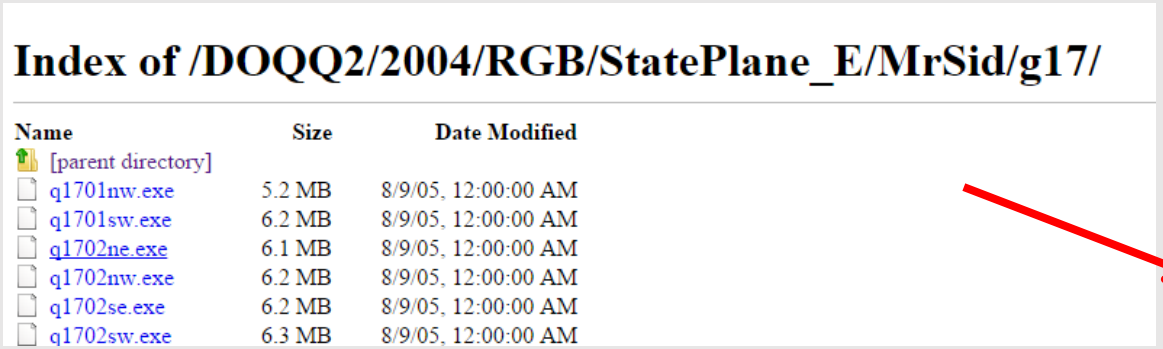
From the /DOQQ2/2004/RGB/StatePlane_E/MrSID folder, Select the g17 folder



Listed are the DEP Quads for the Grid Row 17



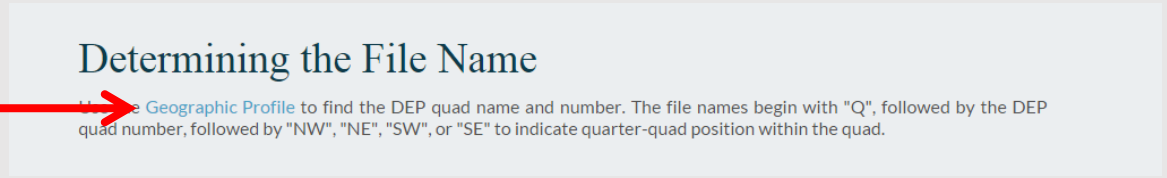
Select the Quads you wish to download



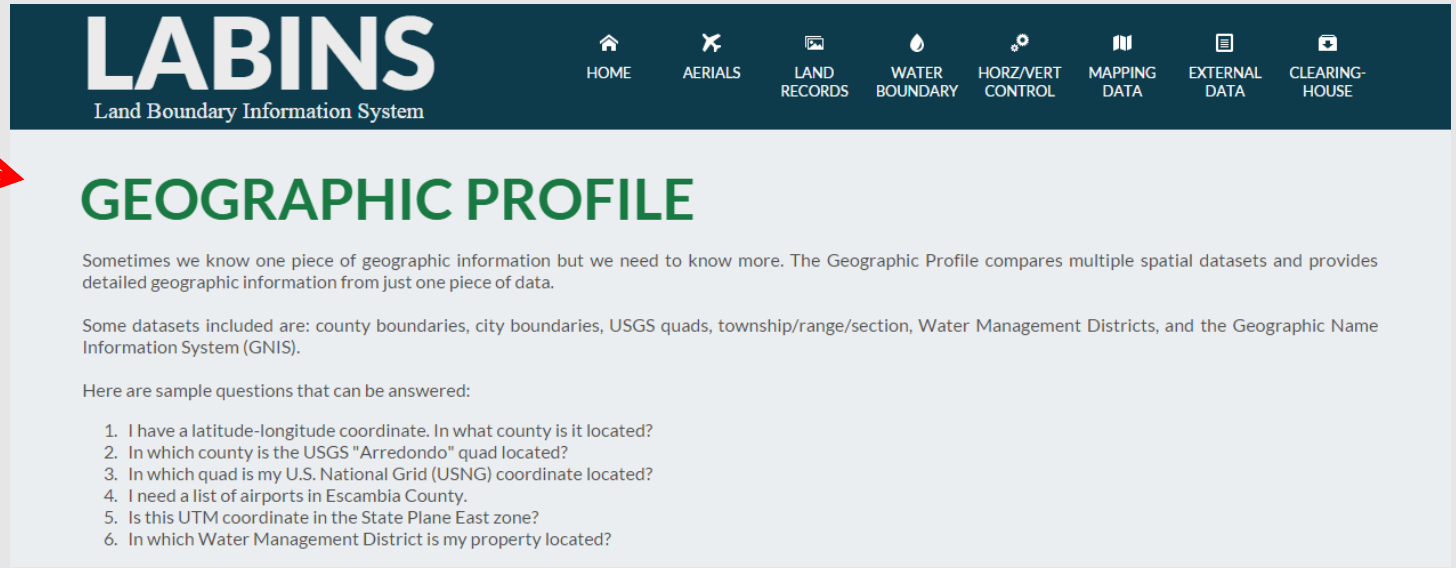
Then save to be attached using Civil 3D

Using Aerial Data in Civil 3D and the FDOT State Tool Kit

Let's review the second of two options from this page, from the Determining the File Name section, select the Geographic Profile link, to find the DEP quad name and number.

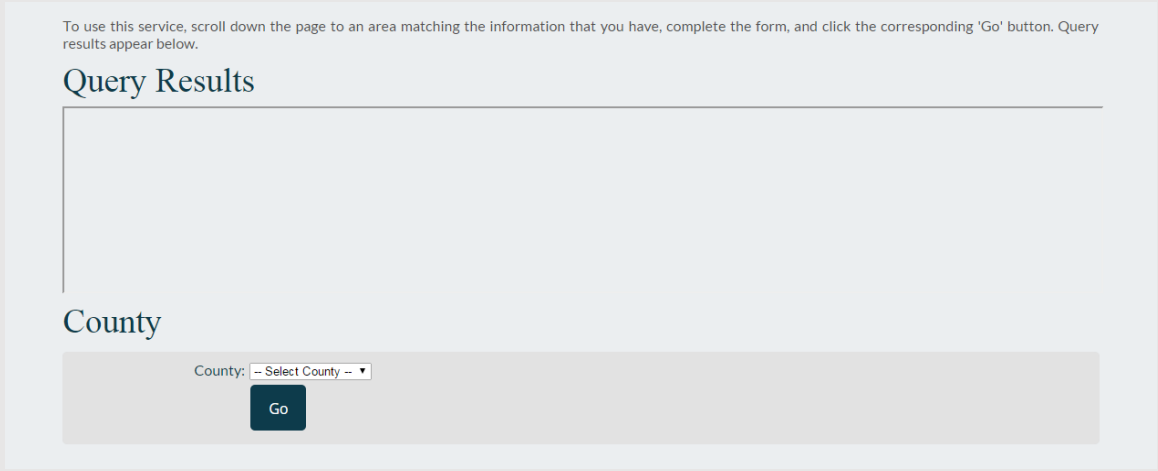


The **Geographic Profile page is now displayed**



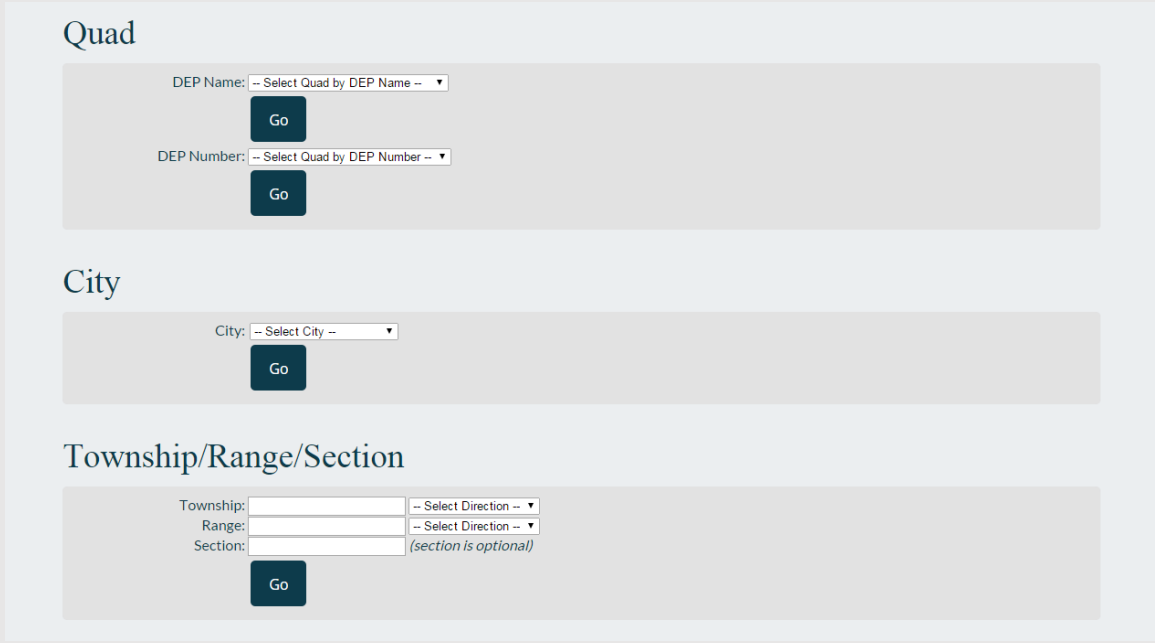
Using Aerial Data in Civil 3D and the FDOT State Tool Kit

This page is broken into sections which allow different type of queries to be performed:



County

Quad, City, or Township/Range/Section



Using Aerial Data in Civil 3D and the FDOT State Tool Kit

United States National Grid, Latitude/Longitude, or Decimal Degrees

United States National Grid

1-meter resolution required.

Sample Format: zzaaannnnnnnnn

Where: z = UTM zone (must be 16 or 17)
a = 3 characters
n = 10 digits to indicate 1-meter precision

Example: 16RGU5979270255

Go

Latitude/Longitude

Latitude: deg
min
sec

Longitude: (Western Hemisphere is implied - Negative sign is optional)
deg
min
sec

Go

Decimal Degrees

Latitude:

Longitude: (Western Hemisphere is implied - Negative sign is optional)

Go

State Plane Coordinate, UTM Coordinate, or Albers Coordinate

State Plane Coordinate

X:
Y:
-- Select Zone --

Go

UTM Coordinate

X:
Y:
-- Select Zone --

Go

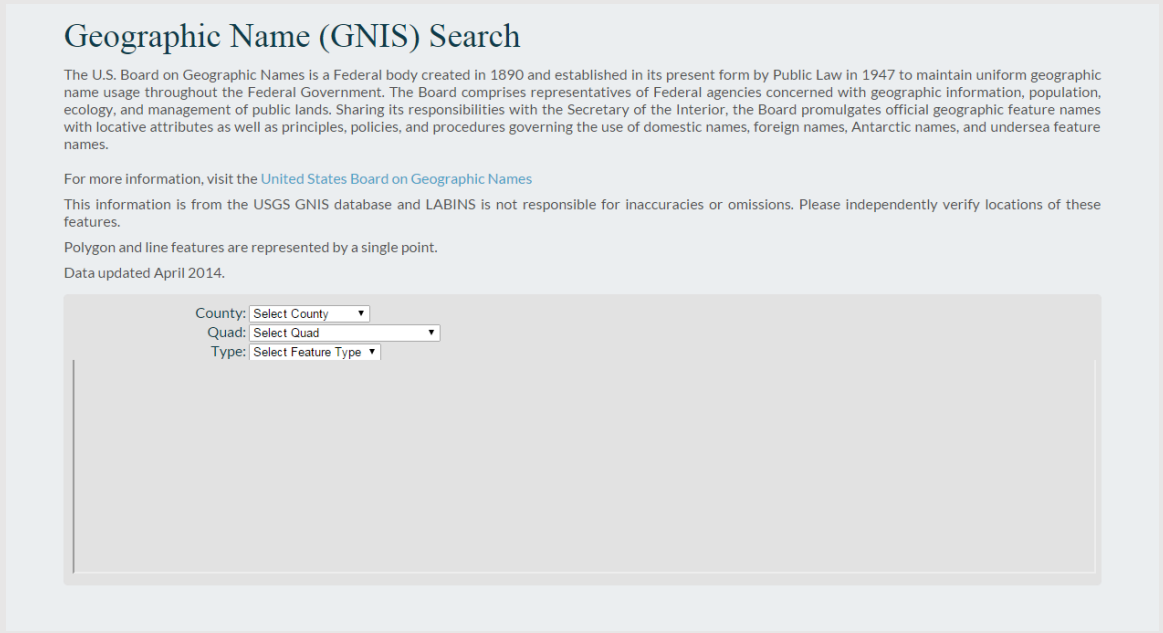
Albers Coordinate

X:
Y:

Go

Using Aerial Data in Civil 3D and the FDOT State Tool Kit

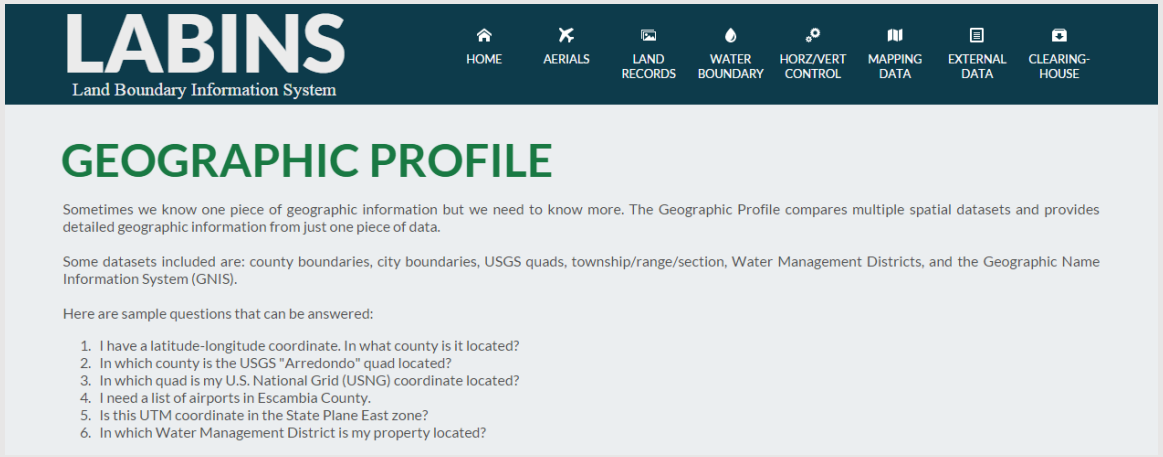
Geographic Name (GNIS) Search



The results from any query are displayed in the Query Results box

Using Aerial Data in Civil 3D and the FDOT State Tool Kit

Sometimes we know one piece of geographic information. The Geographic Profile provides detailed geographic information from that one piece of data.



Using Aerial Data in Civil 3D and the FDOT State Tool Kit

With that in mind we need to determine the Quads that need to be attached our sample Drainage project

What we have to start with is the TOPORD01.DGN file that has been attached as an Xref in Civil 3D with the state plane coordinate system of NAD 83 Florida East Feet set.

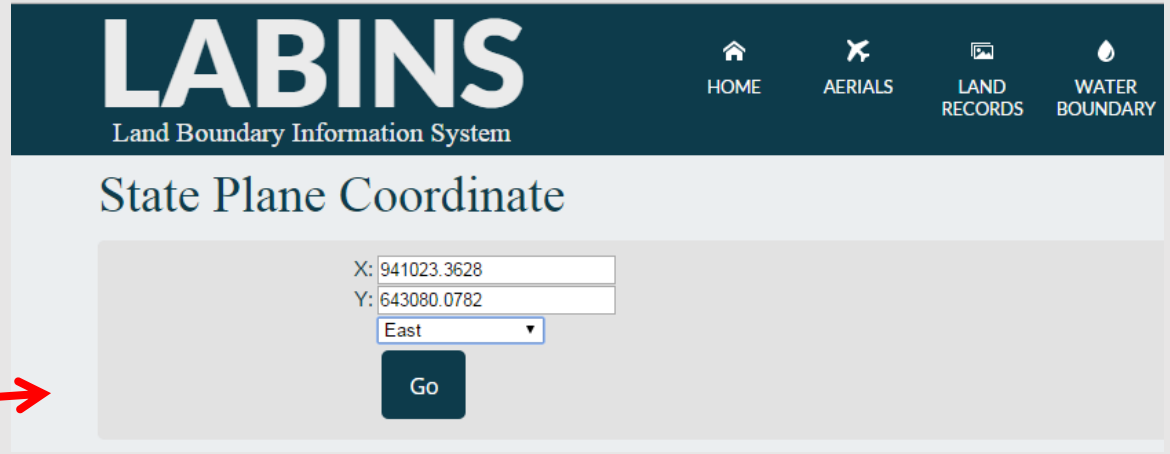
Using the ID command in Civil 3D, and selecting a point from the screen, the Northing / Easting (Y and X) values are displayed on the command line:

Northing: 643080.0782 (Y)
Easting: 941023.3628 (X)

Using Aerial Data in Civil 3D and the FDOT State Tool Kit

From the Geographic Profile page, navigate to the State Plane Coordinate section, for the X value enter 941023.3628, for the Y value enter 643080.0782.

Select East as the zone, then select Go



Using Aerial Data in Civil 3D and the FDOT State Tool Kit

State Plane Coordinate Query Results

LABINS
Land Boundary Information System

HOME AERIALS LAND RECORDS

Query Results

State Plane Coordinate: 941023.3628, 643080.0782

US National Grid: 17RNJ8679587076

County(s):
Broward Google Maps

City(s):
Ft. Lauderdale Google Maps

LABINS
Land Boundary Information System

HOME AERIALS LAND RECORDS

Query Results

DEP Quad Number(s):
1702

USGS Quad Number(s):
26080-A2

Water Management District(s):
SFWMD

DEP Quad Number (s)
1702

LABINS
Land Boundary Information System

HOME AERIALS LAND RECORDS

Query Results

26080-A2

Water Management District(s):
SFWMD

State Plane Zone(s):
E

Township(s)/Range(s):
T50SR42E

Using Aerial Data in Civil 3D and the FDOT State Tool Kit

Return to the Aerial Links list page,

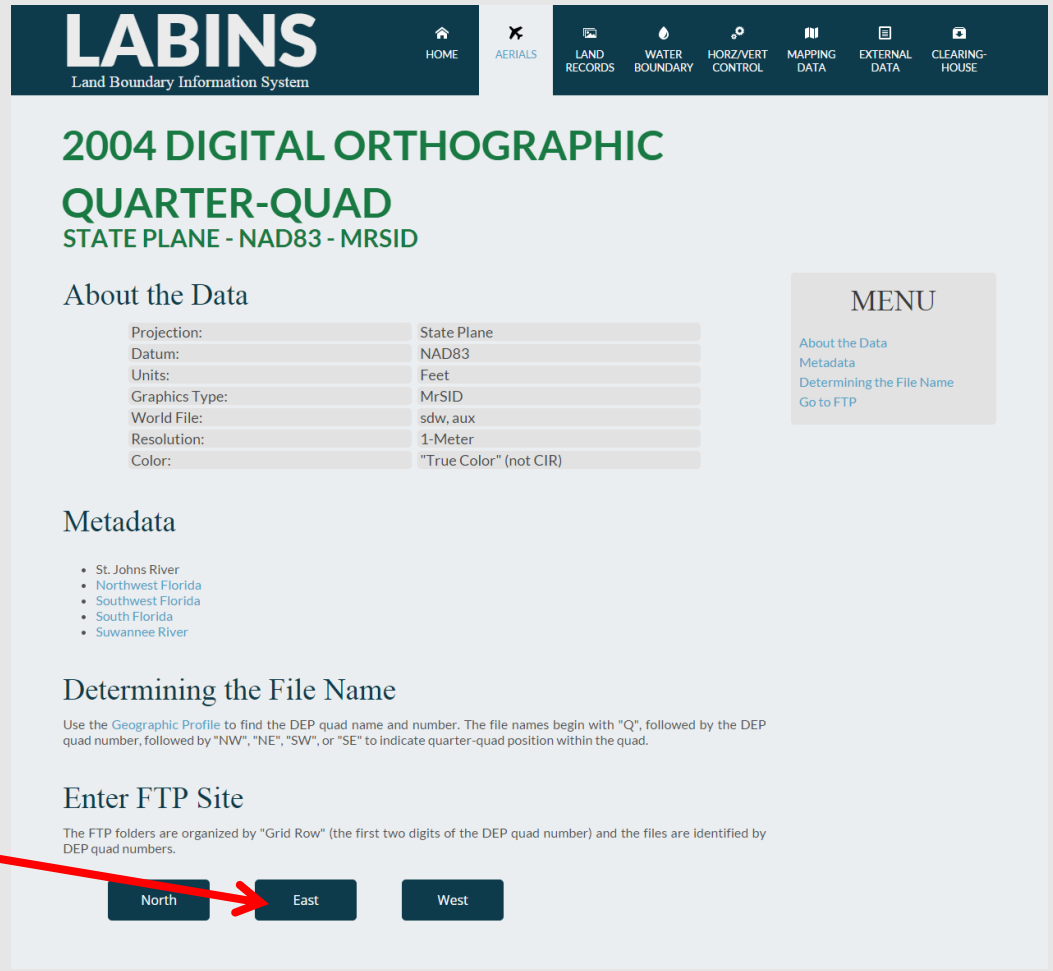
select 2004 RGB State Plan Units: FT MrSID

2004 RGB UTM Units:MT MrSID
2004 RGB State Plane Units:FT JPEG 2000
2004 RGB State Plane Units:FT MrSID
2004 RGB Albers Units:MT JPEG 2000

From the 2004 DIGITAL ORTHOGRAPHIC

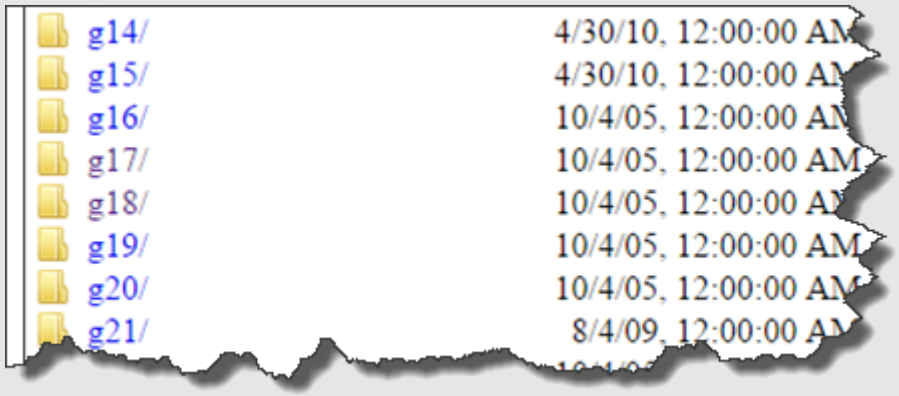
QUARTER-QUAD STATE PLANE – NAD83 – MRSID

Page, Enter FTP Site section, Select East

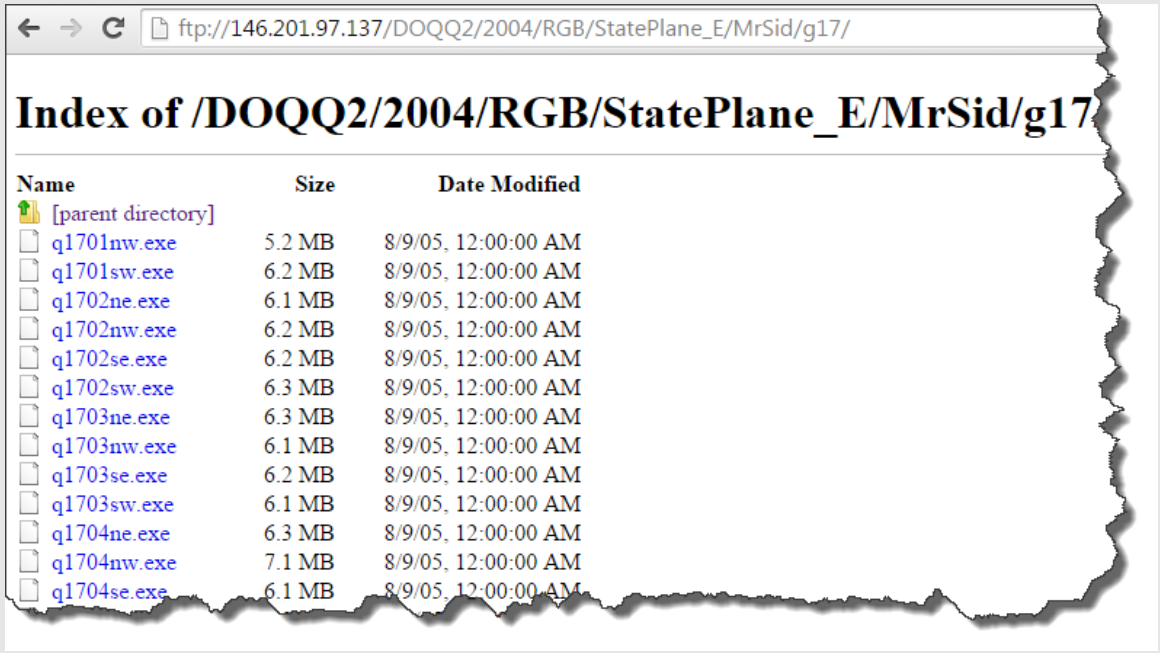


Using Aerial Data in Civil 3D and the FDOT State Tool Kit

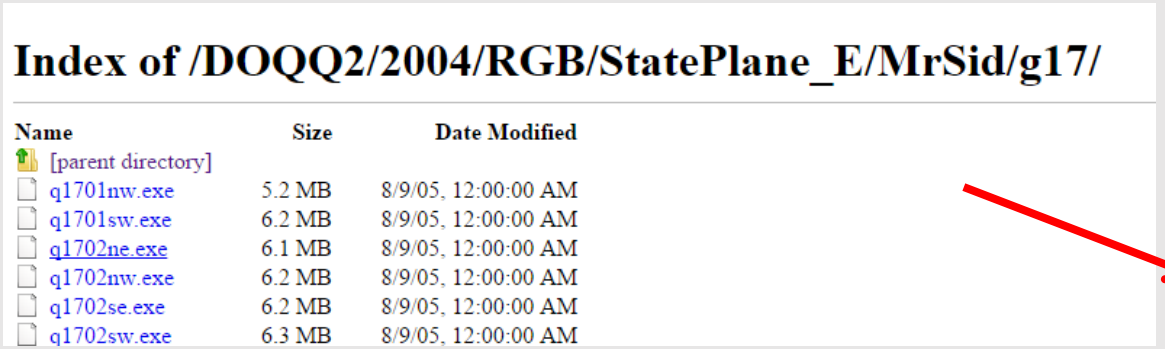
From the /DOQQ2/2004/RGB/StatePlane_E/MrSID folder, Select the g17 folder



Listed are the DEP Quads for the Grid Row 17



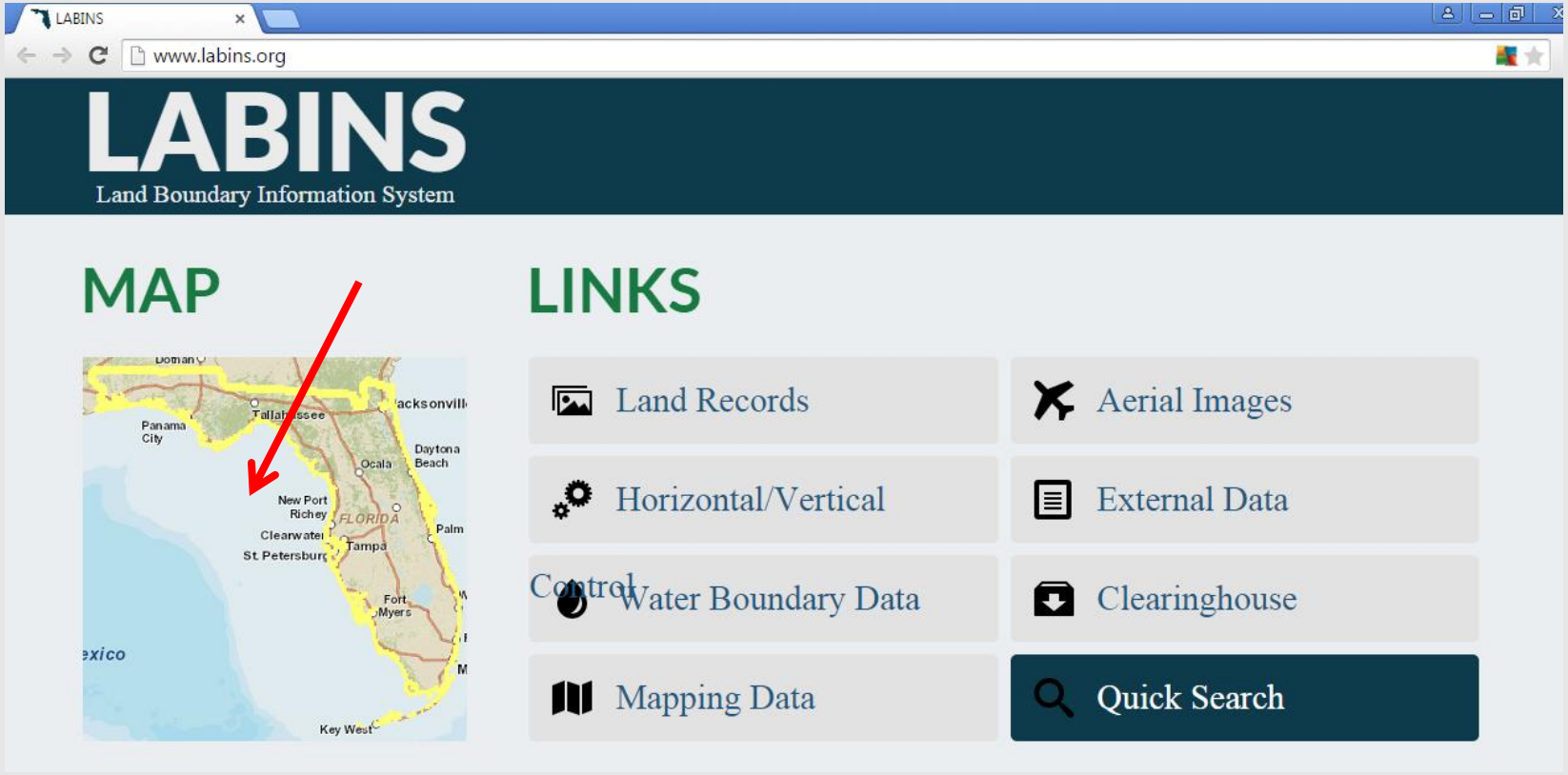
Select the Quads you wish to download, q1702ne.exe, q1702nw.exe, q1702se.exe, and q1702sw.exe



Then save the aerials to be attached in Civil 3D

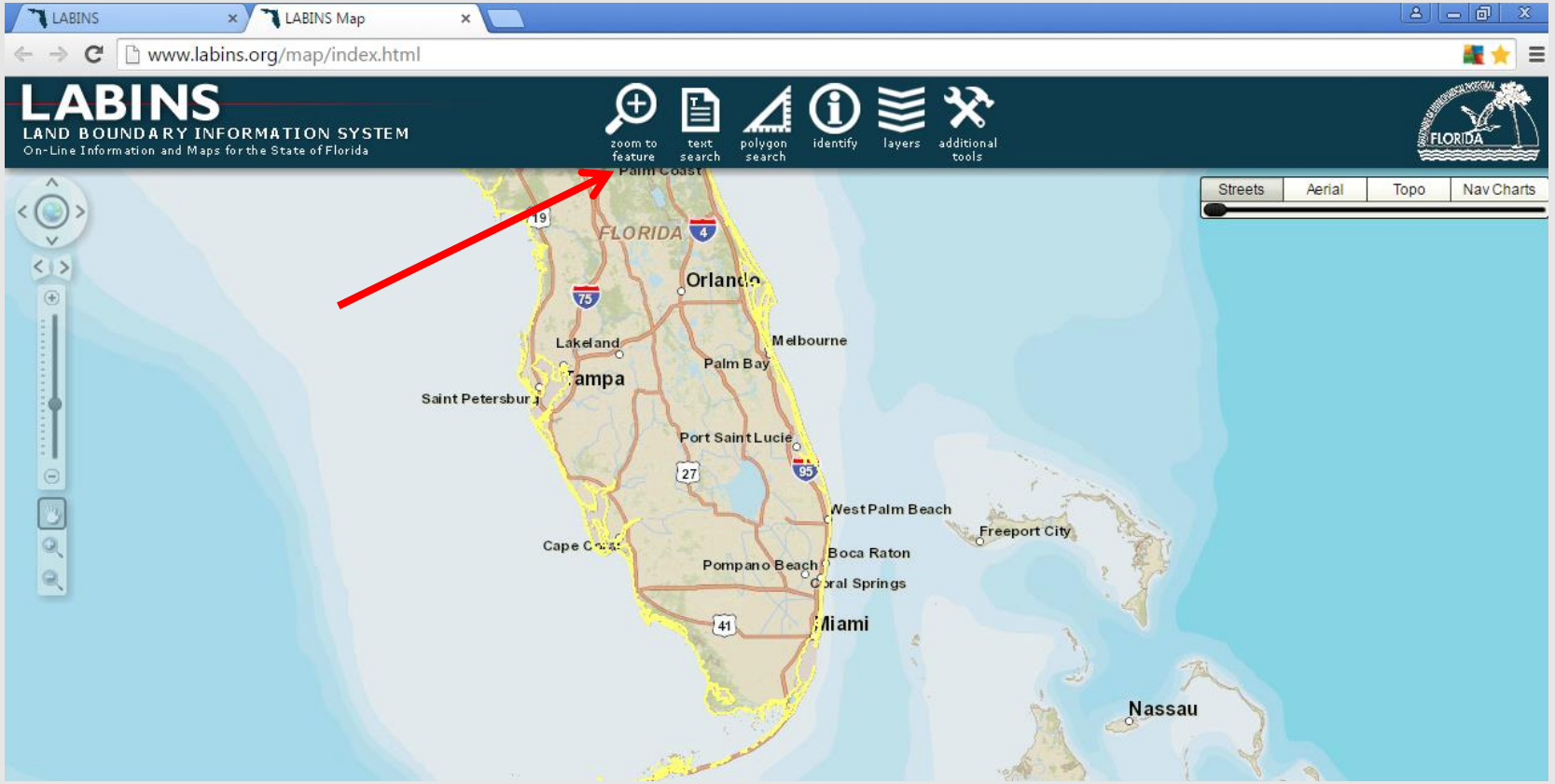
Using Aerial Data in Civil 3D and the FDOT State Tool Kit

Map option, from the LABINS main menu select on the Map of Florida

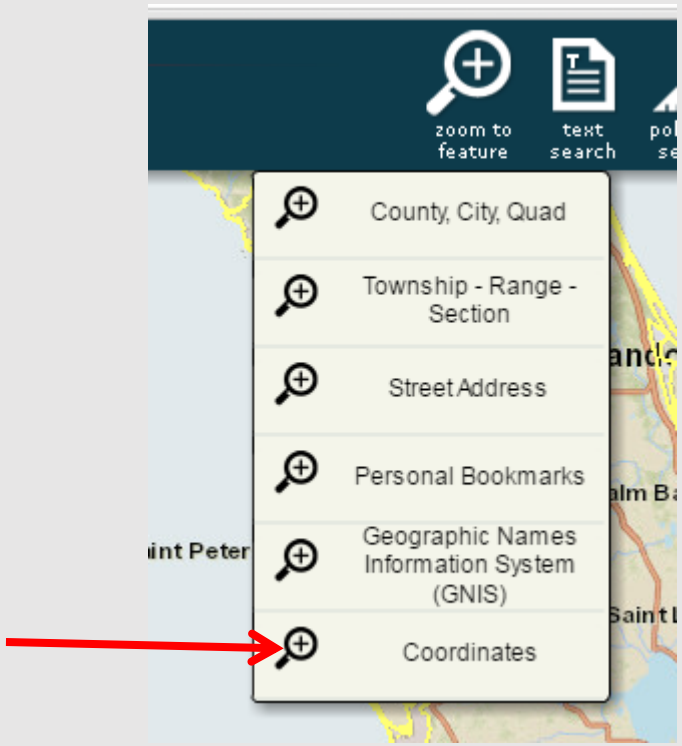


Using Aerial Data in Civil 3D and the FDOT State Tool Kit

Select the Zoom to Feature icon



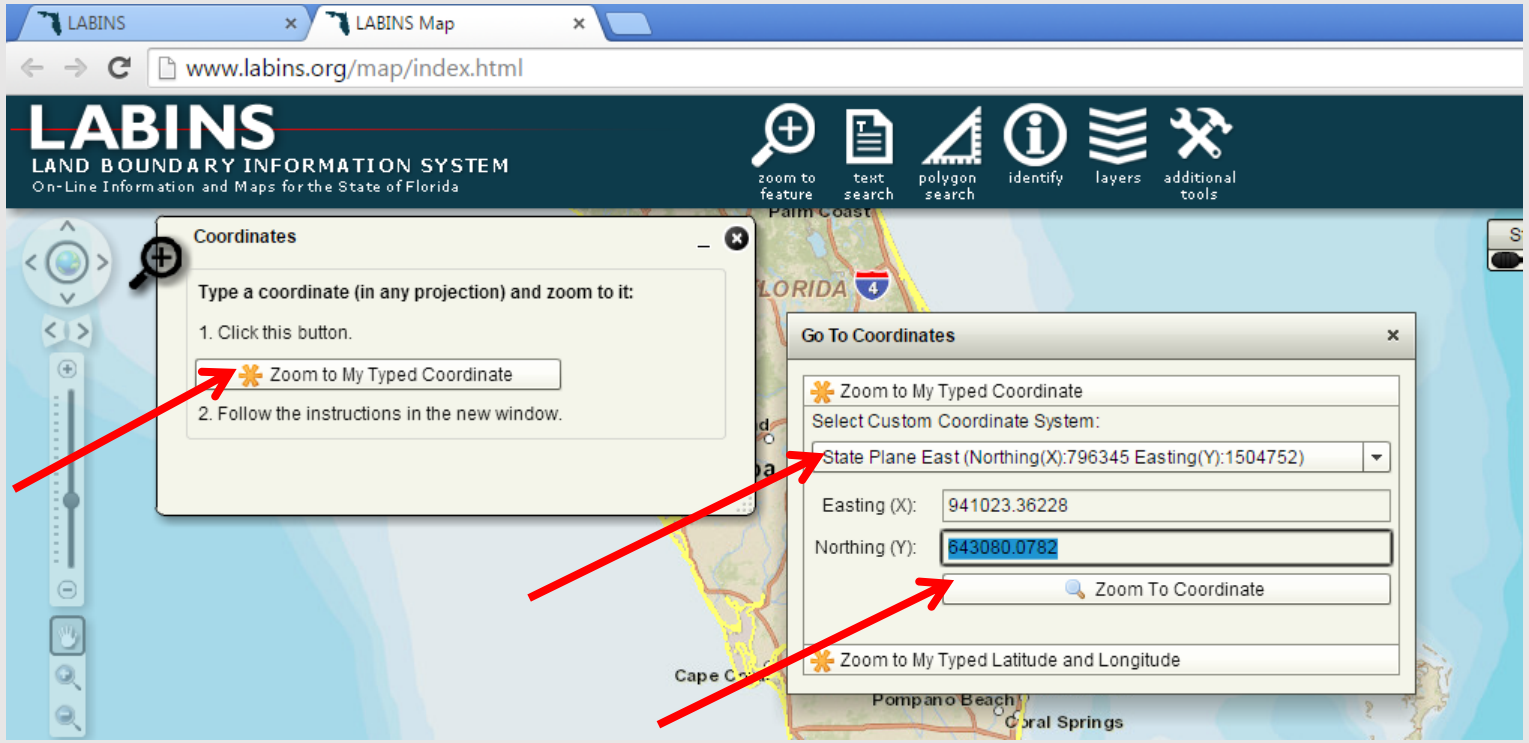
Select the Coordinates option



Using Aerial Data in Civil 3D and the FDOT State Tool Kit

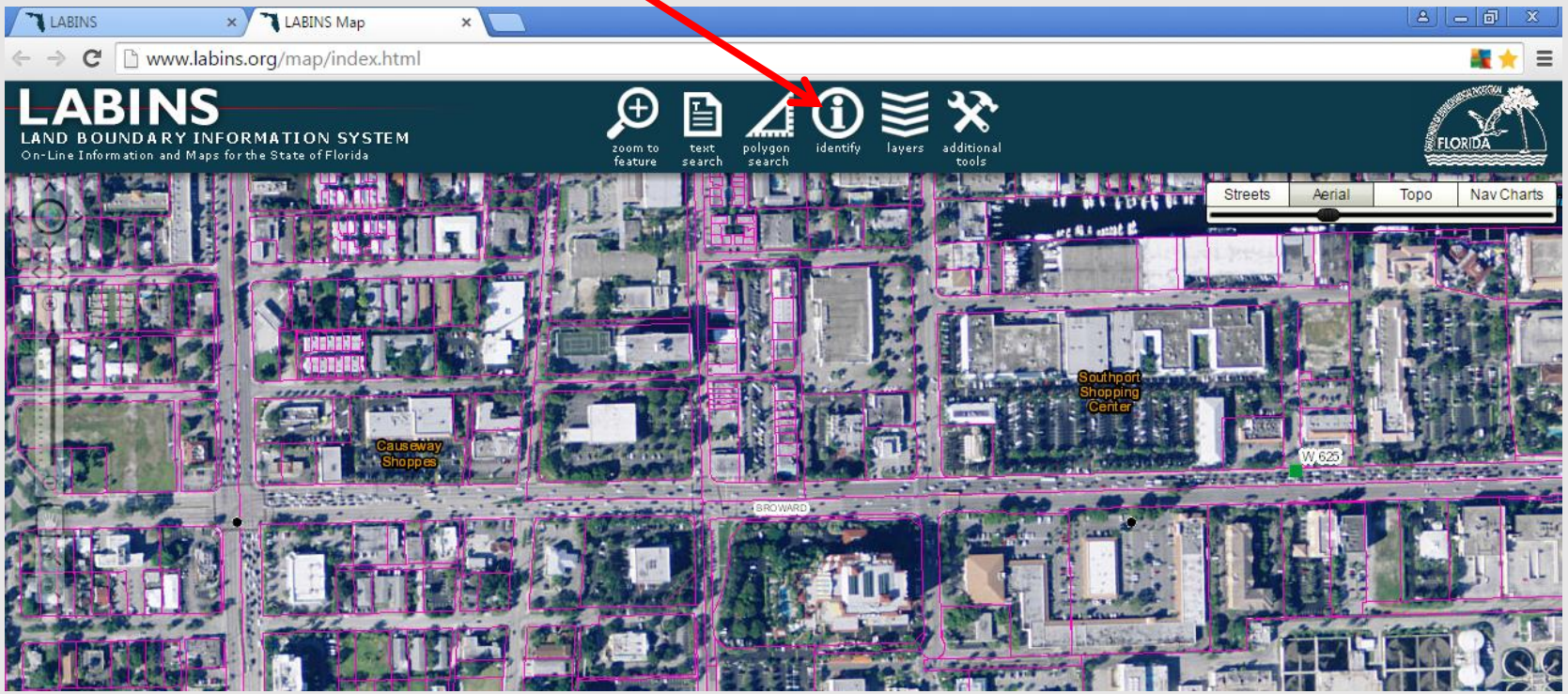
Select Zoom to My Typed Coordinate, then from Select Custom Coordinate System, select State Plane East, set Easting (X) to 941023.3628 and Northing (Y) to 643080.0782.

Select Zoom to Coordinates

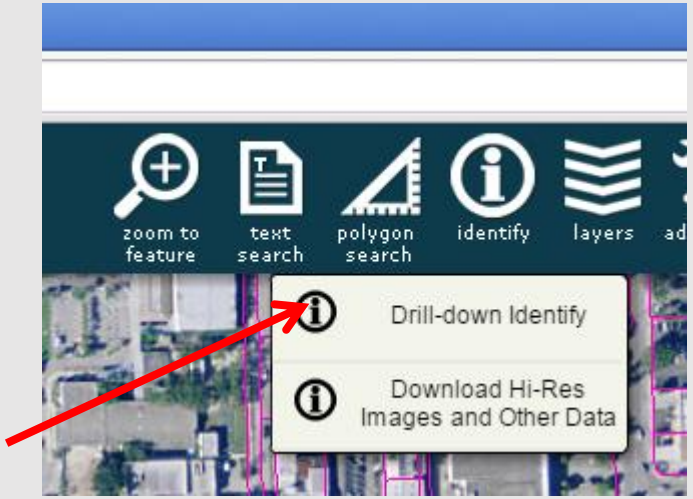


Using Aerial Data in Civil 3D and the FDOT State Tool Kit

Select the Identify icon

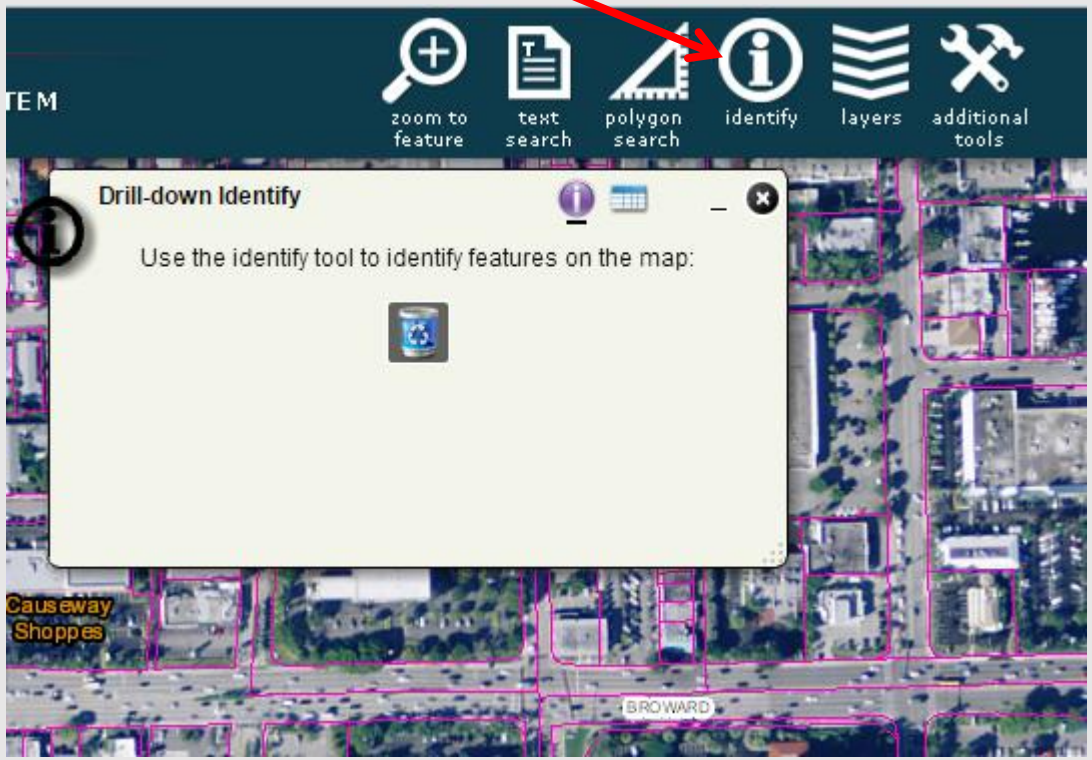


Select the Drill-down identify icon

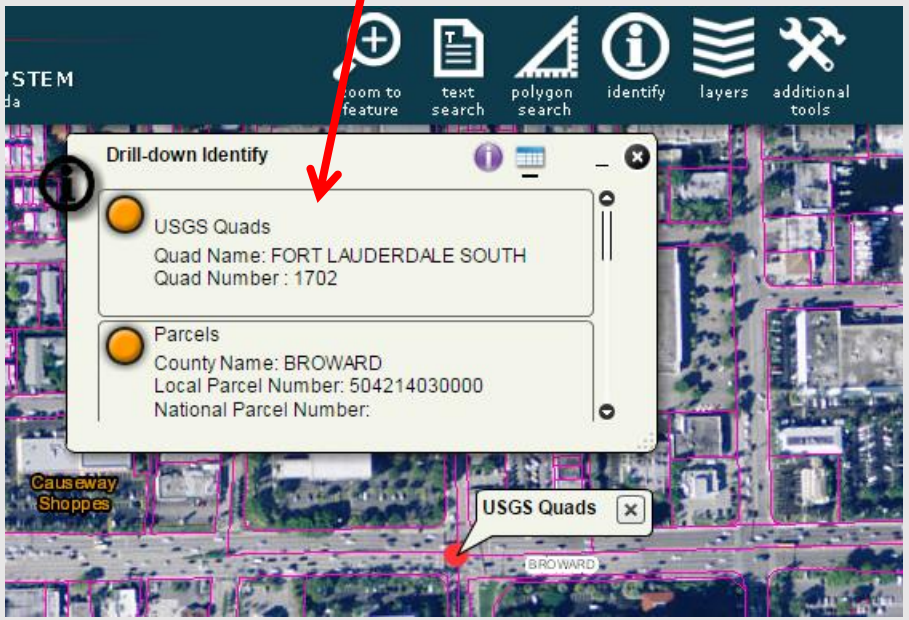


Using Aerial Data in Civil 3D and the FDOT State Tool Kit

Select a point on the map to use the identify features tool

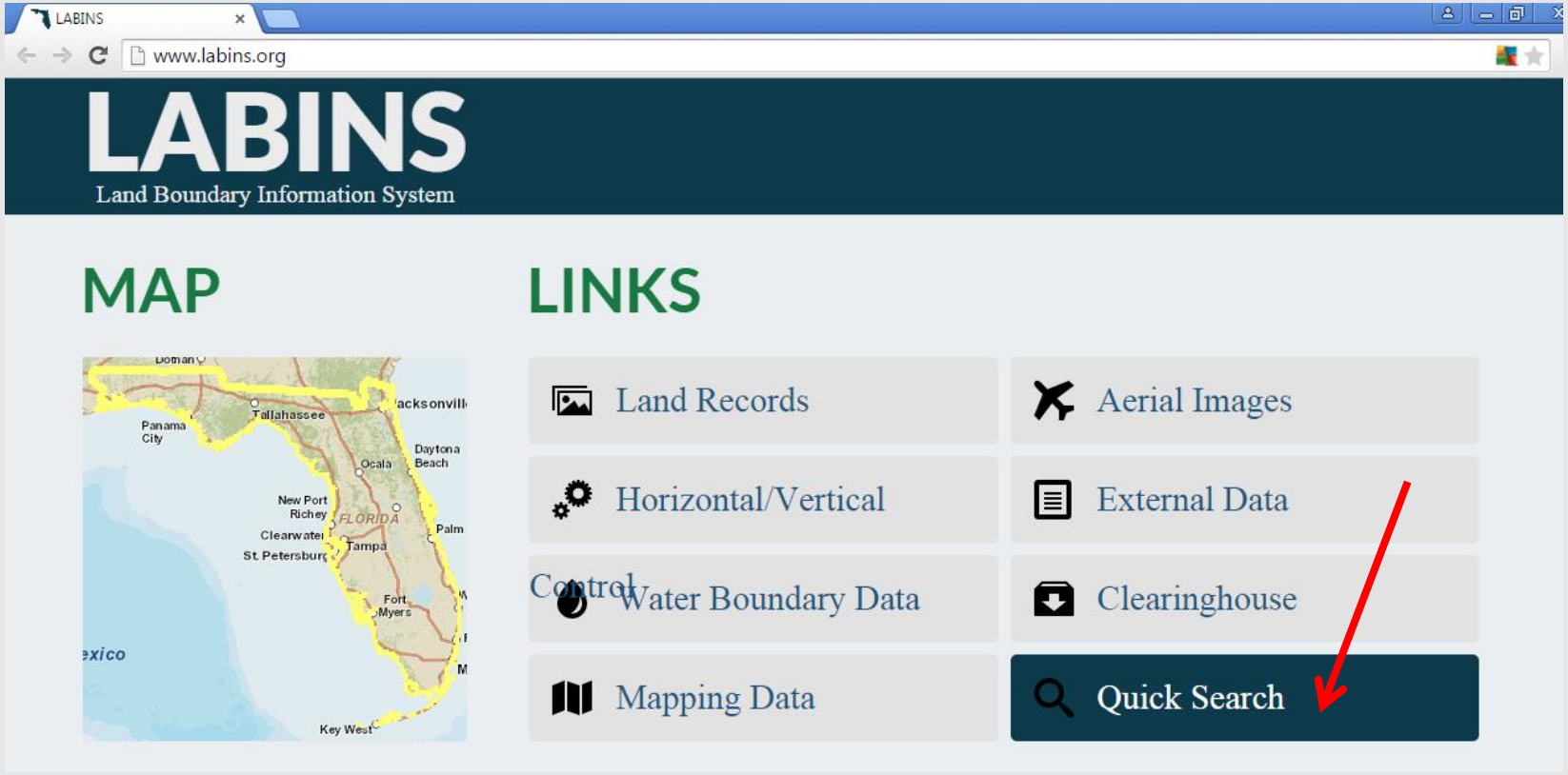


The USGS Quad name is displayed for the location you selected. Then download the required quads from the LABINS FTP Aerial site



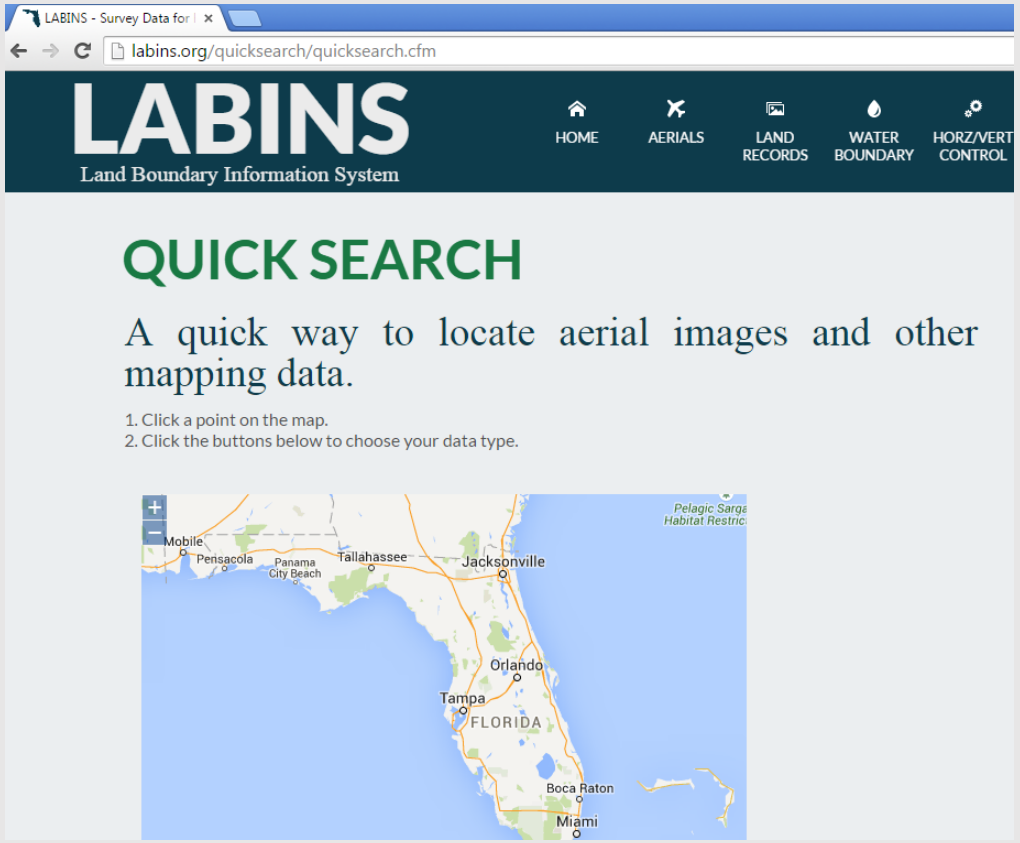
Using Aerial Data in Civil 3D and the FDOT State Tool Kit

Quick Search option, from the LABINS main menu select Quick Search

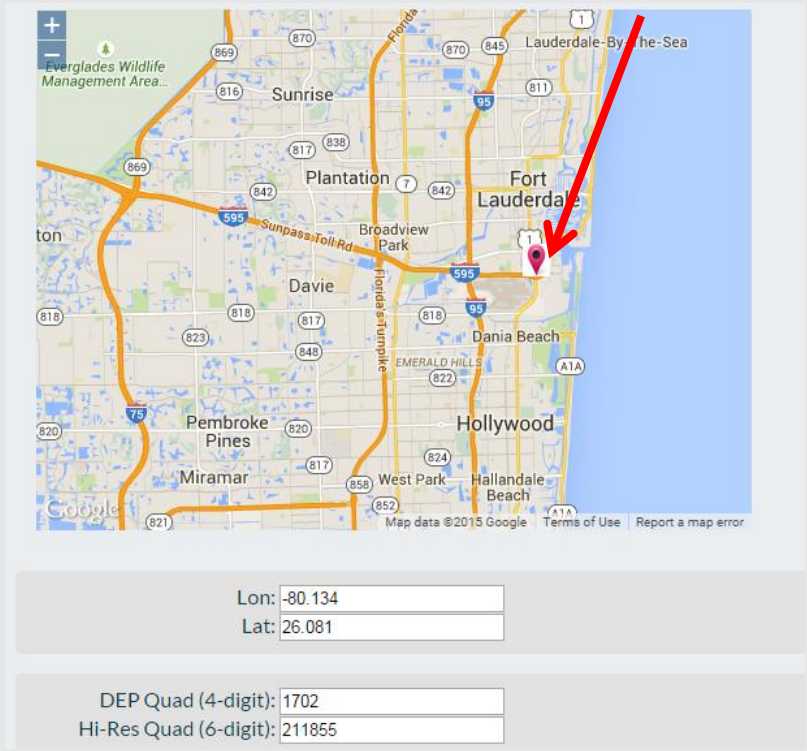


Using Aerial Data in Civil 3D and the FDOT State Tool Kit

Quick Search option, from the LABINS main menu select Quick Search



Zoom on the map to the desired location, then Click a point on the map



Using Aerial Data in Civil 3D and the FDOT State Tool Kit

Select the DOQQ (1995-2004) icon

Digital Orthographic Quarter-Quads

Instructions: Download ALL associated files if you plan to use these images in a GIS.

To download, RIGHT-click on the file name and choose "Save Target as ..." (or your browser's equivalent).
For large downloads, FTP software is recommended instead of a web browser.

Select the desired Quads from the listed links to download

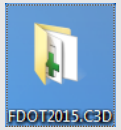
2004 - True Color
Flown: 2004 (find the exact date)
Projection: State Plane East
File Format: MrSid (in compressed .exe format)
Color: True Color
Resolution: 1-Meter
Datum: NAD 83
ftp://146.201.97.137/DOQQ2/2004/RGB/StatePlane_E/MrSid/g17/q1702ne.exe
ftp://146.201.97.137/DOQQ2/2004/RGB/StatePlane_E/MrSid/g17/q1702nw.exe
ftp://146.201.97.137/DOQQ2/2004/RGB/StatePlane_E/MrSid/g17/q1702se.exe
ftp://146.201.97.137/DOQQ2/2004/RGB/StatePlane_E/MrSid/g17/q1702sw.exe

Using Aerial Data in Civil 3D and the FDOT State Tool Kit

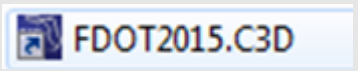
Now that we used have LABINS to locate and download the required quad images, let's turn our attention to Civil 3D to attach / display aerial data using various commands.

Step 1: Create a file in Civil 3D to attach / display aerials from different sources in a Existing Drainage project.

Open the **FDOT2015.C3D** folder on desktop

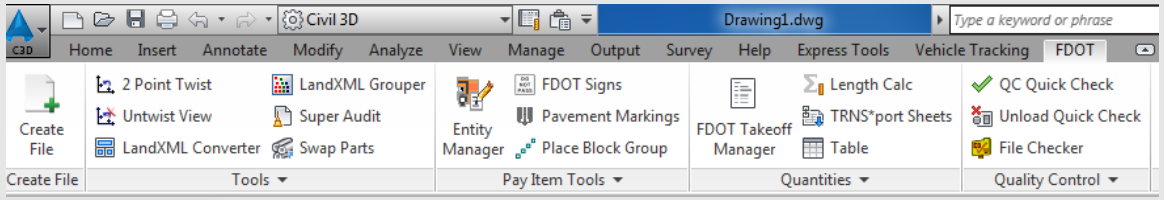


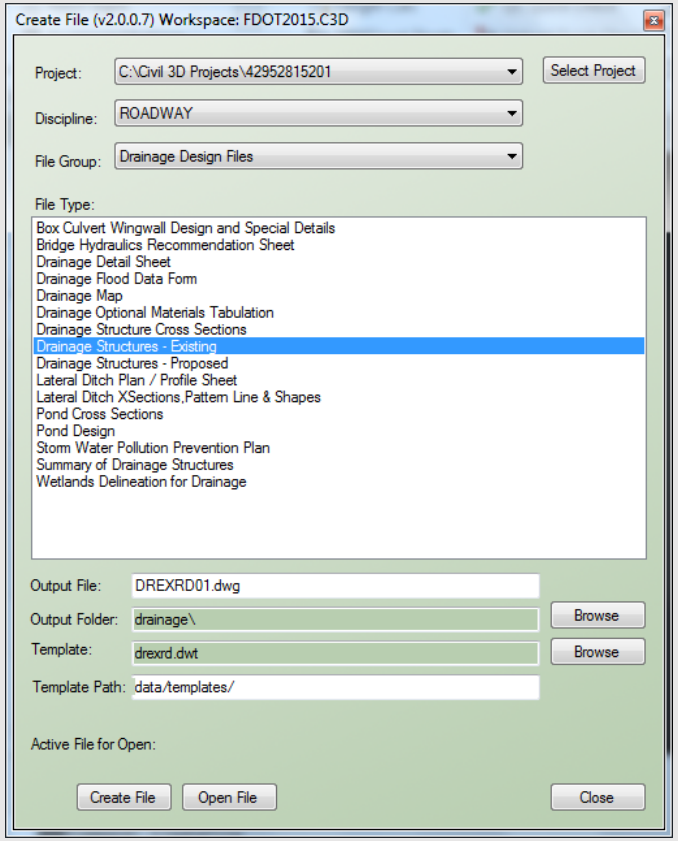
Start Civil 3D by selecting the **FDOT2015.C3D** shortcut.



Create the **DREXRD01.dwg** in the **C:\Civil 3D Projects\42952815201\drainage folder**

From the FDOT tab, Create File panel, select the Create File icon



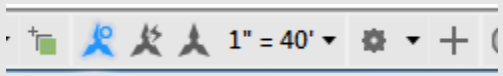


From the Create File dialog, set the project to 42952815201.
Set the Discipline to ROADWAY.
Set the File Group to Drainage Design Files.
For File Type select Drainage Structures Existing.

Select Create File, Open File, and then Close to continue

Using Aerial Data in Civil 3D and the FDOT State Tool Kit

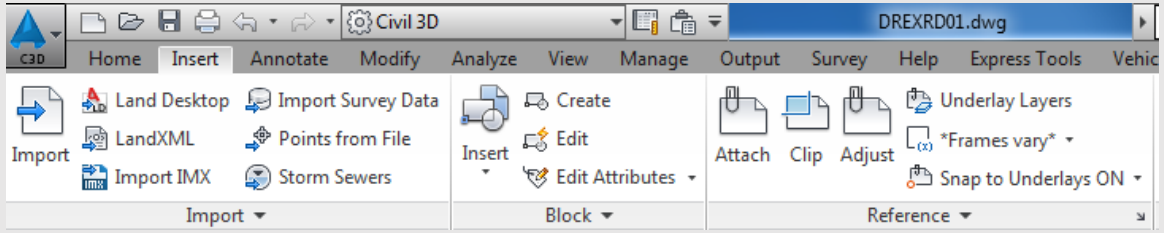
Set the **drawing scale** to **1=40’**

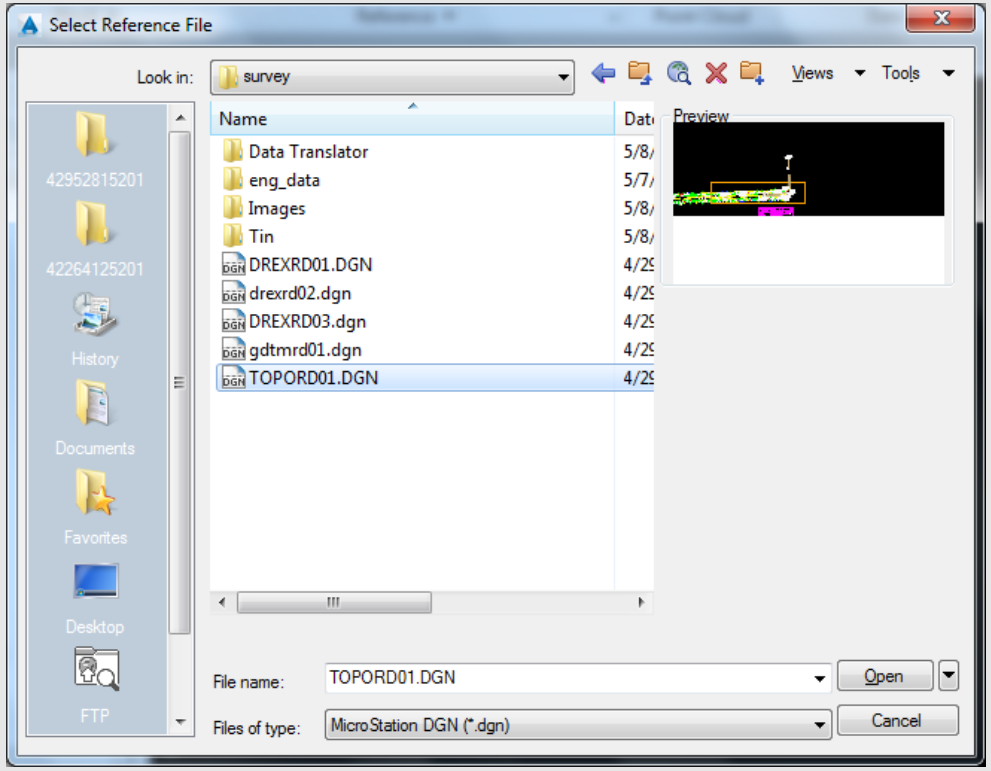


Set the drawing’s coordinates to **NAD83 Florida State Planes, East Zone**, by using the **SETFLEAST** command

Now that we have the **DREXRD01.dwg** file created, we need to attach as an Xref the Microstation TOPORD01.dgn as a reference.

From the **Insert tab**, **Reference** panel, select the **Attach** icon

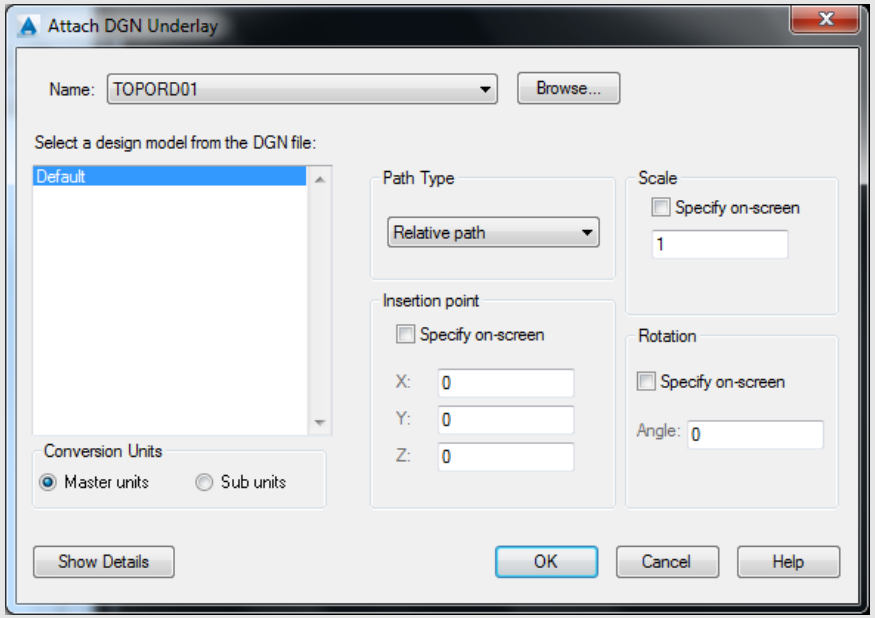




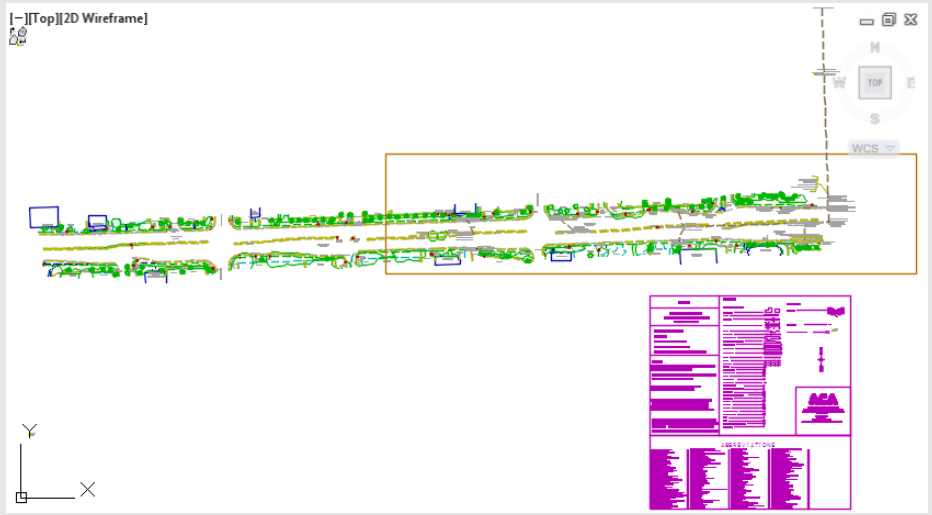
Navigate to the **C:\Civil 3D Projects\42952815201 \survey** folder, set **Files of type** to **Micro Station DGN**, select the **TOPORD01.dgn,** then select **Open**

Using Aerial Data in Civil 3D and the FDOT State Tool Kit

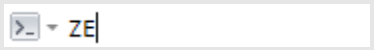
From the **Attach DGN Underlay** dialog, uncheck **Insertion point Scale**, select **OK** to continue



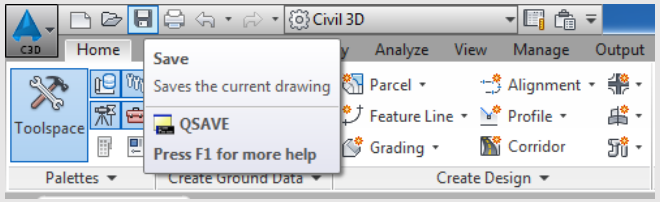
Results of **Xref** DGN attachment and **Zoom Extents**



Execute a **Zoom Extents**



From the **Quick Access toolbar,** select **Save** to save the **DREXRD01.dwg** file



Using Aerial Data in Civil 3D and the FDOT State Tool Kit

About the Online Map Data:

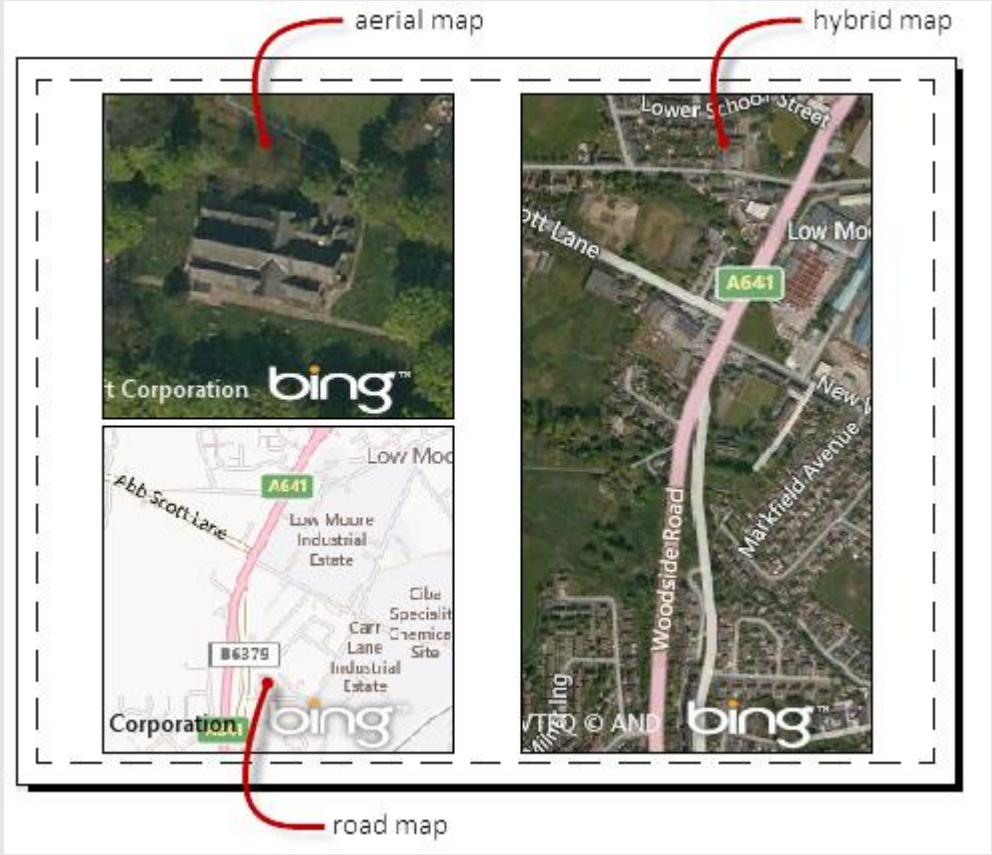
If your drawing contains geographic location information, and you are signed in to Autodesk 360, you can display a map from an online maps service in the current viewport. The online map is a temporary graphic that is dynamically supplied by the online maps service. It displays behind all other drawing objects in the viewport and covers the extent of the GIS coordinate system assigned to the drawing file.

Since the online map is a temporary graphic, you cannot plot the online map, and cannot be displayed if you are not signed in to Autodesk 360. Another drawback of the online map is that it usually covers a large area; much larger than the scope of a typical CAD project. If you need to plot a map, or display the map when you are offline, you can "capture" the area you are interested in, to an object known as a map image. The map image embeds itself to the drawing area on top of the online map and is saved with the drawing. Unlike the online map, the map image is not a temporary graphic, and hence you can plot it. It is available even if you are not signed in to Autodesk 360.

Using Aerial Data in Civil 3D and the FDOT State Tool Kit

Map Styles

You can display the map as a satellite image (aerial style map) or as a vector image (road style map). You can also display the map as a hybrid of the aerial and road styles. If the drawing area is divided into multiple viewports, each viewport can have a different style of map.



Using Aerial Data in Civil 3D and the FDOT State Tool Kit

Use of Map in Dialog Boxes

The online map also displays in the Geographic Location dialog box. It gives you the ability to pick a reference point to use as the geographic marker. If you want to limit the amount of data downloaded to your computer, you can choose not use live map data. When you do so, the system does not connect to the maps service and the maps behave as though you are not connected to the Internet.

Using Aerial Data in Civil 3D and the FDOT State Tool Kit

Now let's move on to attaching / displaying aerial data in the DREXRD01.dwg file. We are going first use the GEOMAP command in Civil 3D to display aerial data from Microsoft maps

What does the GEOMAP command do?

GEOMAP (Command)

Displays a map from an online maps service, in the current viewport.

 Find  Find  Find  Find

The map is available only if you are signed in to Autodesk 360 and if the drawing file contains geographic location information.

Note: When you display a map for the first time in a drawing session, this command displays a task dialog box to verify if you want to use live map data. If you choose No, maps do not display for that drawing session. If you select the Remember this choice option, the task dialog box does not display again. To display the dialog box again, in the Options dialog box (OPTIONS command), in the System tab, change the Hidden Messages settings.

The following prompts are displayed.

 **Aerial**

Displays the map in the current viewport using satellite images.

 **Road**

Displays the map in the current viewport using vector images.

 **Hybrid**

Displays the map in the current viewport overlaying satellite images over vector images and highlighting roads.

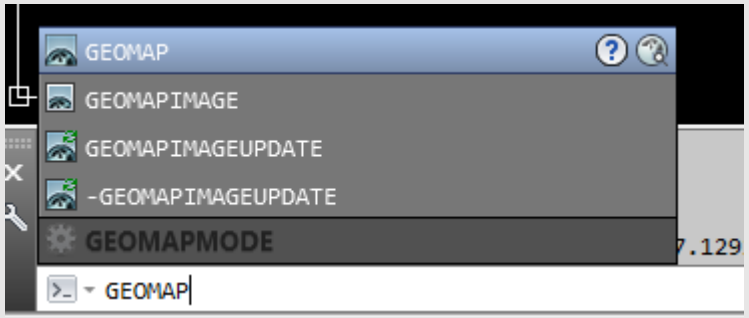
 **None**

Turns off the map.

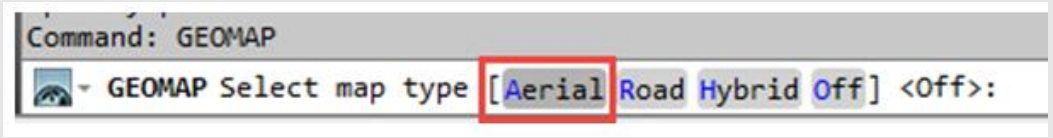
Using Aerial Data in Civil 3D and the FDOT State Tool Kit

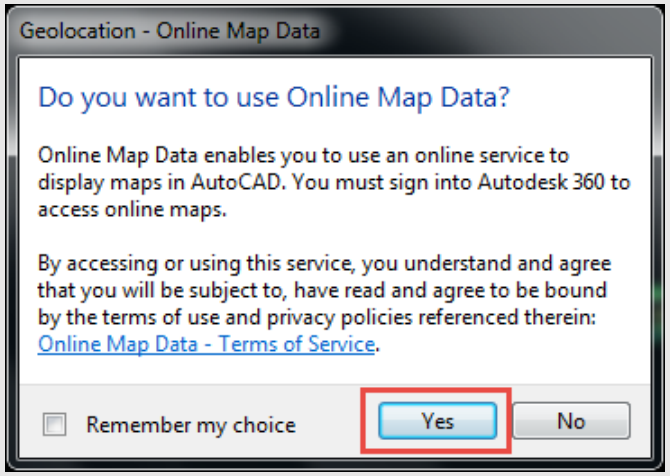
Step 2: GEOMAP

From the **command line** enter **GEOMAP**



Select the **Aerial** option

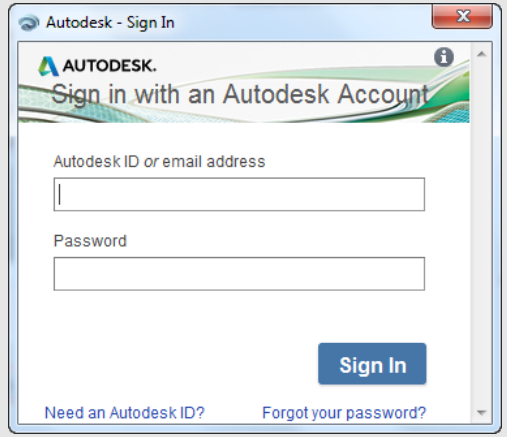




From the **Geolocation - Online Map Data** dialog, You will be prompted "**Do you want to use Online Map Data"** To do so you must login to **Autodesk 360** to access online maps.

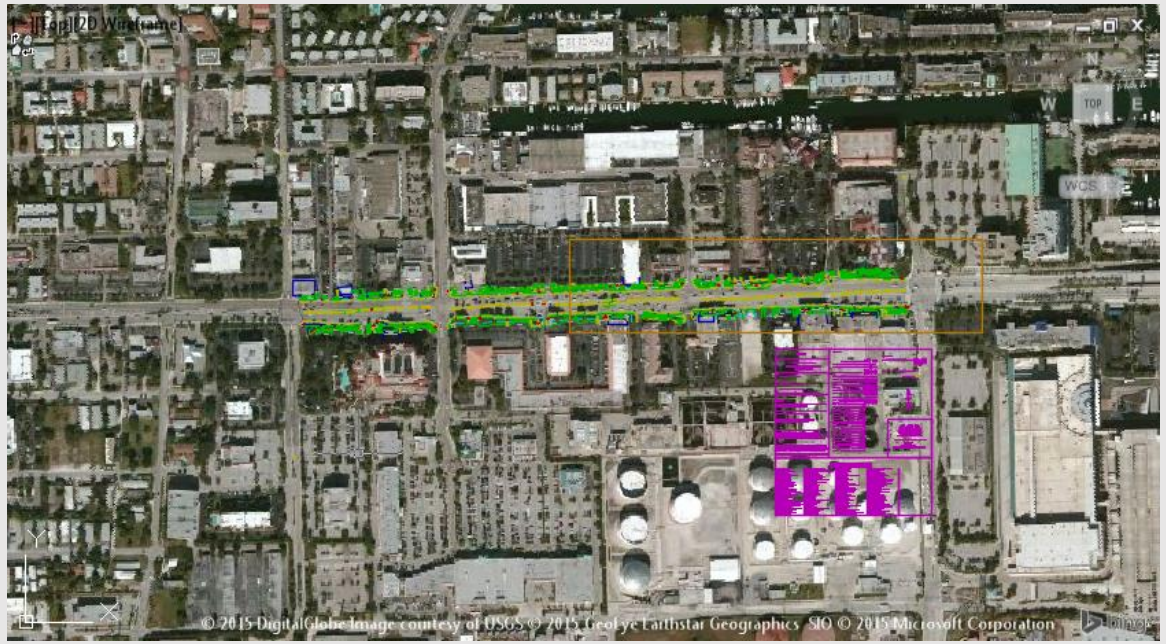
Select **Yes** to continue

Enter your **Autodesk ID** and **Password**, then select **Sign In** to continue



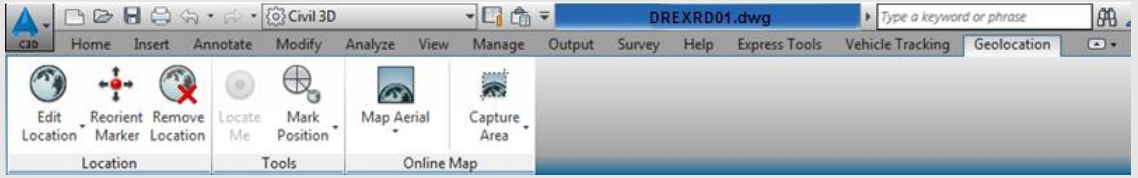
Using Aerial Data in Civil 3D and the FDOT State Tool Kit

Results of the **GEOMAP** command

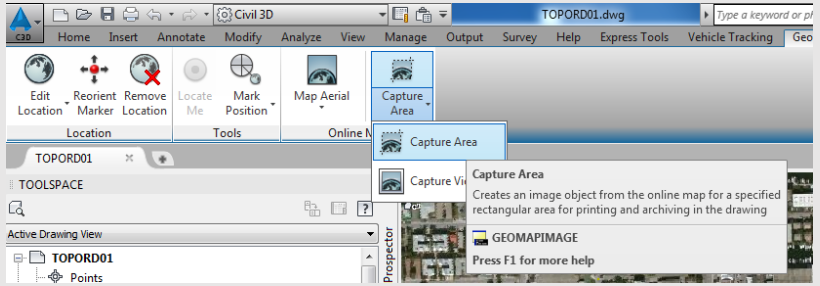


The attached **GEOMAP** will resize as you zoom in or out to fit the drawing editor.

The current **GEOMAP** can be captured as separate image using the **Capture Area** tools from the **Geolocation** tab, **Online Map** panel

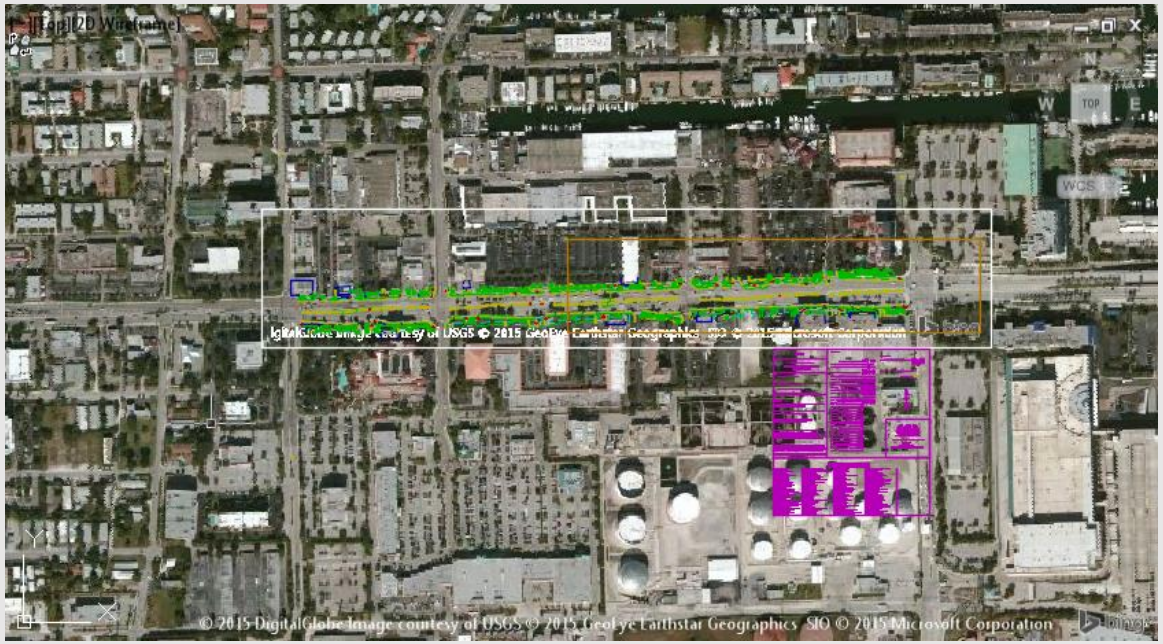


From the **Geolocation** tab, **Online Map** panel, select the **Capture Area** icon



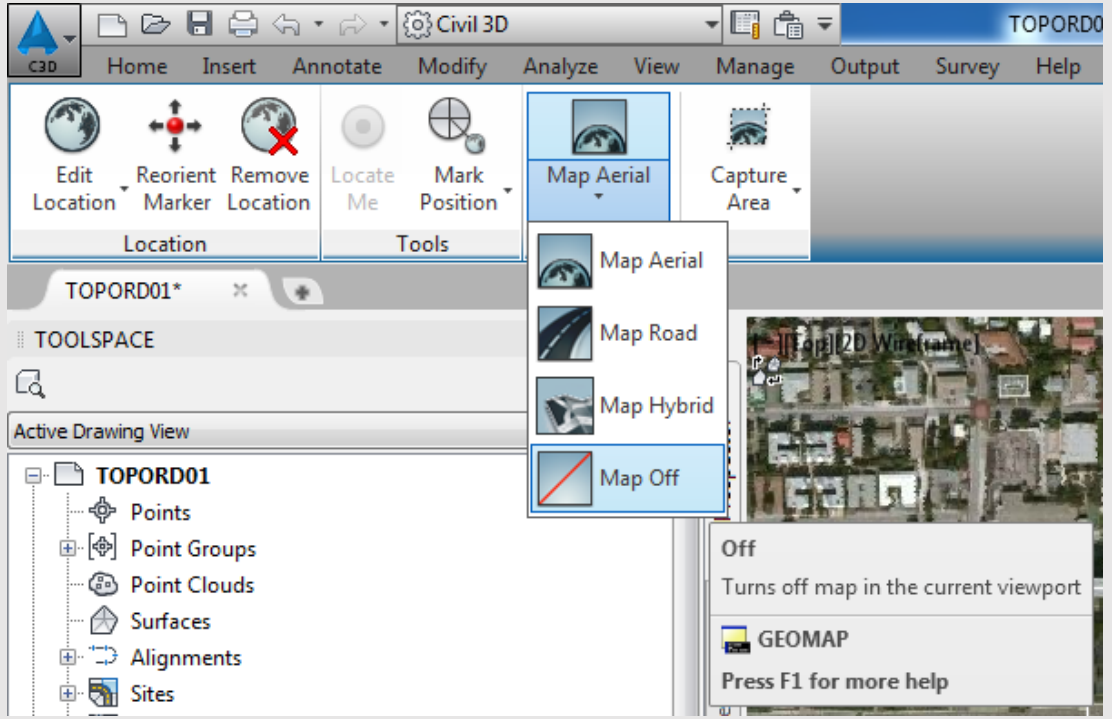
Using Aerial Data in Civil 3D and the FDOT State Tool Kit

Select two points to define the area to be captured.



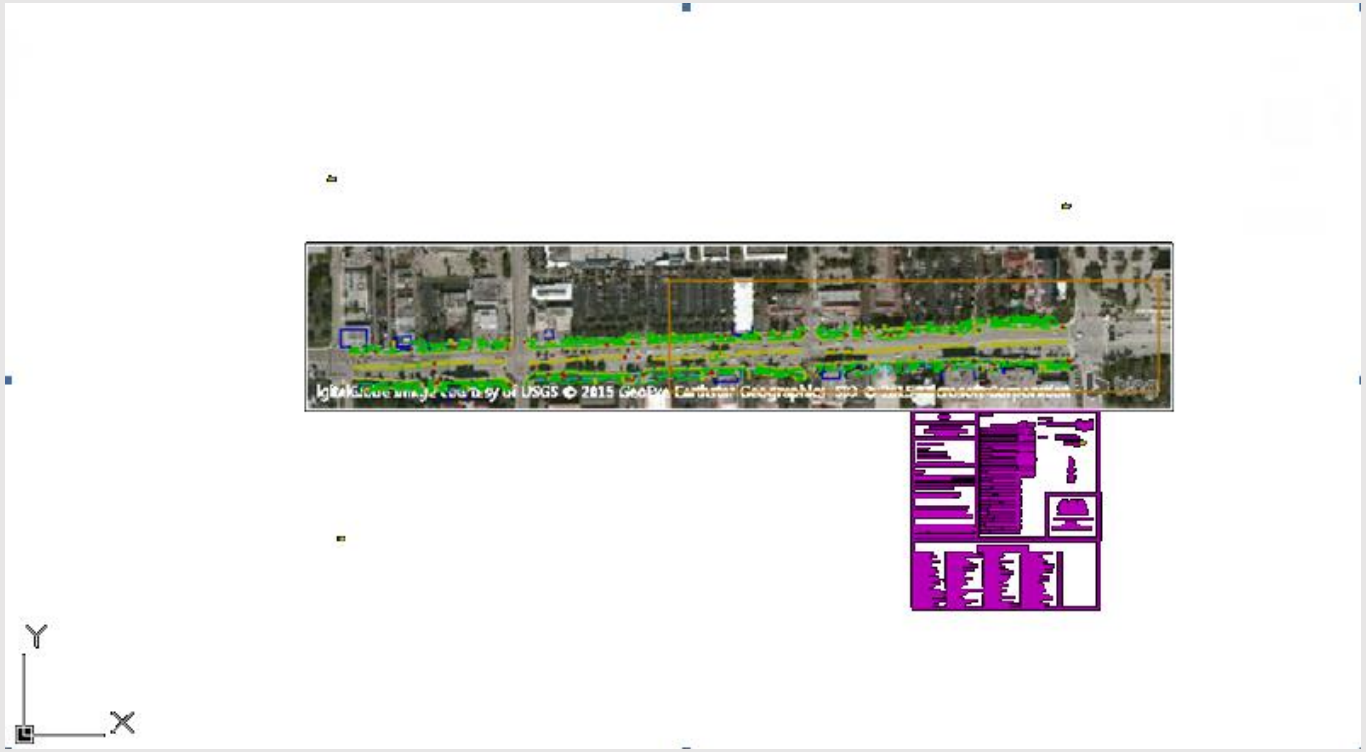
To display the area just captured you must turn off the display of the GEOMAP.

From the **Geolocation** tab, **Online Map** panel, select the **Map Aerial** icon, then select the **Map Off** icon

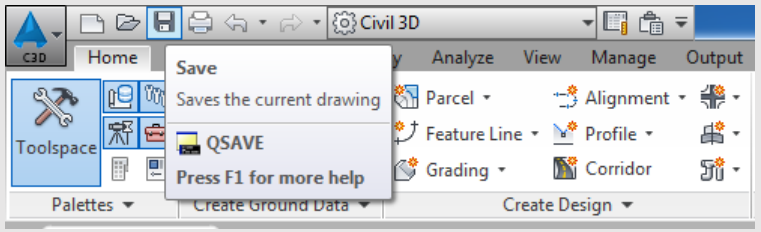


Using Aerial Data in Civil 3D and the FDOT State Tool Kit

Results of the **Capture Area** image



From the **Quick Access toolbar,** select **Save** to save the **DREXRD01.dwg** file

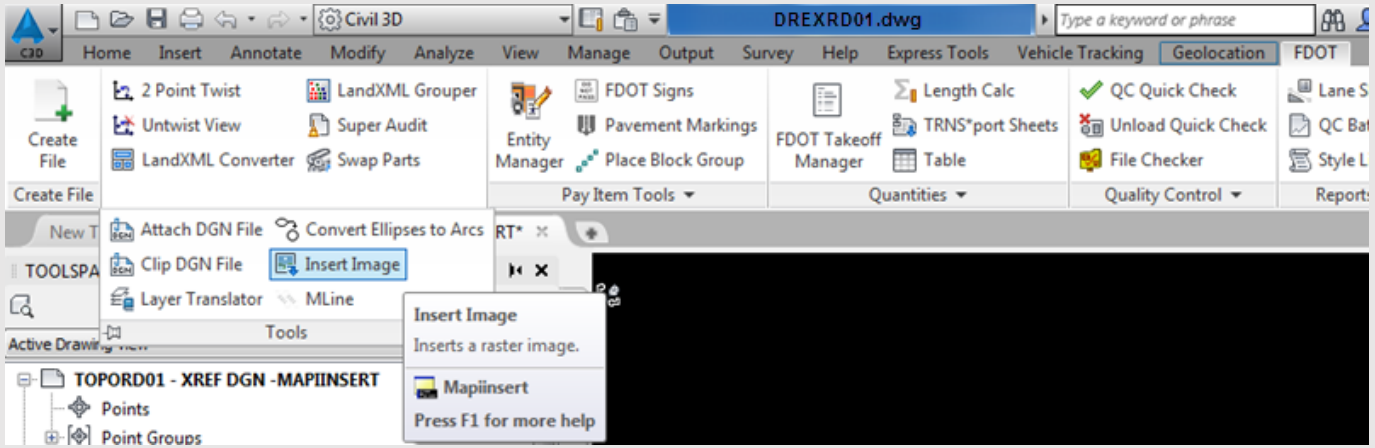


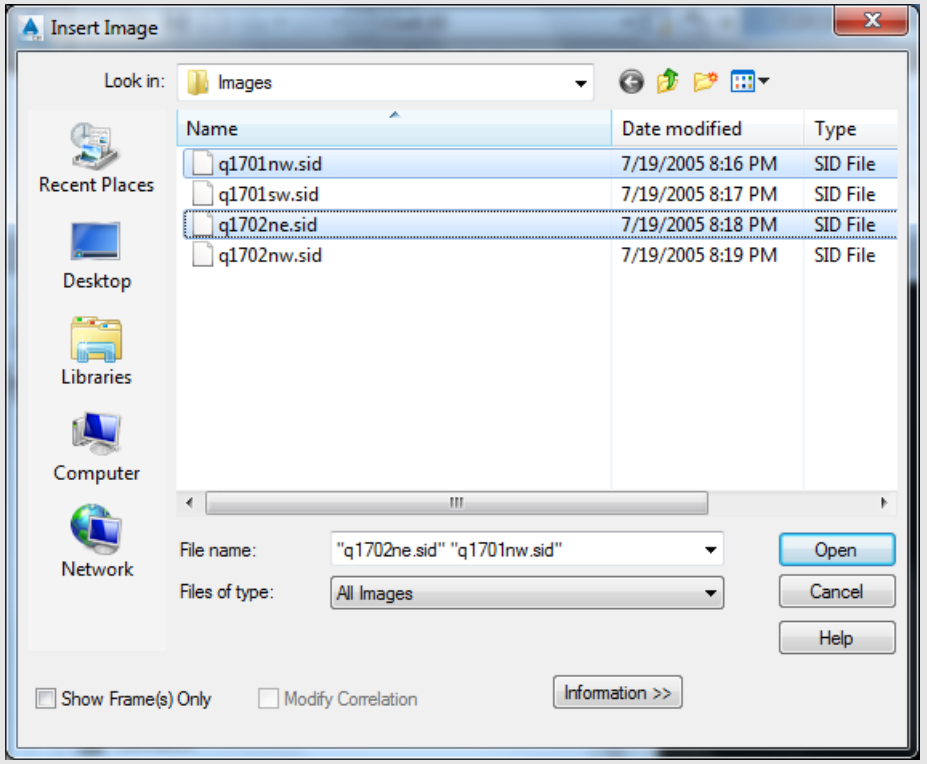
Using Aerial Data in Civil 3D and the FDOT State Tool Kit

Now that we used have LABINS to locate and download the required quad images, let's turn our attention to attaching these aerial images to the DREXRD01.dwg file in Civil 3D.

Step 3: Mapiinsert:

From the FDOT tab, Tools Panel, expand the panel by selecting the arrow, Select the Insert Image icon

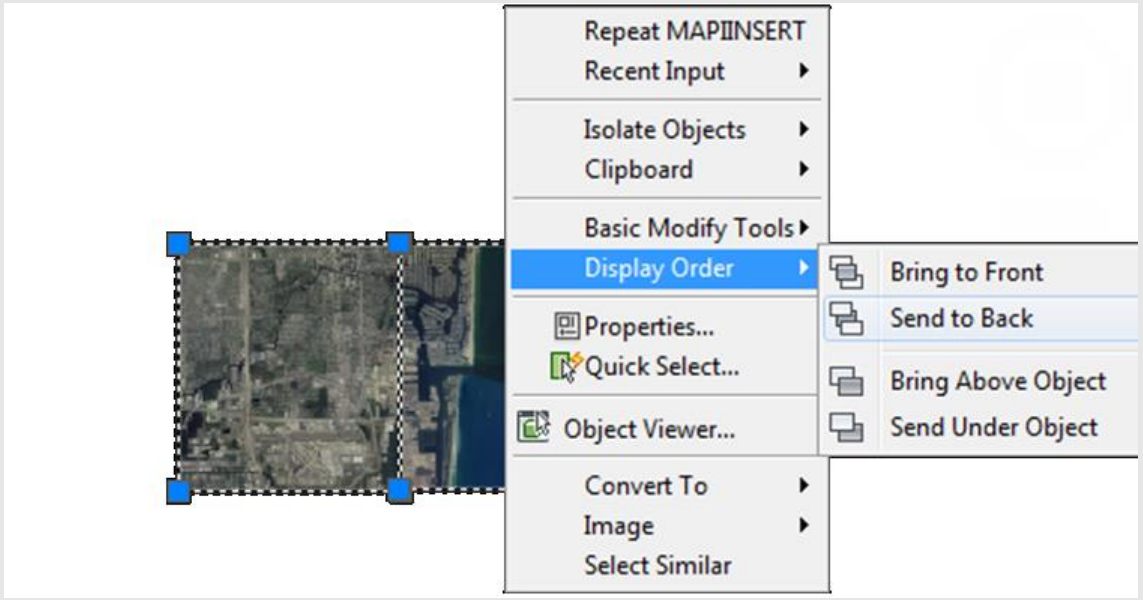




Navigate to the **C:\Civil 3D Projects\42952815201\survey\misc\images** folder, **select all the SID images** by **selecting** the **first SID image** listed then by **holding down the Shift key select** the **last SID image** listed. **Select Open** to continue and load the selected SID images

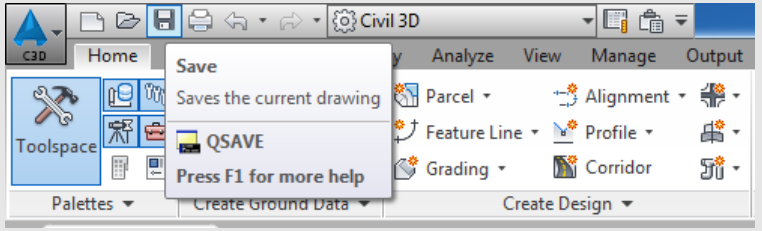
Using Aerial Data in Civil 3D and the FDOT State Tool Kit

Now that the required SID quad images have been inserted, select the images, right click select Display order, and then select Send to back

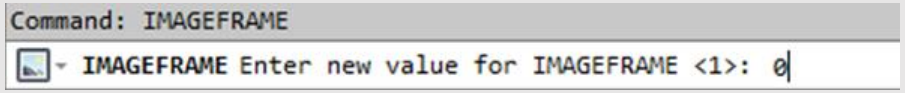


Review the results

From the **Quick Access toolbar,** select **Save** to save the **DREXRD01.dwg** file



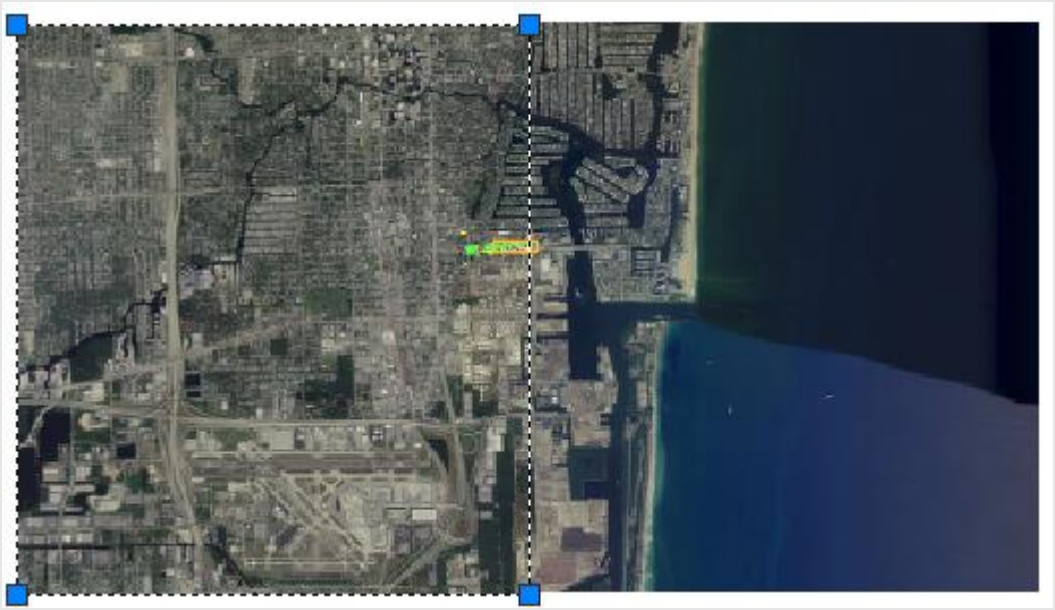
Type **Imageframe** on the **command line**, **set** the **value to 0** to turn off the image's frames.



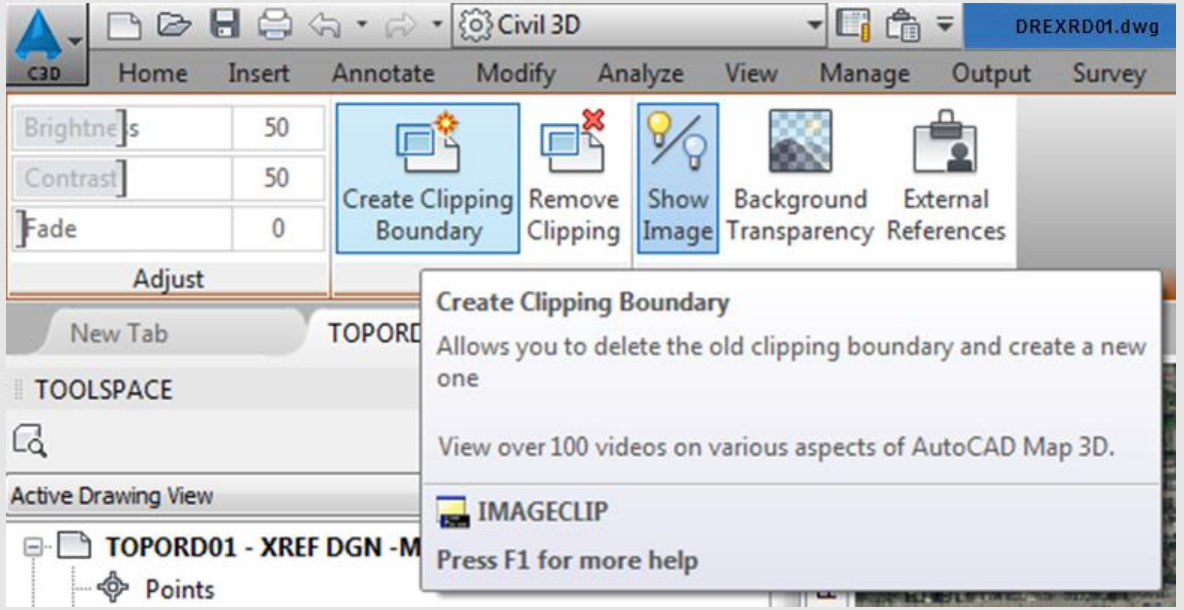
Using Aerial Data in Civil 3D and the FDOT State Tool Kit

The attached images display more area than is required. The images need to be clipped to display less area.

Select the left image



From the image tab, Clipping panel, select Create Clipping Boundary

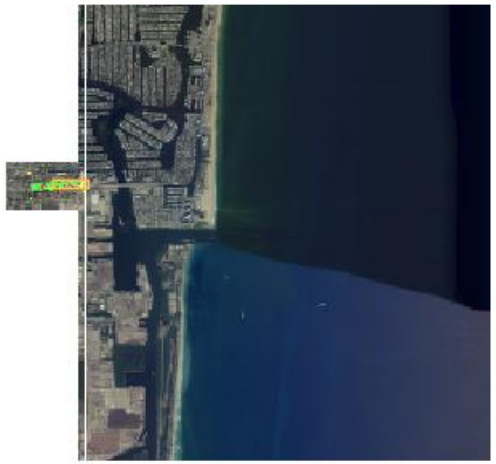


Using Aerial Data in Civil 3D and the FDOT State Tool Kit

From command line, select Rectangular

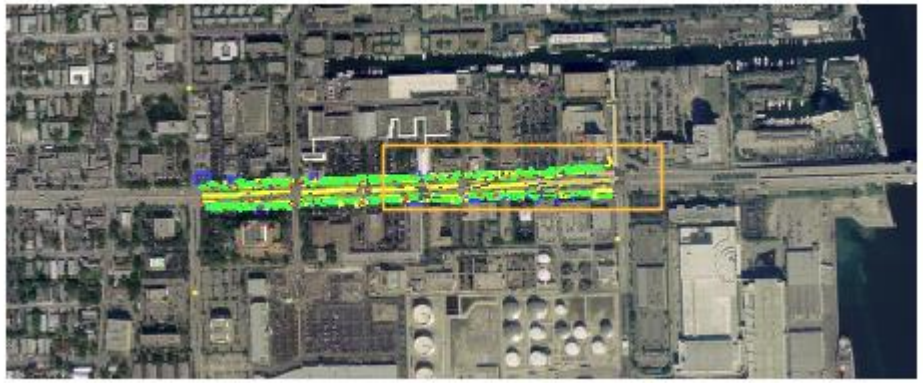
```
Command: _imageclip
Enter image clipping option [ON/OFF/Delete/New boundary] <New>: _N
Outside mode - Objects outside boundary will be hidden.
Specify clipping boundary or select invert option:
IMAGECLIP [Select polyline Polygonal Rectangular Invert clip] <Rectangular>:
```

```
Specify first corner point: Specify opposite corner point:
```

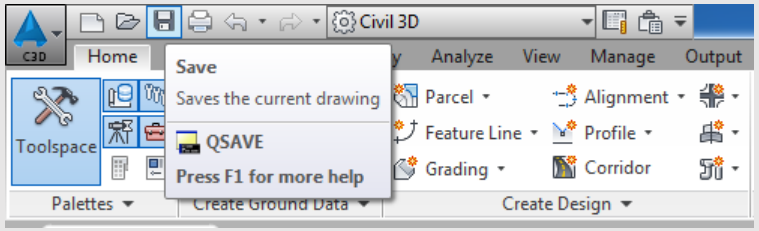


Repeat the process for the image attached on the right

Review the results



From the **Quick Access toolbar,** select **Save** to save the **DREXRD01.dwg** file



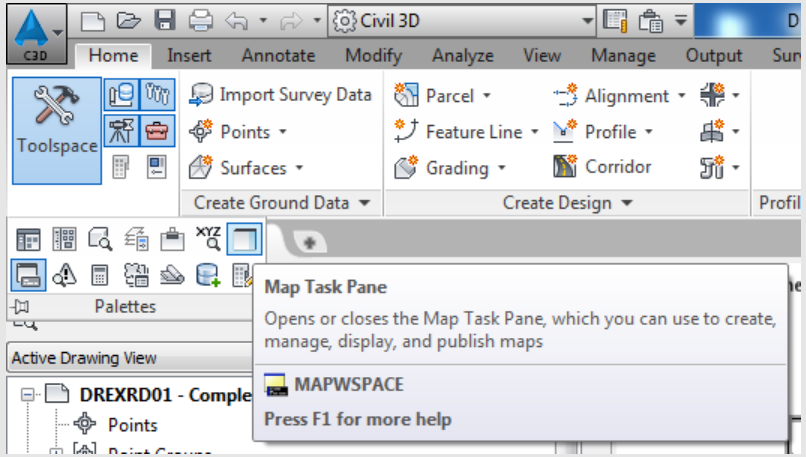
Using Aerial Data in Civil 3D and the FDOT State Tool Kit

Now that we used Mapiinsert command to attached the required SID quad images, let's look at another way to attached images.

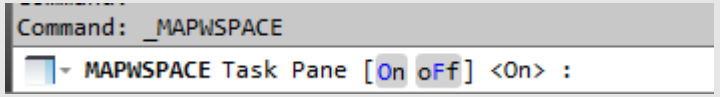
Step 4: Data Connect

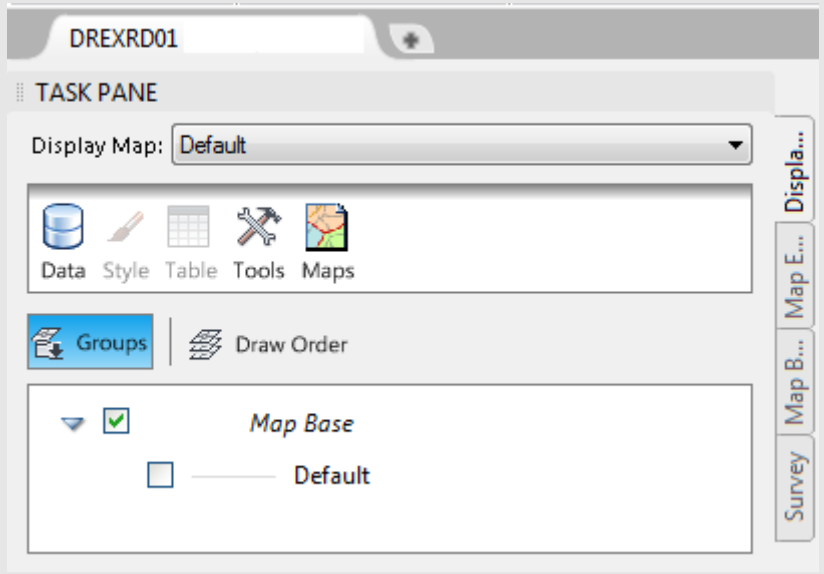
By using Data Connect a feature of Map 3D which is a part of Civil 3D, we can connect to various types of data.

To access Data Connect we must first load the Map Workspace. From the ribbon select the Home tab, Palettes Panel , expand the Palettes panel by selecting the **down arrow**, **select** the **Map Task Pane icon**



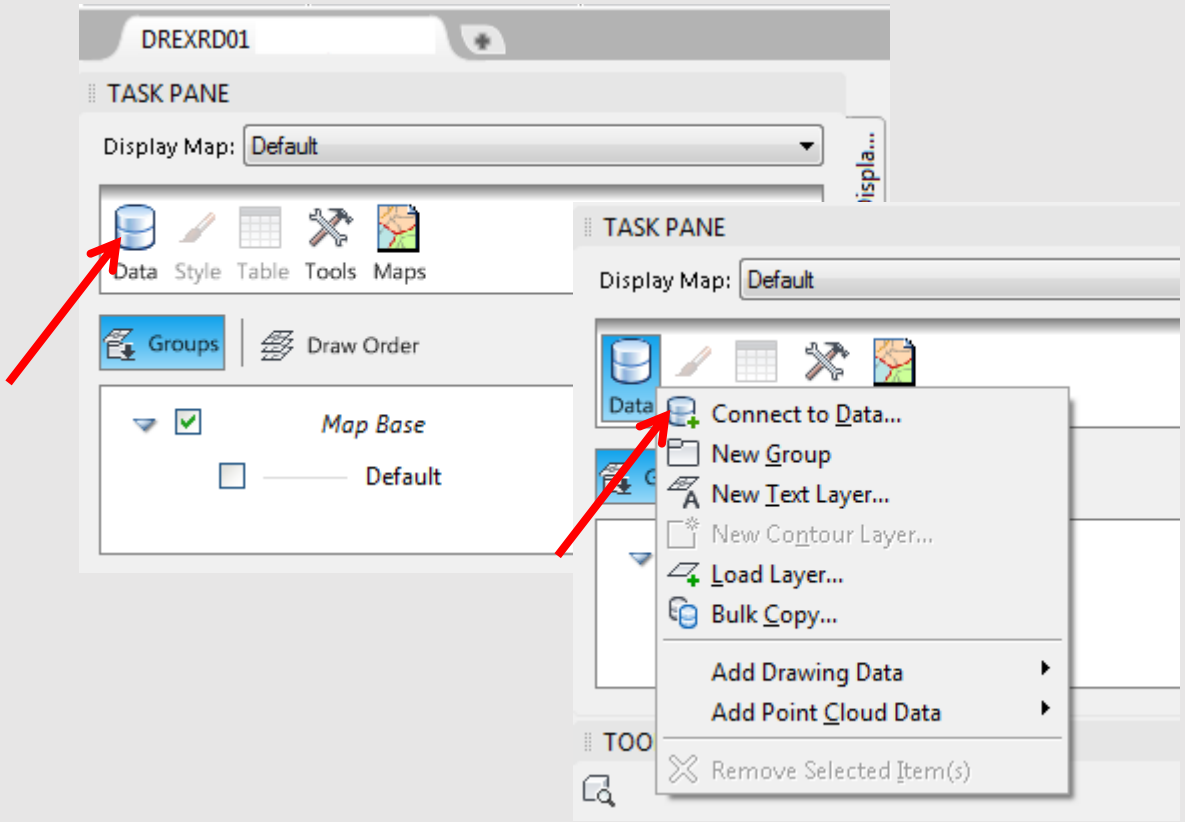
From the Command Line use the **On** option which then loads the Map Task Pane.



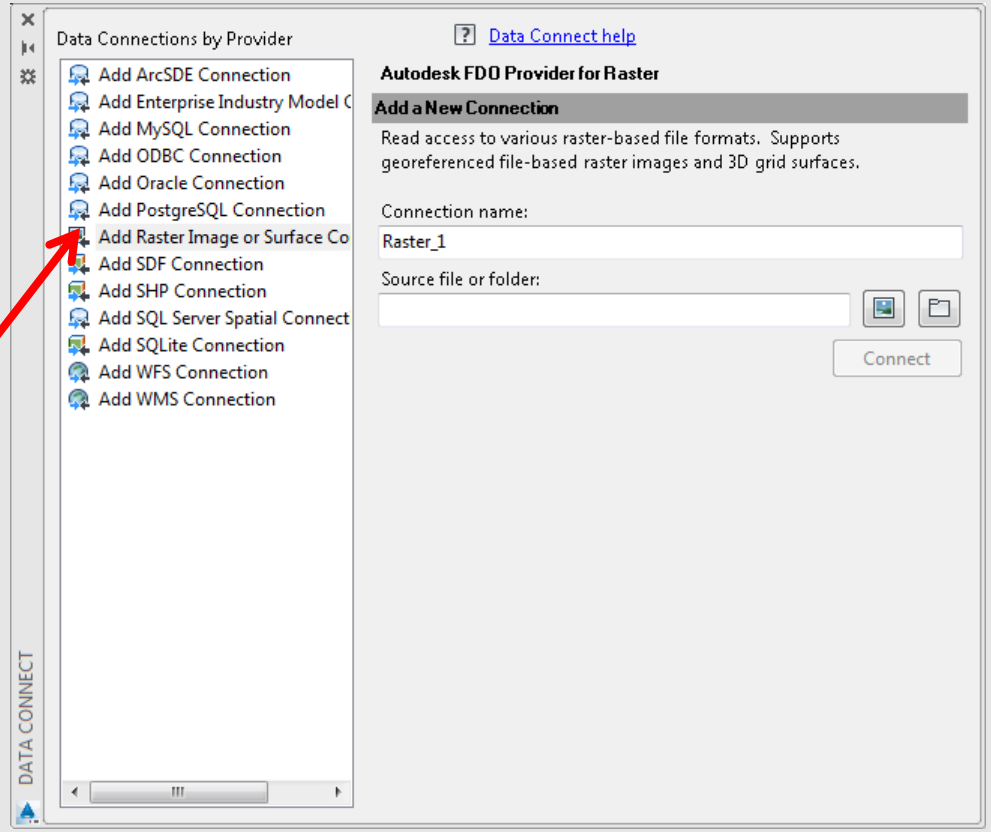


Using Aerial Data in Civil 3D and the FDOT State Tool Kit

From the **Map Task Pane**, Display Manager tab, **select** the **Data** icon, then select **Connect to Data** to open up the **Data Connect** tool palette

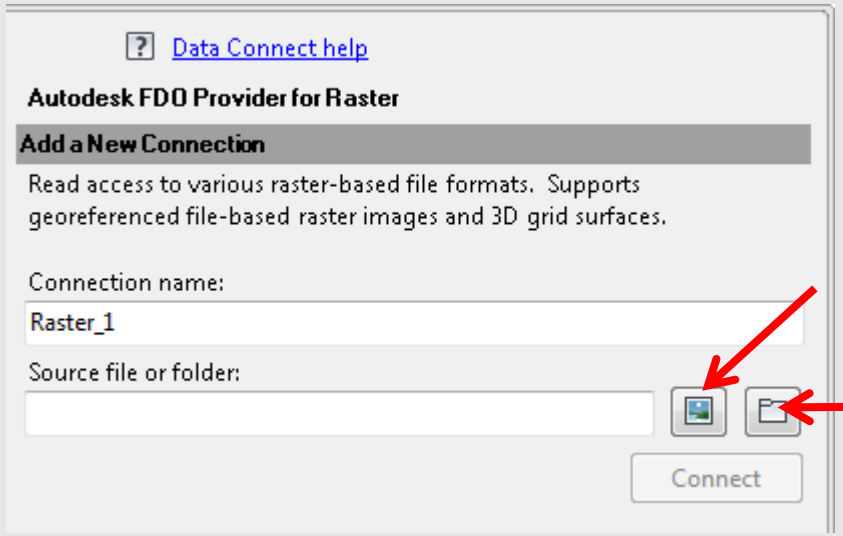


In the **Data Connection by Provider** panel, select **Add Raster or Surface Connection**



Using Aerial Data in Civil 3D and the FDOT State Tool Kit

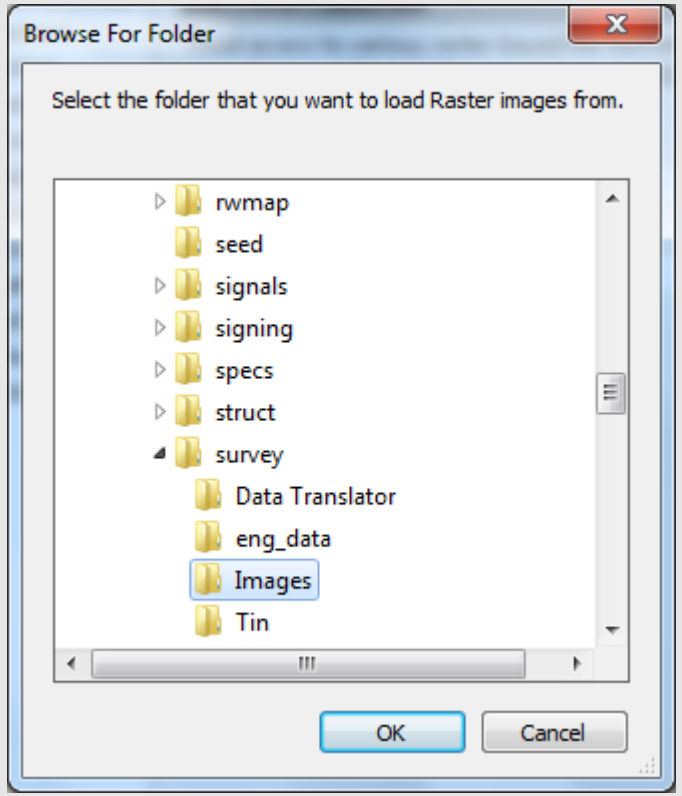
From the **Add a New Connection Pane,** select the **Folder** icon



Select Files icon

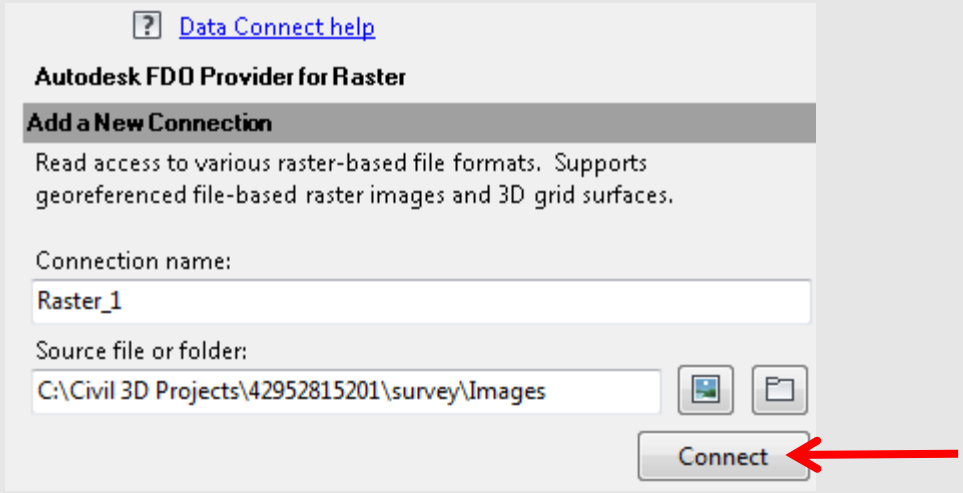
Select Folder icon

Navigate to **C:\Civil 3D Projects\42952815201\survey\misc, select the Images folder, then select the OK button**

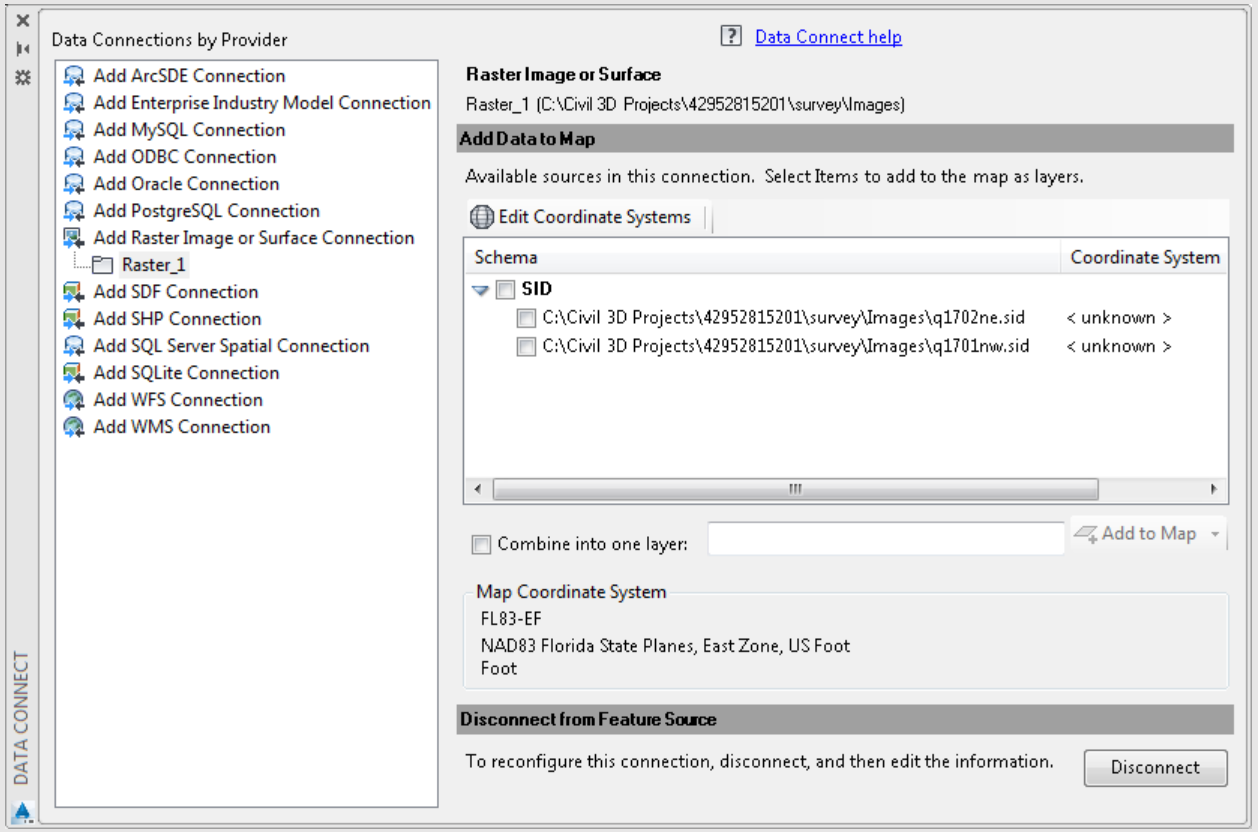


Using Aerial Data in Civil 3D and the FDOT State Tool Kit

From the Add a New Connection pane, select Connect



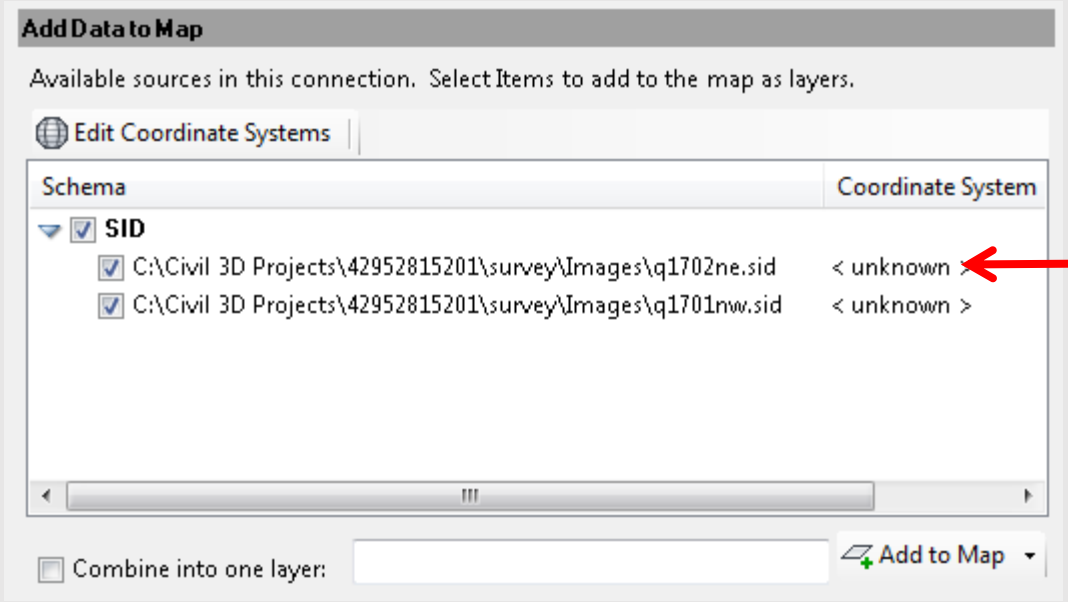
Review the options in the Add Data to Map pane



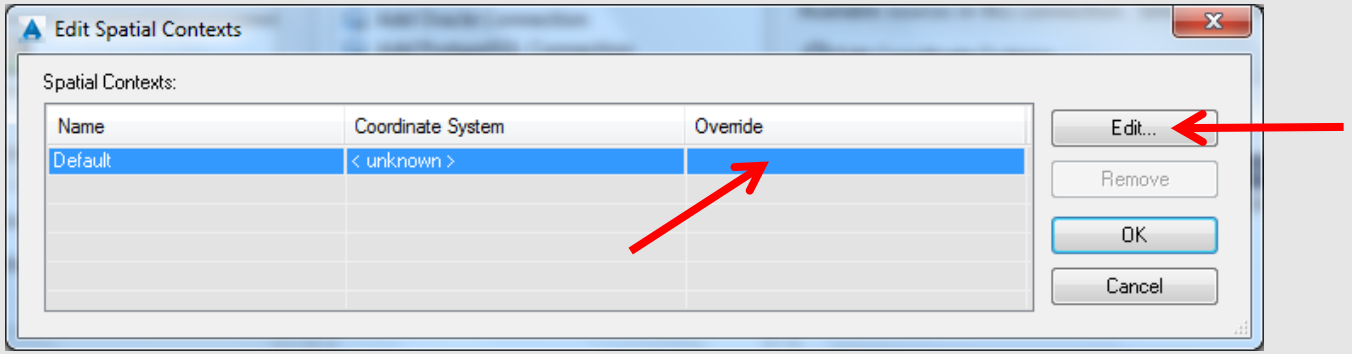
Using Aerial Data in Civil 3D and the FDOT State Tool Kit

From the Add a Add Data to Map pane, under the Schema column select the box next to SID

Currently the Coordinate System for the selected SID images is unknown. Under the Coordinate System column, select <unknown>

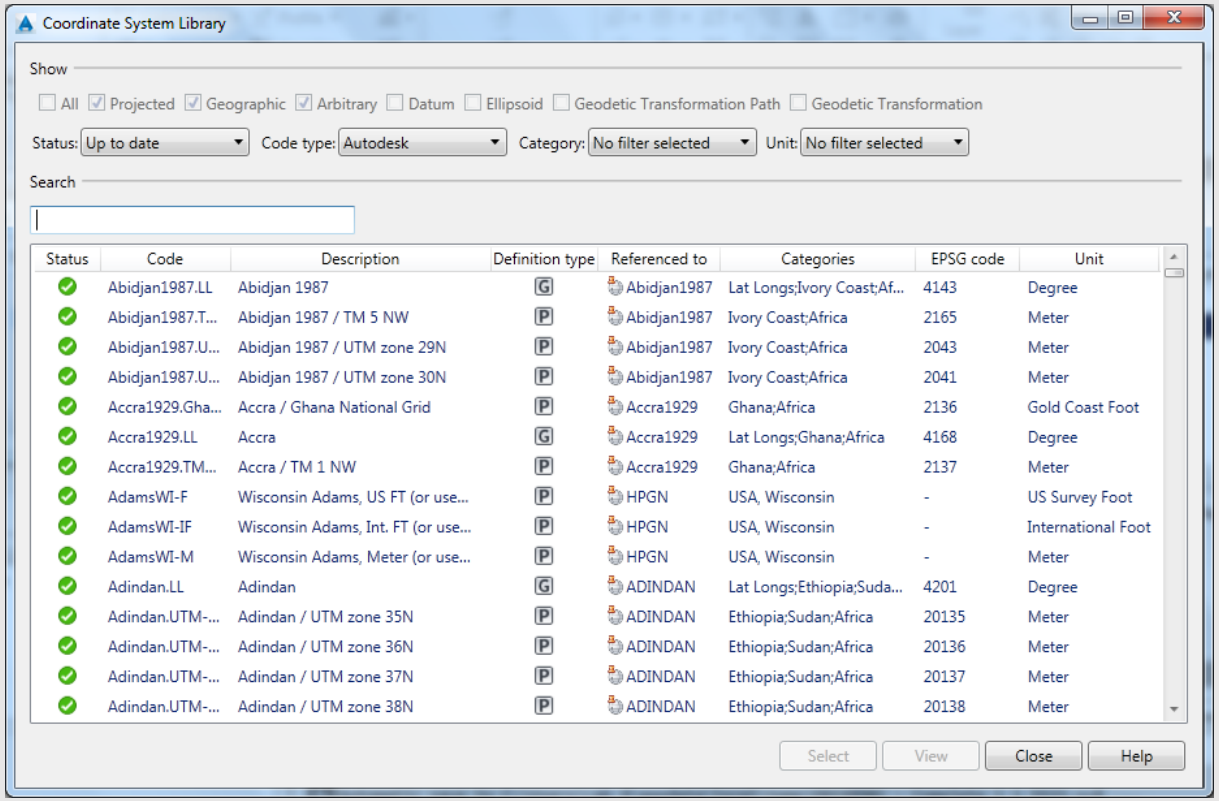


From the Edit Spatial Contexts dialog, under the Override column double-click t on the blank line or select the Edit button

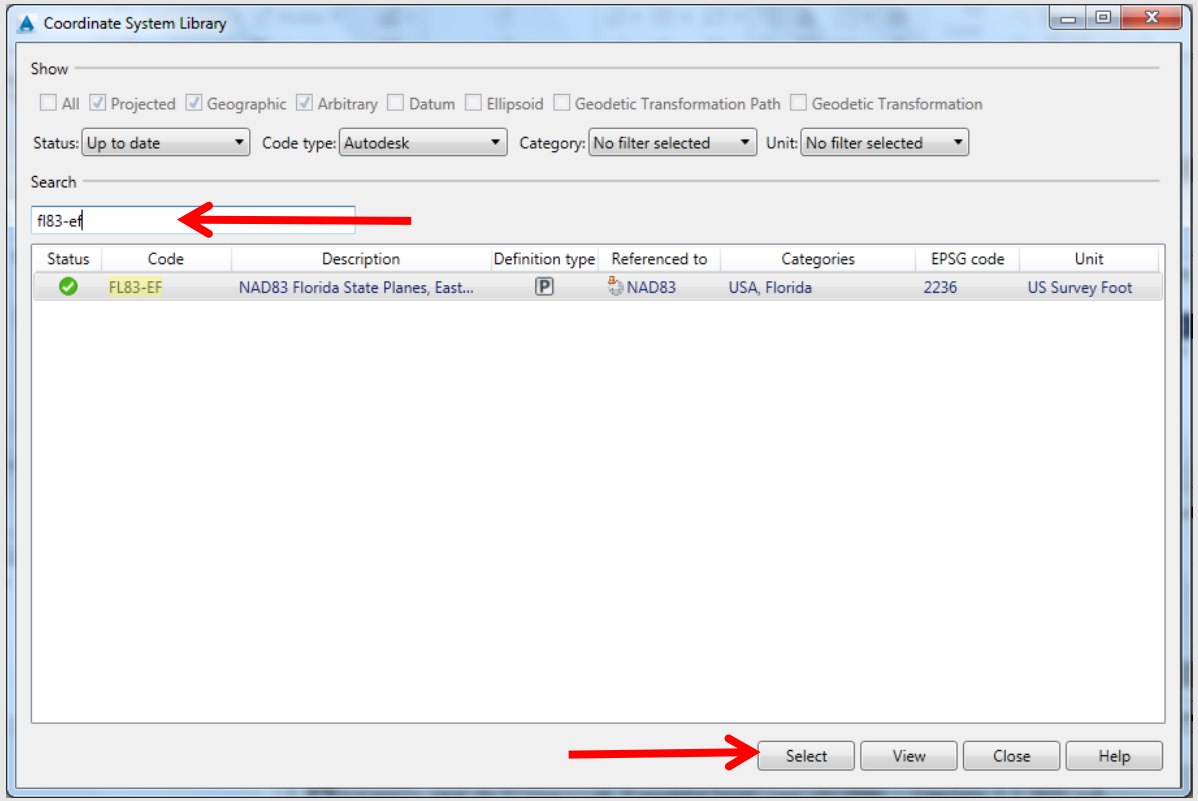


Using Aerial Data in Civil 3D and the FDOT State Tool Kit

From the Coordinate System Library dialog, Search pane, enter FL83-EF to select the NAD83 Florida State Planes East Foot Coordinate System

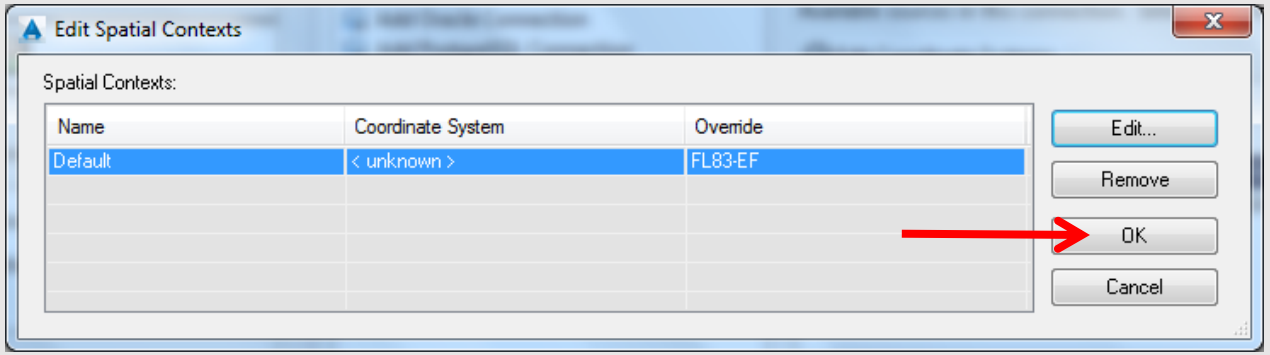


Then select the Select button



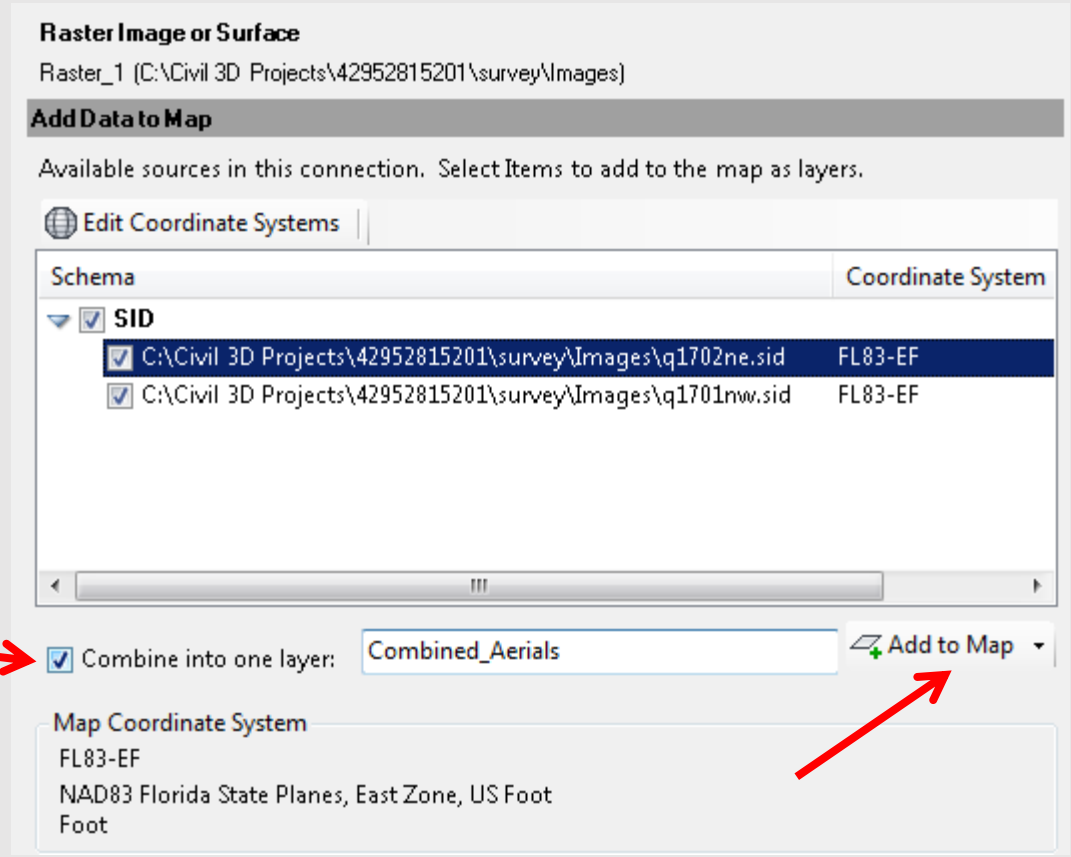
Using Aerial Data in Civil 3D and the FDOT State Tool Kit

Select the OK button



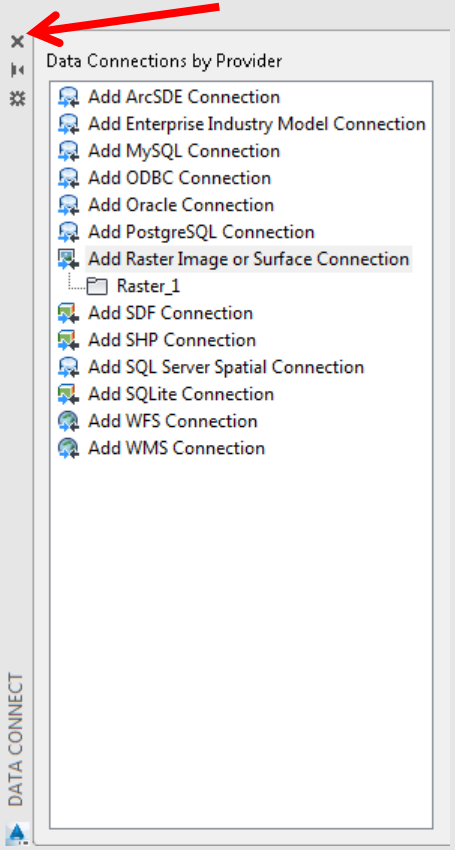
From the Add Data to Map pane, select the box next to Combine into one layer, use Combined_Aerials for layer name.

From the Add Data to Map pane, select Add to Map

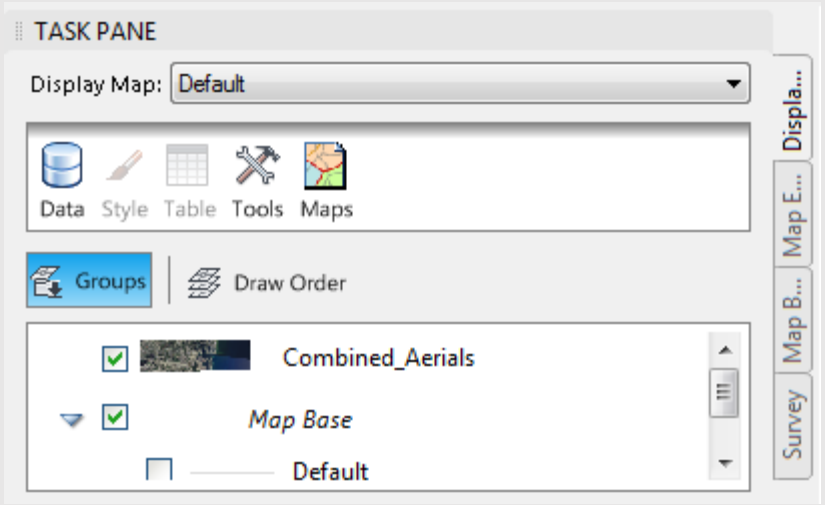


Using Aerial Data in Civil 3D and the FDOT State Tool Kit

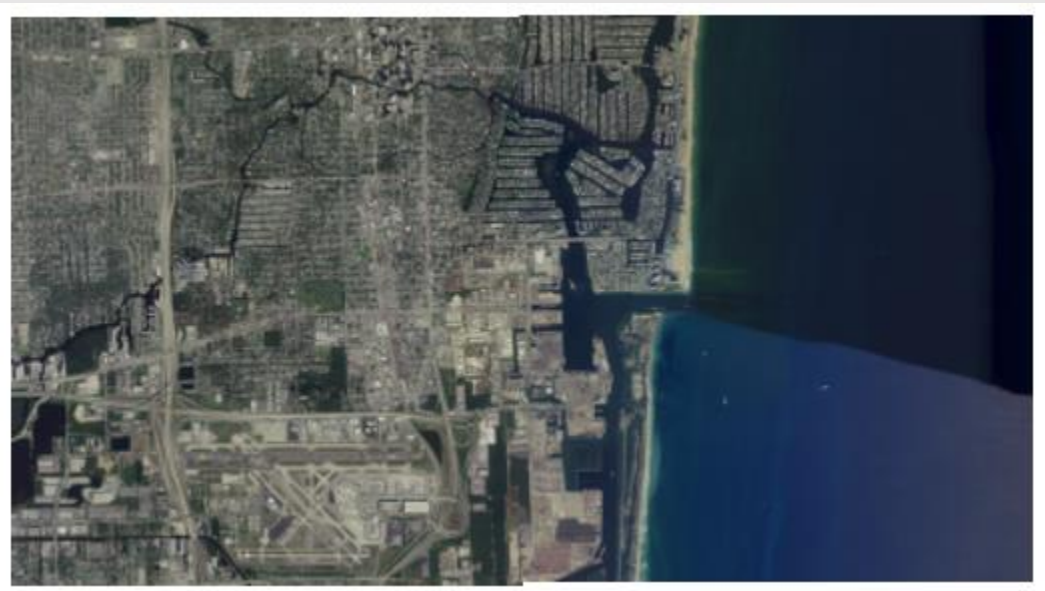
Close the Data Connect palette by selecting the X in the top corner



The layer Combined_Aerials has been added the layer list in the Display Manager tab in the Task Pane

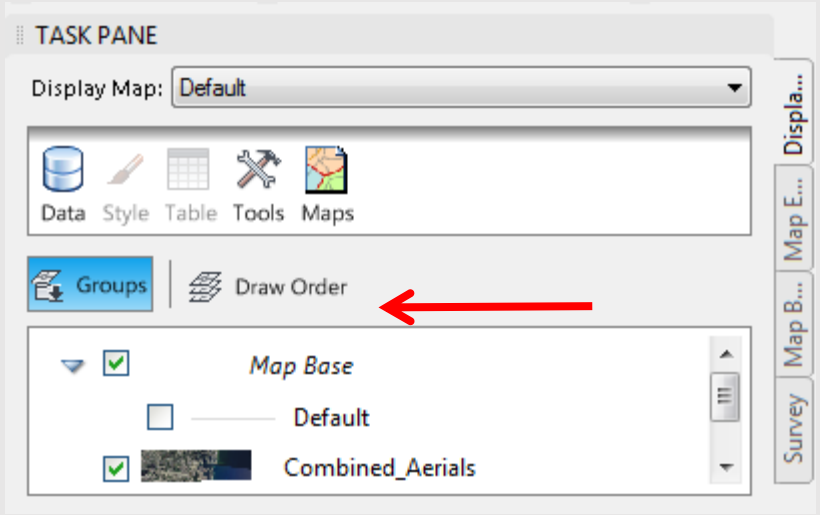


Review the displayed image in the drawing editor

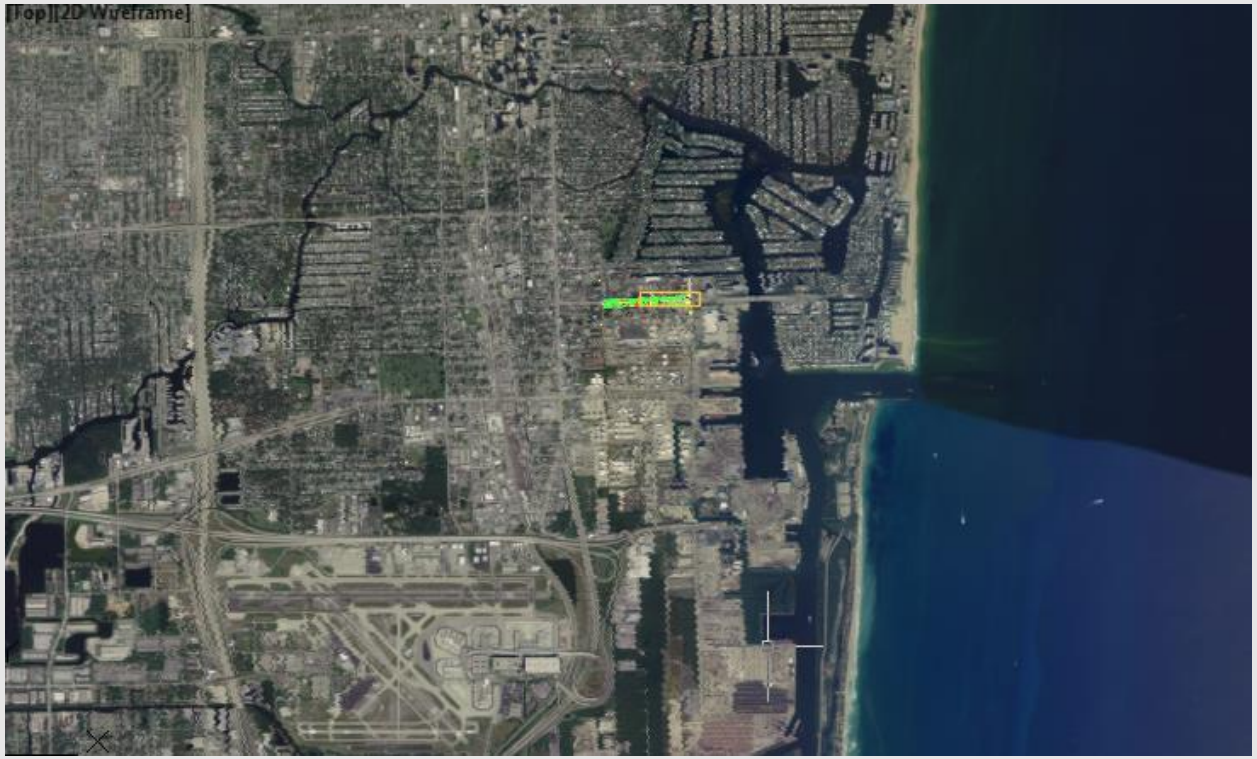


Using Aerial Data in Civil 3D and the FDOT State Tool Kit

To change the display order of the layers in the Display Manager tab, select the Map Base layer and drag and drop it above the Combined_Aerials layer



Review the result in the drawing editor

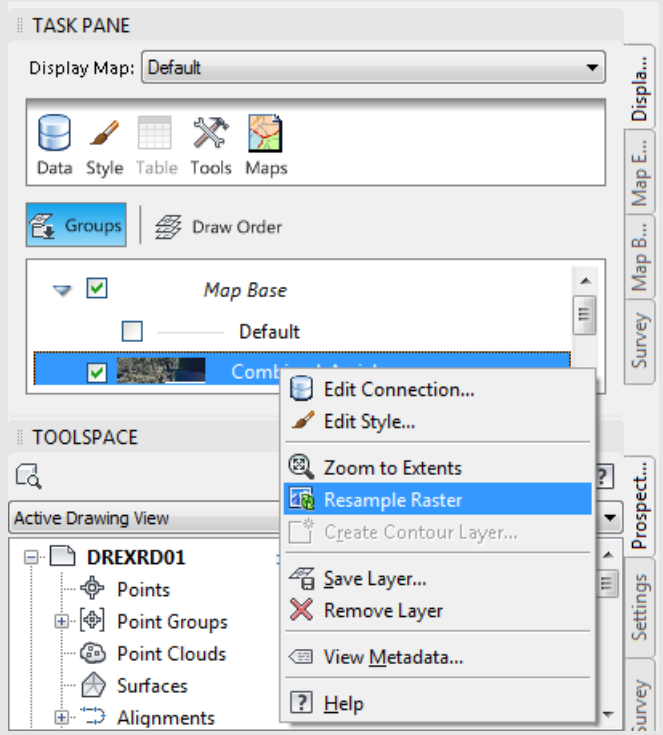


Using Aerial Data in Civil 3D and the FDOT State Tool Kit

To change how much is displayed of the Combined_Aerials layer in the drawing editor:

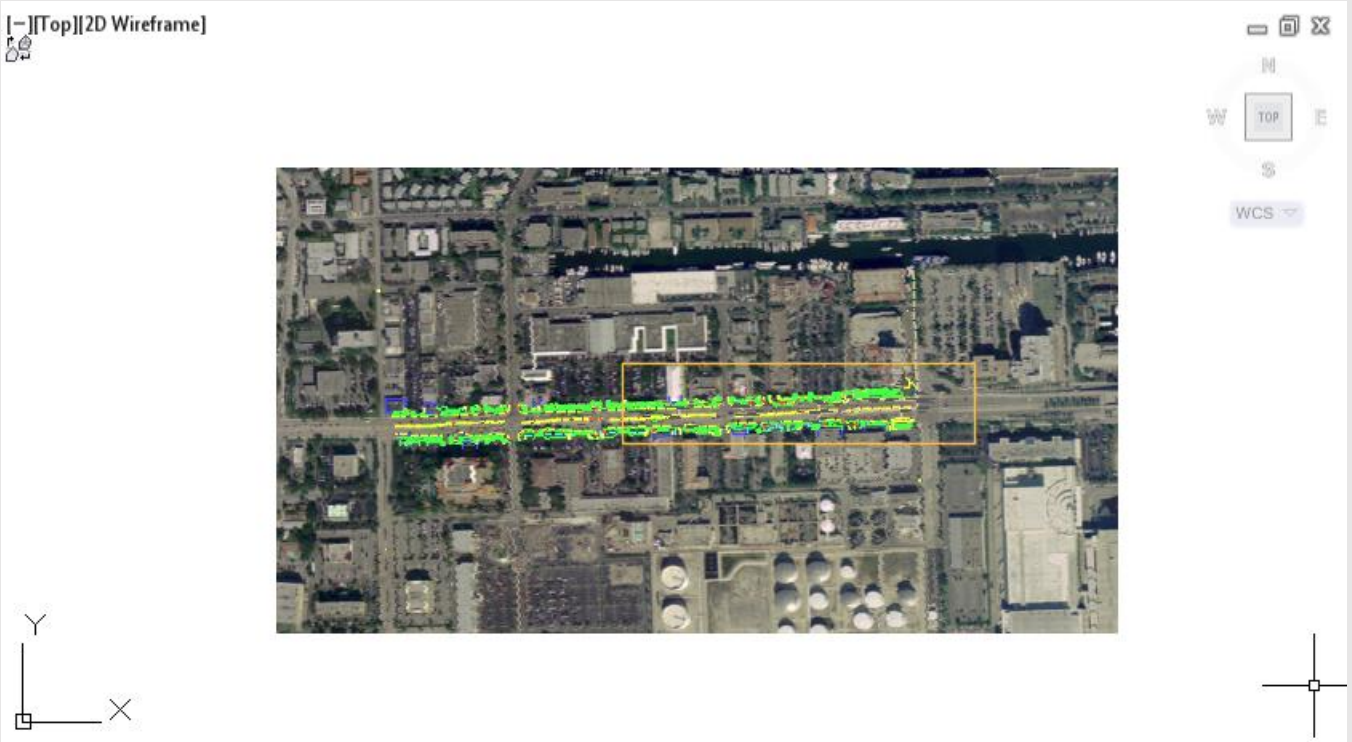
In the drawing editor zoom in until the area of interest is displayed

From the Task pane, Display Manager tab, select the Combined_Aerials layer, right-click and select Resample Raster

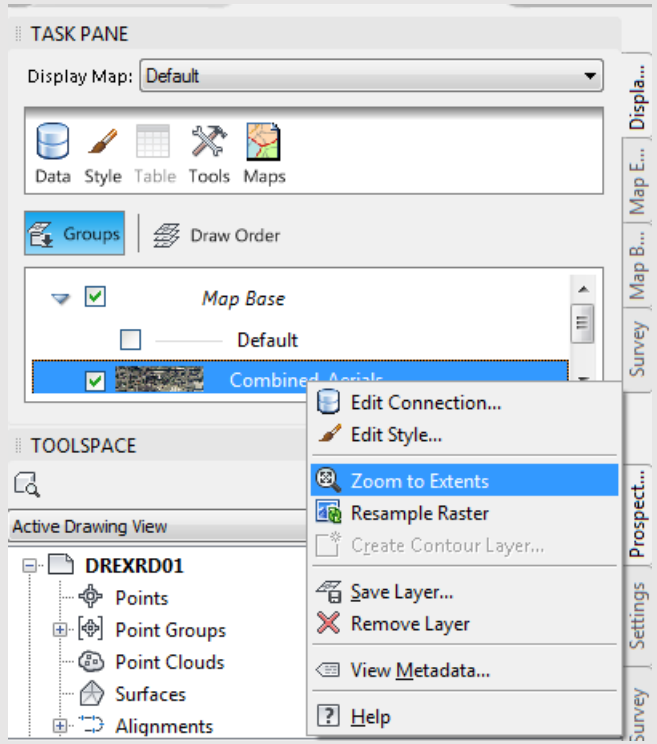


Using Aerial Data in Civil 3D and the FDOT State Tool Kit

In the drawing editor, zoom out to display the image

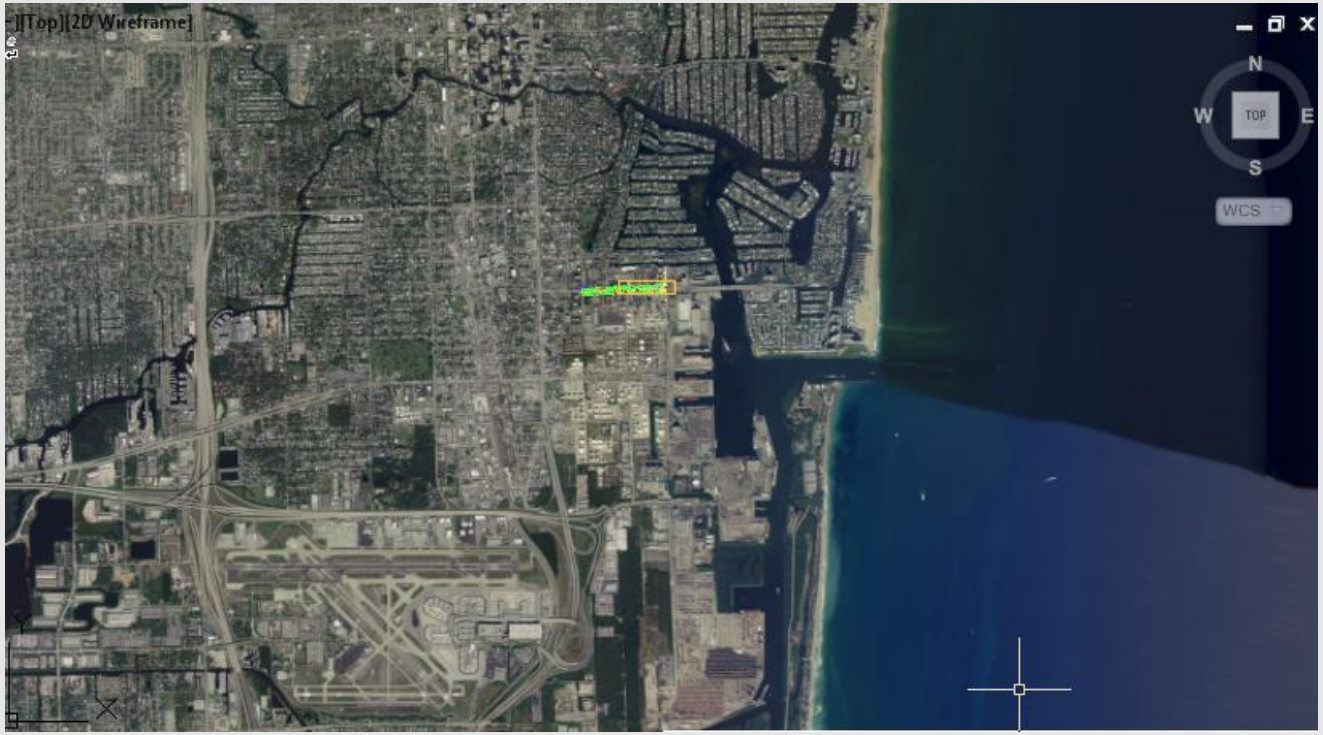


To return the image to full extents, from the Task pane, Display Manager tab, select the Combined_Aerials layer, right-click and select Zoom to Extents

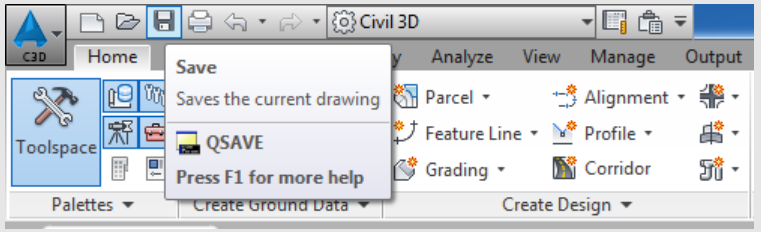


Using Aerial Data in Civil 3D and the FDOT State Tool Kit

Review the result in the drawing editor



From the **Quick Access toolbar,** select **Save** to save the **DREXRD01.dwg** file



2015 Design Training Expo

Using Aerial Data in Civil 3D and the FDOT State Tool Kit

Thank you for attending today's session!
For more information:

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