

# ***CIVIL 3D DESIGN SURVEY DELIVERABELS***



**CIVIL 3D STYLES**

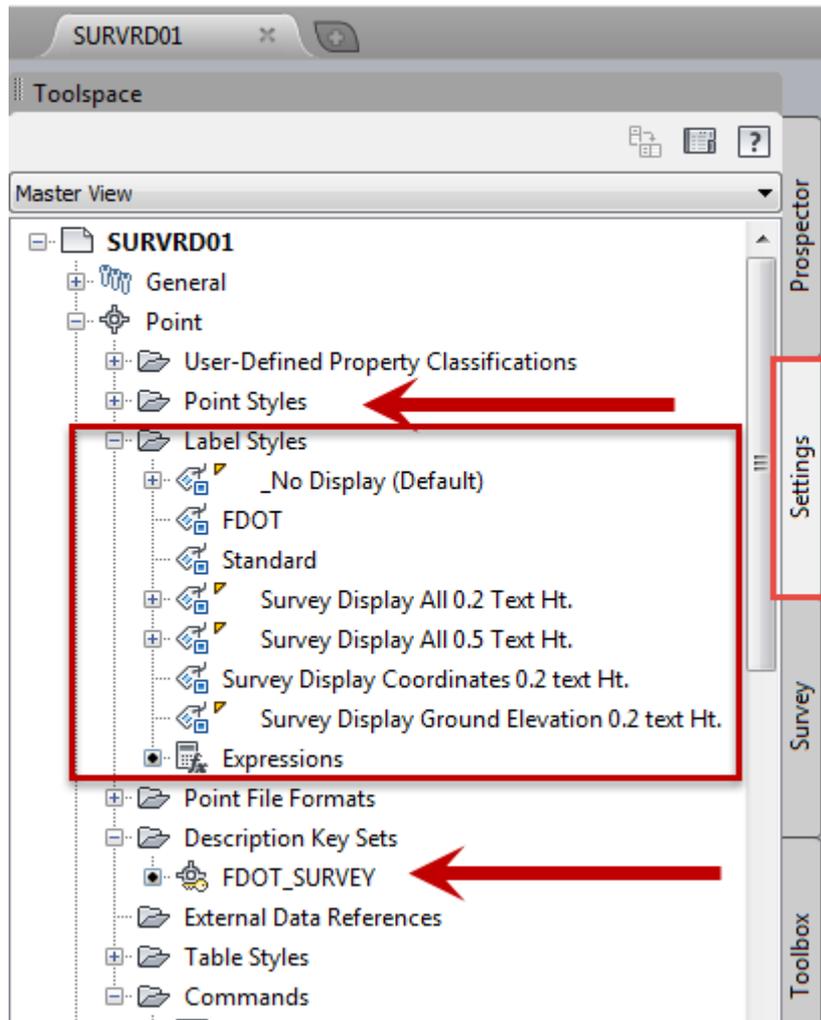
**VISUALIZATION**

**SHEET SET MANAGER**

# CIVIL 3D STYLES

- ◆ Styles are an integral part of Civil 3D and can even replace the need for layers
- ◆ FDOT uses a number of styles throughout the design process
- ◆ Surveying and Mapping uses styles for visualization of point objects, surfaces, alignments and labels
- ◆ Styles are embedded in the template and therefore are drawing specific, but can be moved from drawing to drawing.
- ◆ Styles can be edited, usually in Toolspace>Settings tab

# CIVIL 3D STYLES



- ◆ Point Label Styles that begin with the word “survey” will not change size with the drawing scale
- ◆ All other label styles will change size based on the drawing scale

# *CIVIL 3D POINT & LABEL STYLES*

- ◆ Civil 3D uses point objects. Like surfaces and alignments, point objects have built in intelligence.
- ◆ When point objects are inserted into a drawing from the survey database, they are visualized based on the associated point and label style.
- ◆ Point and label styles are associated with point objects based on the “CreatePoints” Command (see point settings) and the Description Key Set.
  - ✓ NOTE: Description key point and label style settings take precedent over the Point Group display settings in the Toolspace>Prospector tab.

# ***CIVIL 3D POINT & LABEL STYLES***

- ◆ In previous releases of the FDOT Civil 3D state kit, all points were set to visualize all labels.
- ◆ In FDOT2014.C3D MR1 the survey point label styles have been revised to stack and to visualize only specific labels.
  - ✓ Default Points and Ground Shots (GND) will only show the point position and elevation
  - ✓ Most Point features will only show the point feature and comment/description field
  - ✓ Chain points that use chain features (ie. Leica Smart Works) are set to elevation only or No\_Display

# CIVIL 3D POINT & LABEL STYLES

Code	Style	Point Label Style	Format	Layer
AC	<input checked="" type="checkbox"/> _Marker	<input checked="" type="checkbox"/> Elevation - 0.2	S+	<input checked="" type="checkbox"/> PointLocator_ep
AGV	<input checked="" type="checkbox"/> _No Display (Default)	<input checked="" type="checkbox"/> _No Display (Default)	S+	<input checked="" type="checkbox"/> PointLocator_ep
ANT	<input checked="" type="checkbox"/> ANT	<input checked="" type="checkbox"/> Description - 0.5	S+	<input checked="" type="checkbox"/> Tower_ep
AP	<input checked="" type="checkbox"/> _Marker	<input checked="" type="checkbox"/> Elevation - 0.2	S+	<input checked="" type="checkbox"/> PointLocator_ep
APRS	<input checked="" type="checkbox"/> _Marker	<input checked="" type="checkbox"/> Elevation - 0.2	S+	<input checked="" type="checkbox"/> PointLocator_ep
ARST	<input checked="" type="checkbox"/> _Marker	<input checked="" type="checkbox"/> Elevation - 0.2	S+	<input checked="" type="checkbox"/> PointLocator_ep
AT	<input checked="" type="checkbox"/> AT	<input checked="" type="checkbox"/> Description - 0.5	S+	<input checked="" type="checkbox"/> Monument_ep
ATTN	<input checked="" type="checkbox"/> _No Display (Default)	<input checked="" type="checkbox"/> _No Display (Default)	S+	<input checked="" type="checkbox"/> PointLocator_ep
BARW	<input checked="" type="checkbox"/> _No Display (Default)	<input checked="" type="checkbox"/> _No Display (Default)	S+	<input checked="" type="checkbox"/> PointLocator_ep
BAS	<input checked="" type="checkbox"/> _Marker	<input checked="" type="checkbox"/> Elevation - 0.2	S+	<input checked="" type="checkbox"/> PointLocator_ep
BCATV	<input checked="" type="checkbox"/> _No Display (Default)	<input checked="" type="checkbox"/> _No Display (Default)	S+	<input checked="" type="checkbox"/> PointLocator_ep
BCATVB	<input checked="" type="checkbox"/> QL B	<input checked="" type="checkbox"/> _No Display (Default)	S+	<input checked="" type="checkbox"/> PointLocator_ep
BCATVC	<input checked="" type="checkbox"/> QL C	<input checked="" type="checkbox"/> _No Display (Default)	S+	<input checked="" type="checkbox"/> PointLocator_ep
BCATVD	<input checked="" type="checkbox"/> QL D	<input checked="" type="checkbox"/> _No Display (Default)	S+	<input checked="" type="checkbox"/> PointLocator_ep
BGV	<input checked="" type="checkbox"/> _No Display (Default)	<input checked="" type="checkbox"/> _No Display (Default)	S+	<input checked="" type="checkbox"/> PointLocator_ep
BL	<input checked="" type="checkbox"/> BL	<input checked="" type="checkbox"/> _No Display (Default)	S+	<input checked="" type="checkbox"/> BLSurveySymbL_ep
BLC	<input checked="" type="checkbox"/> NL	<input checked="" type="checkbox"/> Survey Display All 0.5 Text Ht.	S+	<input checked="" type="checkbox"/> PointLocator_ep
BLDG	<input checked="" type="checkbox"/> _Marker	<input checked="" type="checkbox"/> Elevation - 0.2	S+	<input checked="" type="checkbox"/> PointLocator_ep
BN	<input checked="" type="checkbox"/> BN	<input checked="" type="checkbox"/> Description - 0.5	S+	<input checked="" type="checkbox"/> Beacons_ep
BNCH	<input checked="" type="checkbox"/> BNCH	<input checked="" type="checkbox"/> Description - 0.5	S+	<input checked="" type="checkbox"/> BusStop_ep
BNK	<input checked="" type="checkbox"/> GND	<input checked="" type="checkbox"/> Survey Display Ground Elevation 0.2 text Ht.	S+	<input checked="" type="checkbox"/> PointLocator_ep
BOL	<input checked="" type="checkbox"/> BOL	<input checked="" type="checkbox"/> Description - 0.5	S+	<input checked="" type="checkbox"/> Bollard_ep

# ***CIVIL 3D POINT & LABEL STYLES***

- ◆ Survey point and label styles for design surveys will be found in the DREXRD, TOPORD, TOPORW, UTEXRD and SURVRD templates
- ◆ Point styles control how the points will be visualized.
  - ✓ FDOT existing point features have been set to an idealized size based on and relative to the size of travel lanes. Once placed in a drawing file, they will remain static in size and will not change with the drawing scale.
  - ✓ A few point styles like the BL and CL symbols will change size with the drawing scale for annotation scale purposes.

# CIVIL 3D POINT & LABEL STYLES

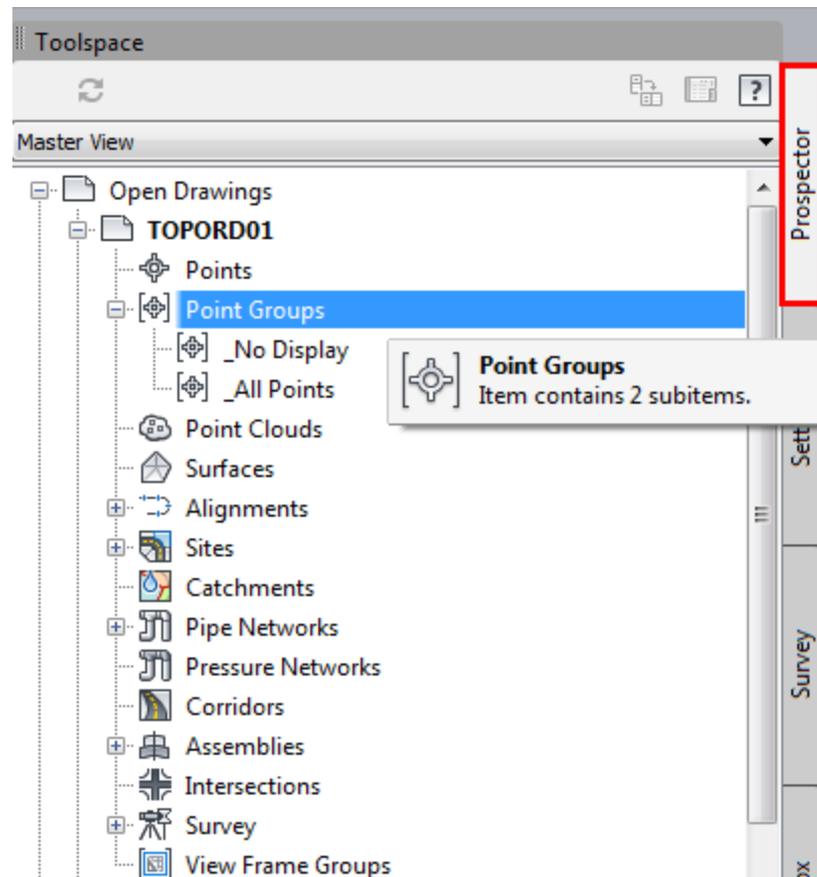
- ◆ Label Styles control how the point object labels will be displayed.
  - ✓ FDOT has provided a number of Label Styles for the surveyor to use in developing deliverables.
  - ✓ Label Styles that end in 0.2 will stay static at 0.2 feet in height and are unaffected by the drawing scale.
  - ✓ Label Styles that end in 0.5 will stay static at 0.5 feet in height and are unaffected by the drawing scale.
- ◆ The label style associated with point objects inserted in the drawing can be changed individually in the Properties box or globally in the Prospector under Point Groups.

# CIVIL 3D POINT GROUPS

- ◆ Toolspace > Prospector tab > Point Groups
  - ✓ Survey templates have two preset point groups
    - \_No Display – turns off all point and label styles
    - \_All Points – turns on all point and label styles
  - ✓ Civil 3D displays Point Groups based on a hierarchy order of the point groups.
    - The top group has precedent over the lower groups
    - For example if \_No Display is at the top then all groups lower in the list will not display
    - EXCEPTION: Description Key settings take precedent over Point Groups hierarchy unless point and label “Overrides” are selected

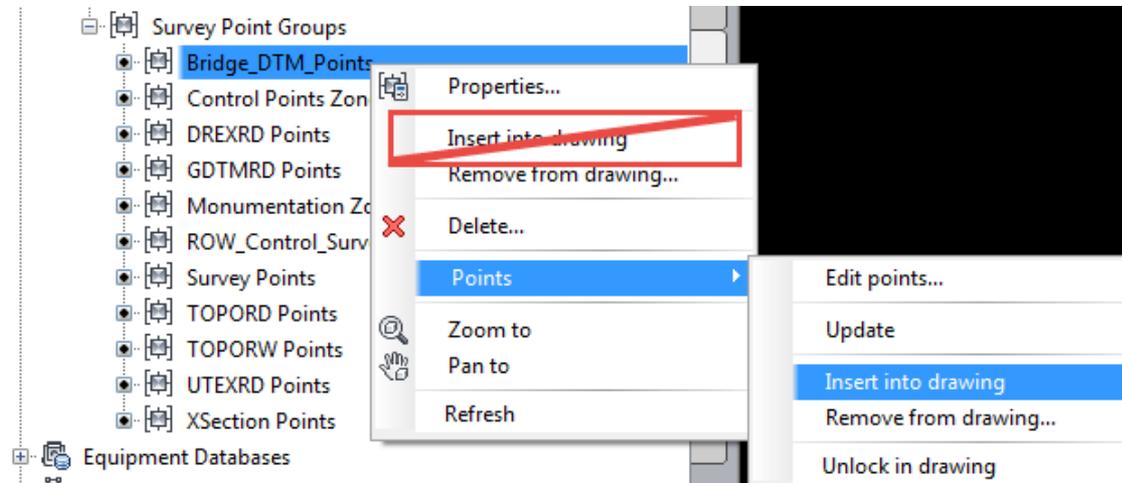
# CIVIL 3D POINT GROUPS

- ◆ When points from the survey database are inserted into a drawing they will show up in the Prospector under Point Groups.



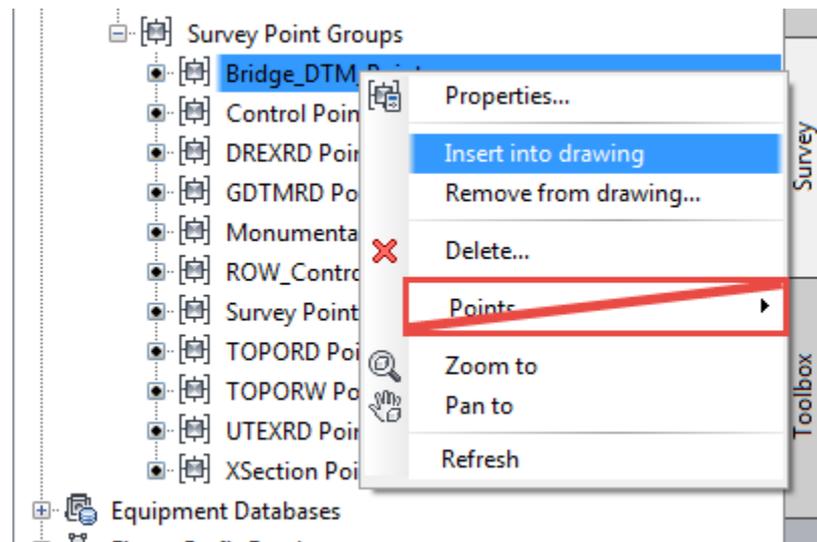
# CIVIL 3D POINT GROUPS

- ◆ To insert points into a drawing from the survey database, right click on “Survey Points” or a “Survey Point Group”.
  - ✓ To insert points into the `_All Points` group
    - Hover over “Points” and select from the options “Insert into drawing”. This will always insert the points into the “`_All Points`” group even if it is done from a survey database point group.



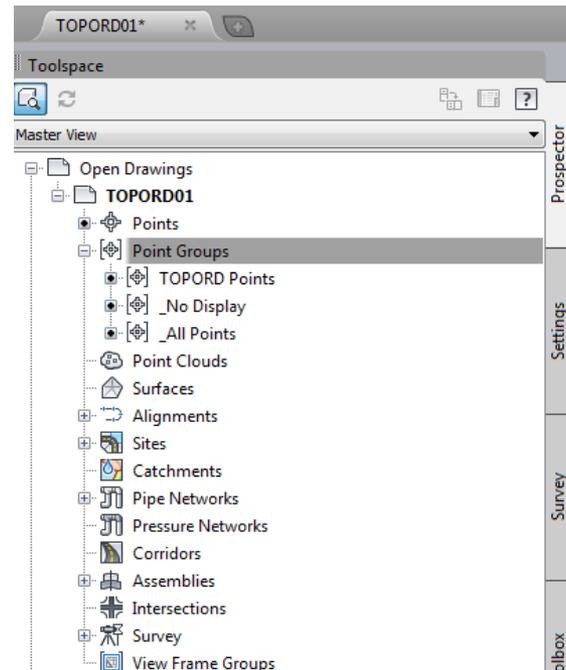
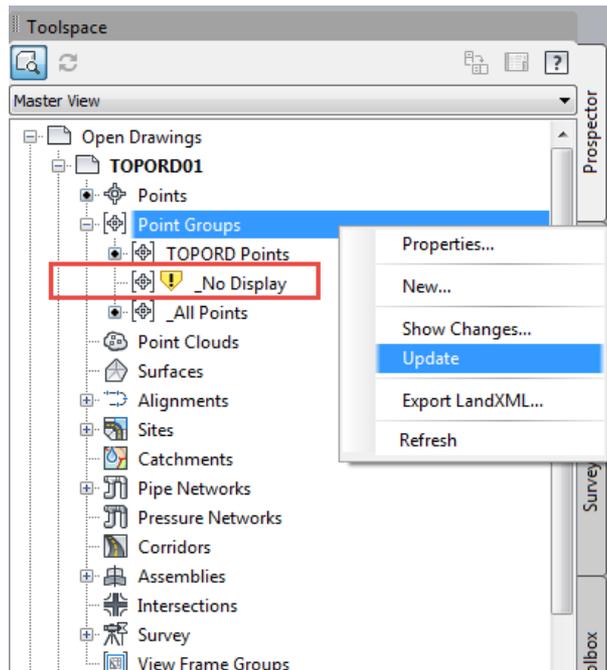
# CIVIL 3D POINT GROUPS

- ◆ To insert points into a drawing from the survey database, right click on “Survey Points” or a “Survey Point Group”.
  - ✓ To insert points into its own point group
    - Do not hover over “Points”. Instead, click on the “Insert into drawing” directly below “Properties...”



# CIVIL 3D POINT GROUPS

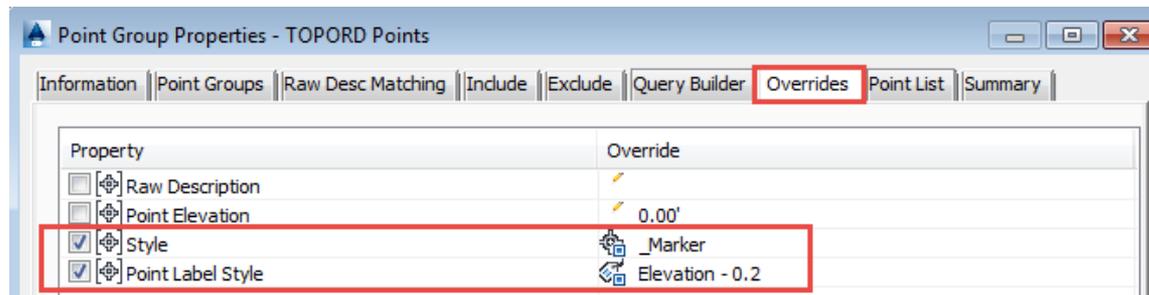
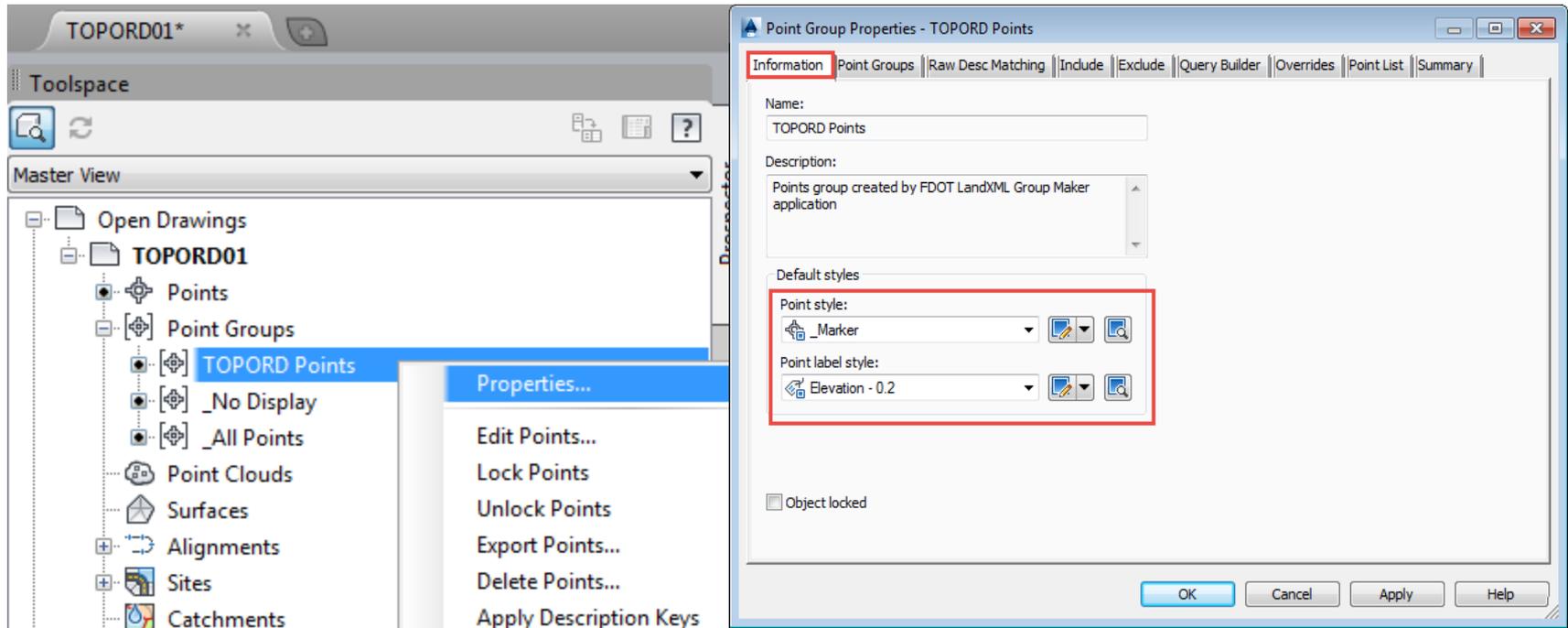
- ◆ Once the points have been inserted into the active drawing, navigate to the Toolspace>Prospector and view the point groups. Right click on point groups and “Update”. This will update any affected groups that did not update with the insertion like the “\_No Display” group below.



# CIVIL 3D POINT GROUPS

- ◆ To reverse the insertion process, instead of choosing insert into drawing, choose “Remove from drawing...”
- ◆ After removing points and/or point groups from the drawing, update the point groups in Toolspace>Prospector.
- ◆ Changing the display of points in a point group can be done by right clicking the point group in the Prospector and selecting “Properties”.
  - ✓ Select the “Information” tab and change to the desired Point style and/or Point label style. Note: If the style is defined in the description keys for a point object then overrides must be selected in the “Overrides” tab.

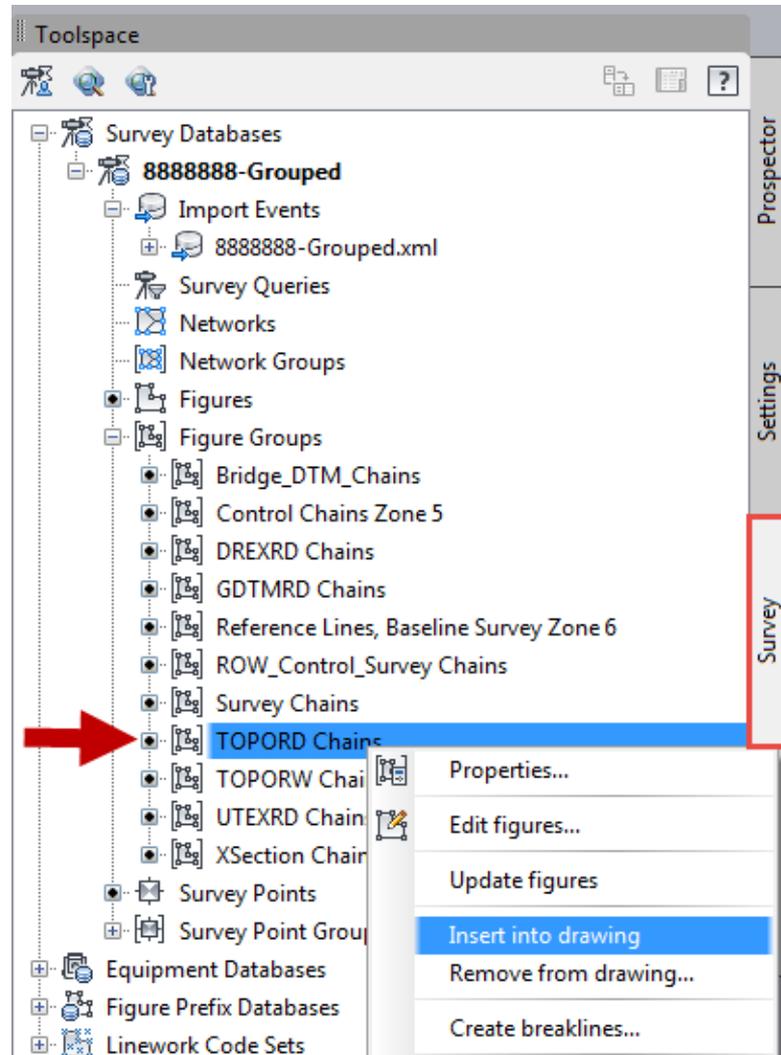
# CIVIL 3D POINT GROUPS



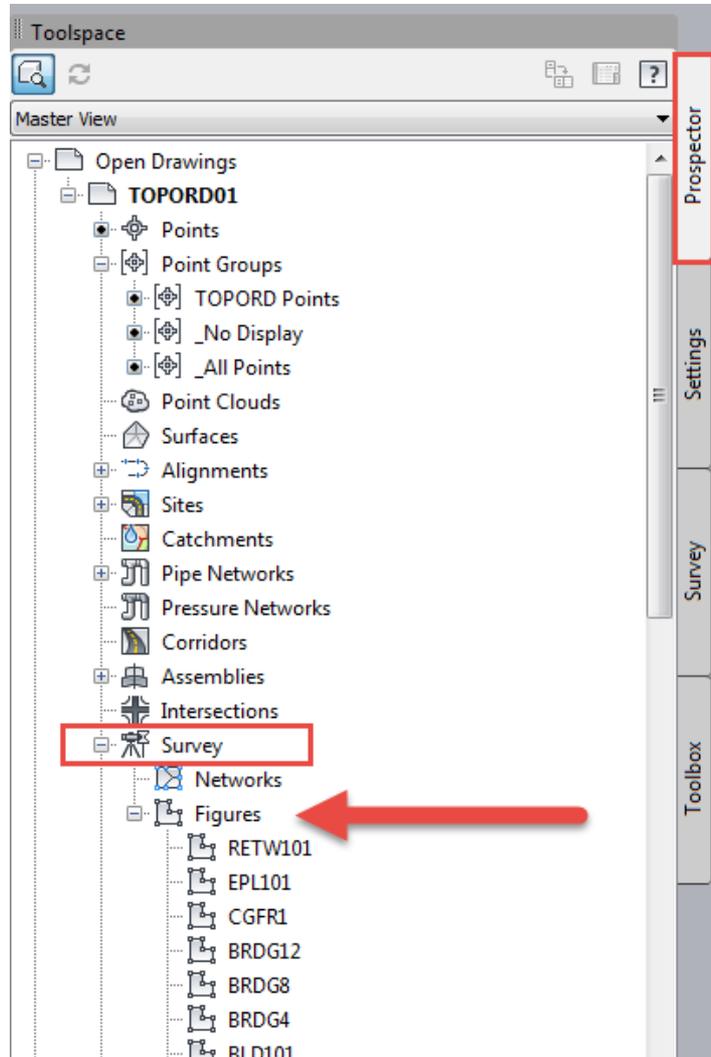
# CIVIL 3D FIGURE GROUPS

- ◆ Civil 3D Figure Groups work similarly to the Point Groups in that they can be inserted into the drawing from the survey database in the Toolspace>Survey tab. Once inserted into the drawing, figures are listed in the Prospector under Survey>Figures, however, they are not segregated into groups like points.
- ◆ Note that it is critical that the appropriate template be used for the figures inserted into a drawing. For instance drainage figures inserted into a TOPORD template will not visualize properly because there are no drainage layers in the TOPORD template. Drainage layers are found in the DREXRD template. Only the SURVRD template has all survey layers for a single file delivery.

# CIVIL 3D FIGURE GROUPS



# CIVIL 3D FIGURE GROUPS



# ***FDOT CIVIL 3D DELIVERABLES***

- ◆ FDOT deliverables can be created from the Point and Figure groups created with the LandXML Grouper
- ◆ Use the Create File utility to create and open the appropriate file.
  - ✓ TOPORD
  - ✓ UTEXRD
  - ✓ DREXRD
  - ✓ GDTMRD
  - ✓ ALGNRD (Found under Roadway Design Files)
  - ✓ CTLSRD

# ***FDOT CIVIL 3D DELIVERABLES***

- ◆ To create a TOPORD, UTEXRD, or DREXRD deliverable
  - ✓ Insert the appropriate Point Group
  - ✓ Insert the appropriate Figure Group
  - ✓ Edit Figures if necessary
  - ✓ Label as needed (includes turning on/off point labels)
- ◆ To create a GDTMRD or ALGNRD deliverable
  - ✓ Insert the LandXML file(s) created in the SURVRD file using the “Insert” tab on the Civil 3D Ribbon.
- ◆ To create the CTLSRD deliverable, first use the Sheet Set Manager to populate the title block.

# ***FDOT CIVIL 3D DELIVERABLES***

- ◆ The ctlsrd.dwt is the only design survey template with layout tabs and sheets.
- ◆ When created the CTLSRD file will have three unique layout sheets.
  - ✓ These layouts can be duplicated within the file to make multiple sheets if needed.
  - ✓ All, some or one layout can be used as needed.
  - ✓ Unused layouts can be deleted.
- ◆ The Sheet Set Manager will populate the sheet title blocks in all of the layouts.

# ***SHEET SET MANAGER***

- ◆ The Sheet Set Manager is a Civil 3D tool used in part to populate the sheet title blocks.
- ◆ The Sheet Set Manager uses a DST file to accomplish this. The DST file template for Surveying is in the “Data” directory of the project file structure created by the “CREATE PROJECT” utility.
- ◆ The FDOT SURVEYING.dst template is used by the Sheet Set Manager to create a CTLSRD.dst under the project Survey/eng\_data folder.
- ◆ Open the Sheet Set Manager from the Civil 3D ribbon in the Home tab under the Pallets drop down.

# SHEET SET MANAGER

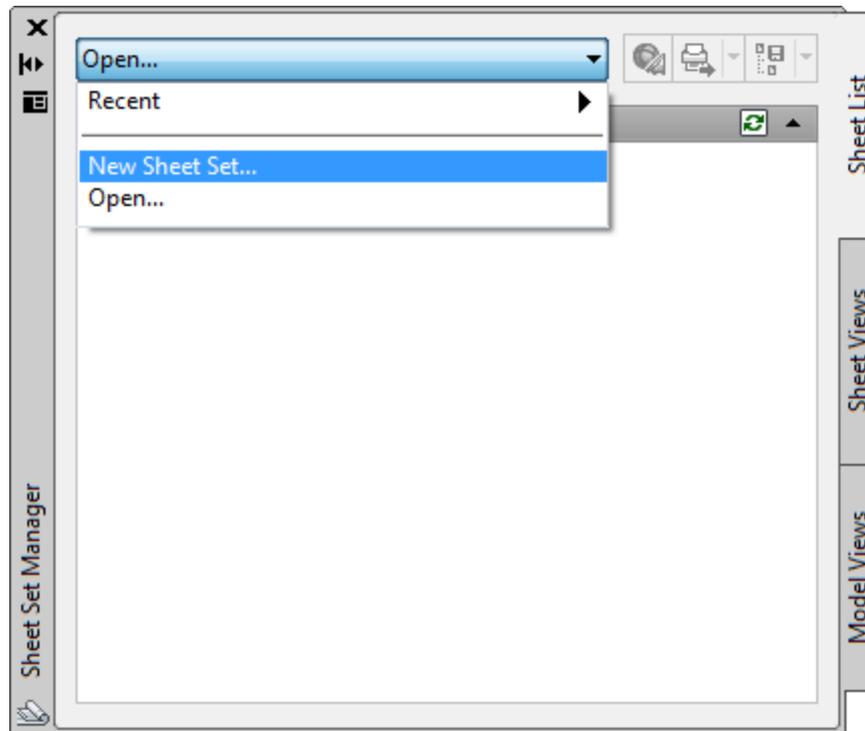
The screenshot displays the AutoCAD Civil 3D software interface. The title bar shows 'Civil 3D' and the application name 'c3d'. The ribbon includes tabs for Home, Insert, Annotate, Modify, Analyze, View, Output, Manage, Help, Express Tools, and Add-Ins. The ribbon panels are organized into groups: 'Toolspace' (containing Import Survey Data, Points, Surfaces, Create Ground Data), 'Parcel' (containing Parcel, Feature Line, Grading), 'Alignment' (containing Alignment, Profile, Create Design), 'Intersections' (containing Intersections, Assembly, Pipe Network), and 'Profile & Section Views' (containing Profile View, Sample Lines, Section Views). The Palettes area at the bottom left shows a list of palettes, with the 'Sheet Set Manager' palette highlighted. A red arrow points to the 'Sheet Set Manager' icon in the Palettes area. A tooltip for the 'Sheet Set Manager' palette is displayed, containing the following text:

**Sheet Set Manager (Ctrl+4)**  
Opens or closes the Sheet Set Manager which organizes, displays, and manages collections of drawing sheets

**SHEETSET**  
Press F1 for more help

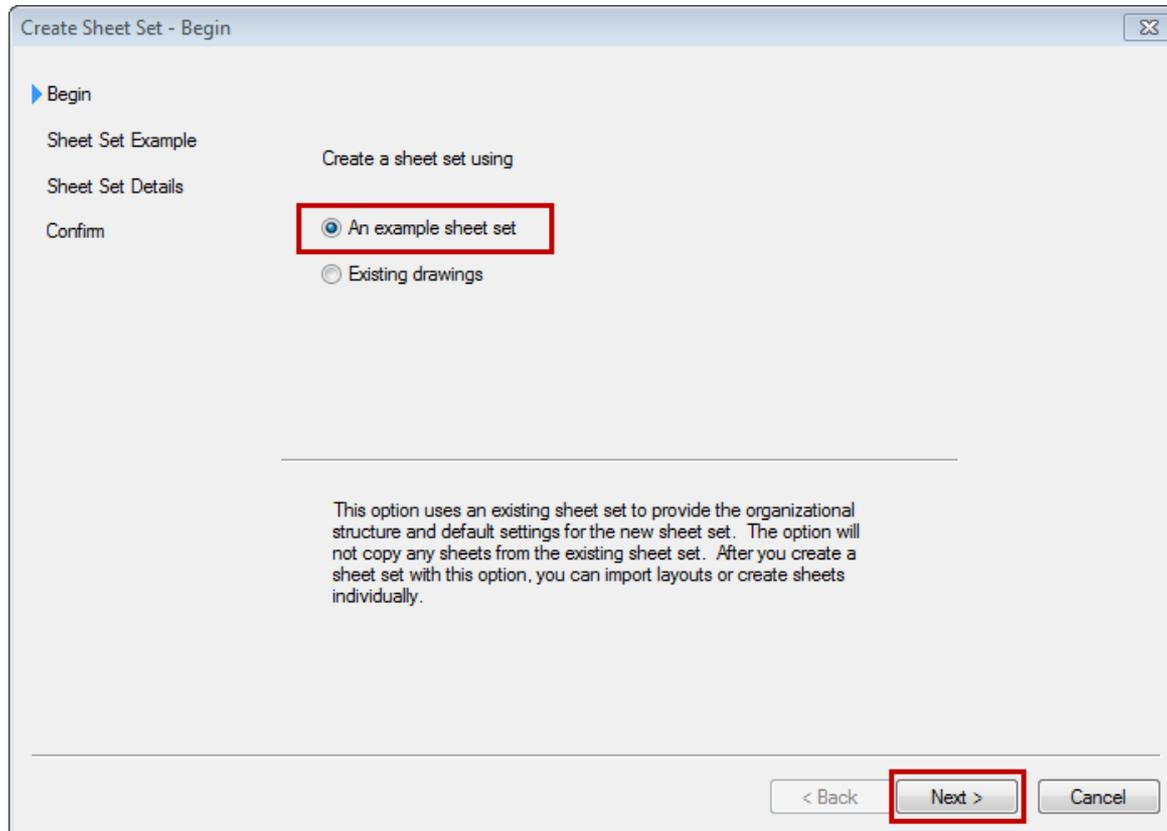
# SHEET SET MANAGER

- ◆ In the “Open...” drop down, select “New Sheet Set...” to start the Create Sheet Set wizard.



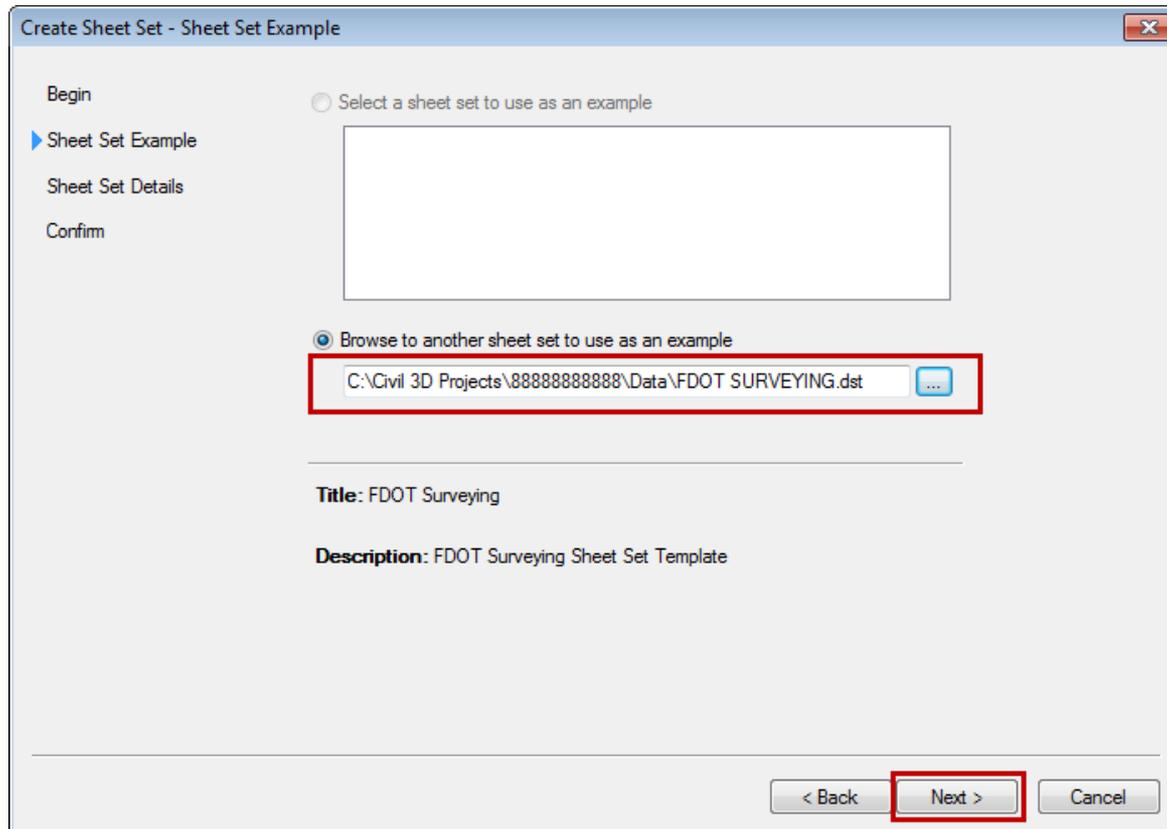
# SHEET SET MANAGER

- ◆ Using “An example sheet set”, browse to the FDOT SURVEYING.dst template under the project “Data” folder.



# SHEET SET MANAGER

- ◆ Using “An example sheet set”, browse to the FDOT SURVEYING.dst template under the project “Data” folder.



# SHEET SET MANAGER

- ◆ Name the sheet set “CTLSRD” and browse to the project Survey/eng\_data folder. Select Next, then Finish.

Create Sheet Set - Sheet Set Details

Begin

Sheet Set Example

▶ Sheet Set Details

Confirm

Name of new sheet set:

CTLSRD

Description (optional):

FDOT Surveying Sheet Set Template

Store sheet set data file (.dst) here:

C:\Civil 3D Projects\888888888888\Survey\eng\_data

Note: The sheet set data file should be stored in a location that can be accessed by all contributors to the sheet set.

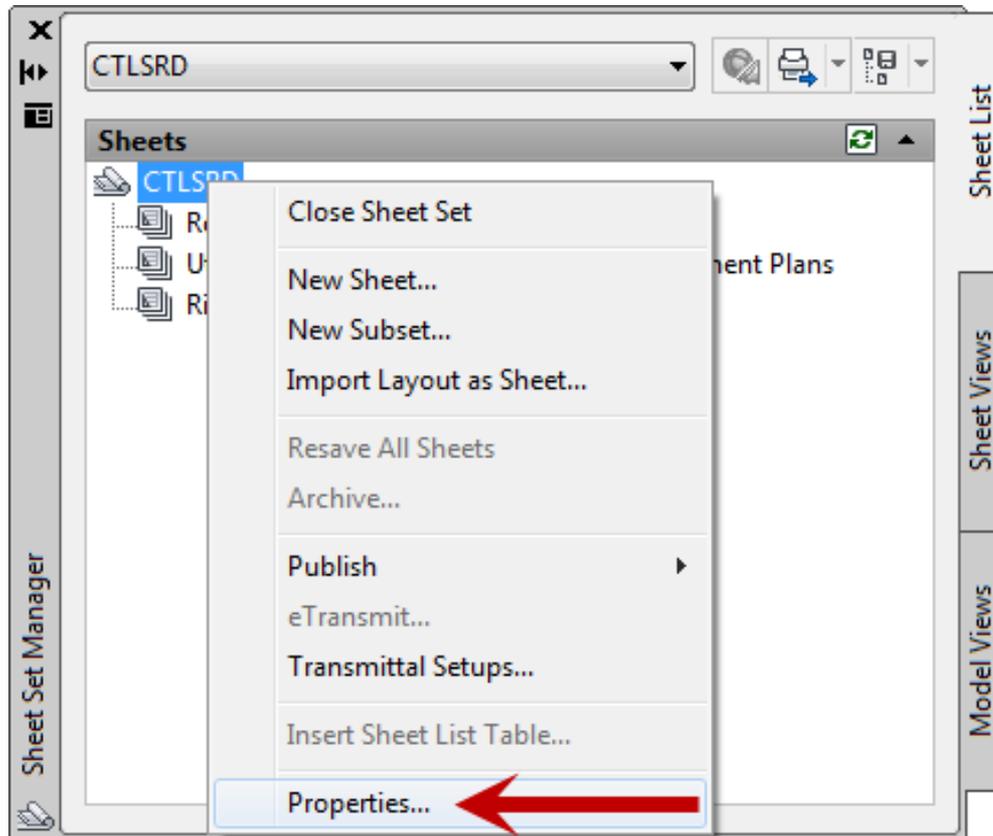
Create a folder hierarchy based on subsets

Sheet Set Properties

< Back Next > Cancel

# SHEET SET MANAGER

- ◆ In the Sheet Set Manager dialogue box, right click on the sheet set name (CTLSRD) and select “Properties...”

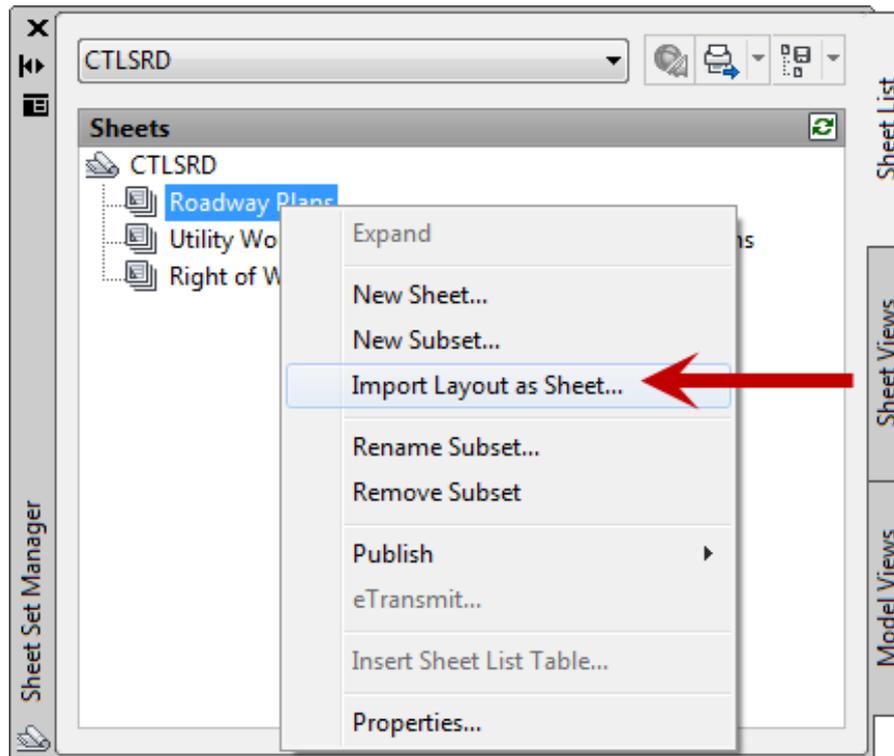


# ***SHEET SET MANAGER***

- ◆ In the Sheet Set Manager dialogue box, right click on the sheet set name (CTLSRD) and select “Properties...”
- ◆ The Sheet Set Properties dialogue box will open. Fill out missing information and press “OK”
  - ✓ County
  - ✓ District
  - ✓ POR1-8 information (Professional of Record)
  - ✓ Project Description
  - ✓ Road Number

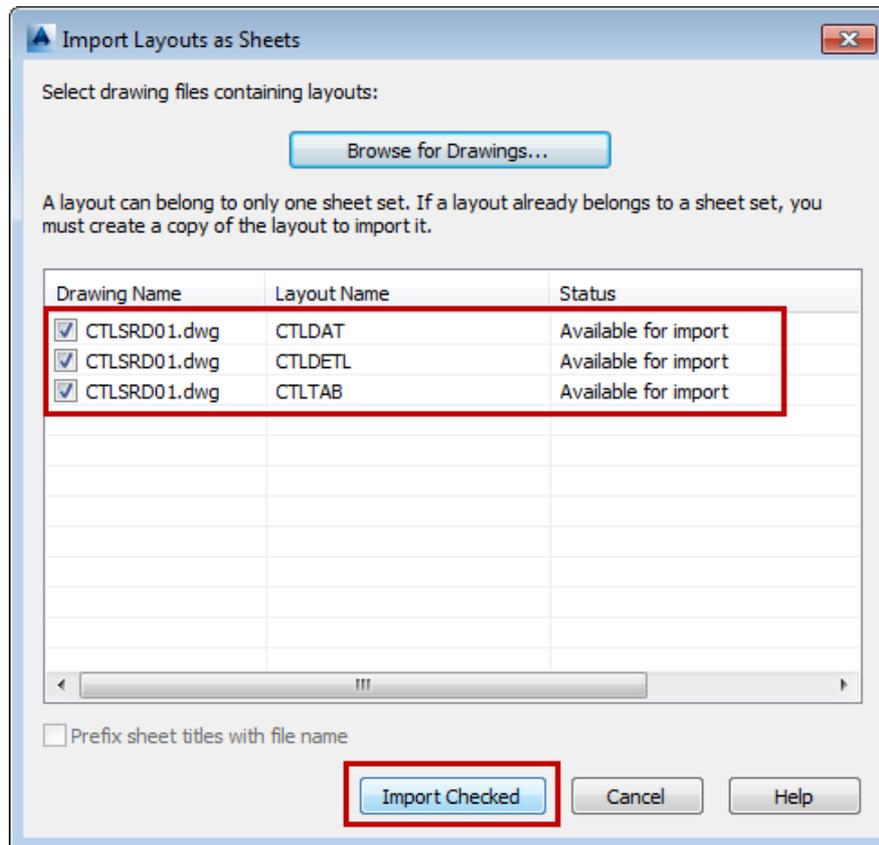
# SHEET SET MANAGER

- ◆ In the Sheet Set Manager dialogue box, right click on the Roadway Plans subset and select “Import Layout as Sheet...”



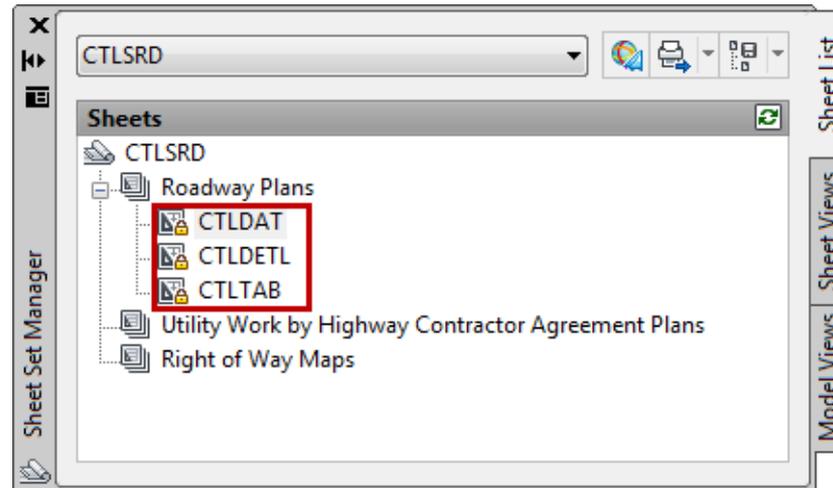
# SHEET SET MANAGER

- ◆ Browse for the drawing containing the layouts (CTLSRD01.dwg) and select “Import Checked”



# SHEET SET MANAGER

- ◆ The checked layouts will be imported into the Sheet Set Manager as “sheet titles” under the Roadway Plans subset.



- ◆ Note that the sheet titles and the drawing layout names are the same
- ◆ Also note the SHEET NO. has not been populated

# SHEET SET MANAGER

The screenshot displays the SHEET SET MANAGER dialog box in AutoCAD. The dialog is titled 'CTLSRD' and shows a tree view of sheets. The 'Roadway Plans' folder is expanded, and the sheet 'CTLDAT' is highlighted with a red box. The 'Sheet List' tab is active, showing a table with 'SHEET NO.' and a dashed line. The command line at the bottom shows 'Command: <Switching to: CTLDAT>'.

CTLSRD

Sheets

- CTLSRD
  - Roadway Plans
    - CTLDAT**
    - CTLDETL
    - CTLTAB
  - Utility Work by Highway Contractor Agreement Plans
  - Right of Way Maps

Sheet List

Model Views Sheet Views

SHEET SET MANAGER

NOTICE: THE OFFICIAL RECORD OF THIS SHEET I

CTLDAT

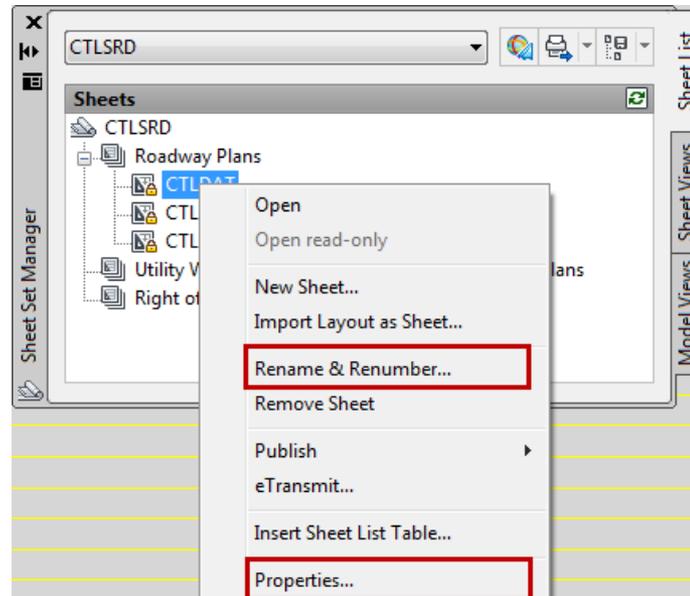
SHEET NO.  
---

Command: \*Cancel\*  
Command: <Switching to: CTLDAT>

# SHEET SET MANAGER

- ◆ Rename the Sheet titles and number the sheets
  - ✓ “Rename & Renumber...” – Renames & numbers the sheet title block.
  - ✓ “Properties...” – Change or add information, including renaming & numbering the sheet title block.

Right Click Sheet title:



# SHEET SET MANAGER

**Rename & Renumber Sheet**

Number:

Sheet title:

Layout name:

File name:

Folder path:

**Rename options**

Rename layout to match:

- Sheet title
- Prefix with sheet number

Rename drawing file to match:

- Sheet title
- Prefix with sheet number

< Previous    Next >    OK    Cancel    Help

CTLSRD

Sheets

- CTLSRD
  - Roadway Plans
    - CTLDAT**
    - CTLDETL
    - CTLTAB
  - Utility Work by Highway Contra
  - Right of Way Maps

CTLDAT

SHEET NO.  
---

C:\Civil 3D Projects\888888888888\survey\CTLSRD01.dwg

Model \ **CTLDAT** \ CTLDETL \ CTLTAB /

NOTICE: THE OFFICIAL RECORD OF THIS

# SHEET SET MANAGER

**Rename & Renumber Sheet**

Number: **CTL-1** Sheet title: REFERENCE POINTS HORIZ.-VERT. CONTROL

Layout name: **CTL-1 REFERENCE POINTS HORIZ.-VERT. CONTROL**

File name: CTLSRD01.dwg

Folder path: C:\Civil 3D Projects\8888888888\Survey

Rename options

Rename layout to match:

- Sheet title
- Prefix with sheet number**

Rename drawing file to match:

- Sheet title
- Prefix with sheet number

< Previous **Next >** OK Cancel Help

Sheet Set Manager

CTLSRD

Sheets

- CTLSRD
- Roadway Plans
- CTL-1 - REFERENCE POINTS
- CTLDETL**
- CTLTAB
- Utility Work by Highway Contra
- Right of Way Maps

REFERENCE POINTS  
HORIZ.-VERT. CONTROL

SHEET NO.  
**CTL-1**

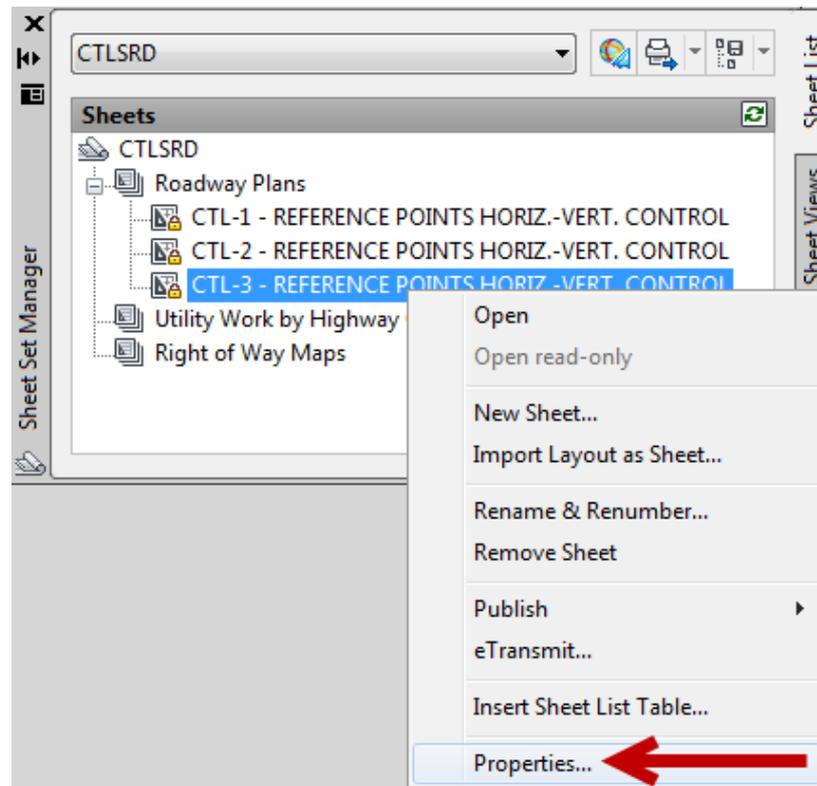
C:\Civil 3D Projects\8888888888\survey\CTLSRD01.dwg

Model **CTL-1 REFERENCE POINTS HORIZ.-...** / CTLDETL / CTLTAB /

NOTICE: THE OFFICIAL RECORD OF THIS

# SHEET SET MANAGER

- ◆ Right click on the sheet title and select properties to make changes to the information in the title block for a specific layout



# SHEET SET MANAGER

- ◆ Note: “Rename layout to match” options are the same.

Sheet Properties

Sheet	
Sheet title	REFERENCE POINTS HORIZ.-VERT. CONTROL
Sheet number	CTL-3
Description	
Include for Publish	Yes
Expected layout	CTL-3 REFERENCE POINTS HORIZ.-VERT. C...
Found layout	CTL-3 REFERENCE POINTS HORIZ.-VERT. C...
Sheet set	CTLSRD
Revision number	
Revision date	
Purpose	
Category	

Sheet Custom Properties	
CheckedBy	
CheckedDate	
County1	LEON
County2	
County3	

Rename options

Rename layout to match:	Rename drawing file to match:
<input checked="" type="checkbox"/> Sheet title	<input type="checkbox"/> Sheet title
<input checked="" type="checkbox"/> Prefix with sheet number	<input type="checkbox"/> Prefix with sheet number

OK Cancel Help

# ***SHEET SET MANAGER***

- ◆ To add another sheet to the subset with a layout in the current drawing, right click on any layout and choose “Move or copy...”
- ◆ Pick the appropriate layout, check the “Create a copy” box and select “OK”
- ◆ The new layout is created in front of the copied layout. To move it after the copied layout... drag it.
- ◆ Before the new layout can be imported as a sheet in the Sheet Set Manager, the drawing must be **SAVED!**
- ◆ Once imported put sheets in order - rename & renumber

# ***SHEET SET MANAGER***

- ◆ Delete unused layouts in the CTLSRD01.dwg file.
- ◆ It is important to use the correct subset in order for project management to use the Sheet Set Organizer tool
- ◆ Unused subsets (ie. “Right of Way Maps” and “Utility Work by Highway Contractor Agreement Plans”) can be deleted

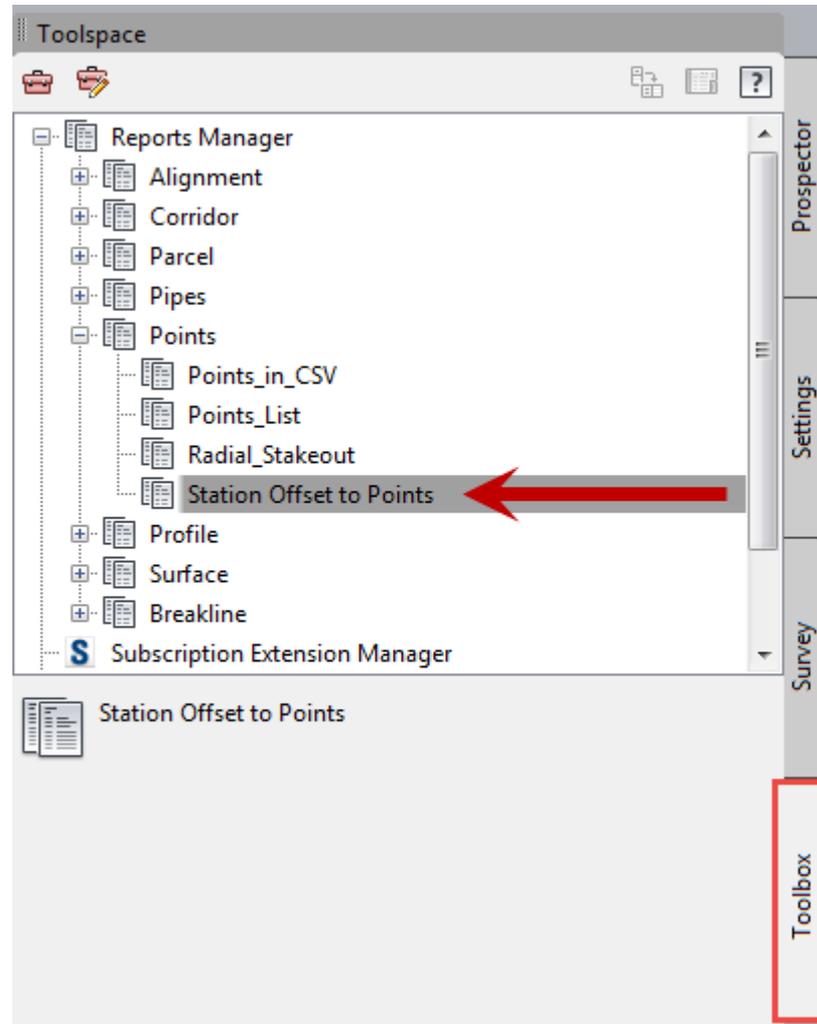
Link to Create Files and Create Projects video:

- ◆ <http://www.dot.state.fl.us/structures/designExpo2012/Presentations/CreateFiles.wmv>

# ***CTLSRD REPORTS***

- ◆ To Generate an alignment report showing station and offset to Horizontal and Vertical Control Points, the alignment and the control points must be inserted into the CTLSRD file.
- ◆ In the CTLSRD file, switch to “Model” space.
- ◆ Insert the alignment LandXML file
- ◆ From the survey database, survey point groups, insert the Control Points (zone 5).
- ◆ In Toolspace>Toolbox tab, expand the Reports Manager and under Points, double click “Station Offset to Points”

# CTLSRD REPORTS



# CTLSRD REPORTS

- ◆ In the Create Reports dialogue box, select the points and alignment and save report to a “Control.txt” file under the survey folder in your project directory.

Create Reports - Station Offset to Points Report

Points station offset to points report  
The Station offset report option displays the station and offset values of the selected points relative to the selected alignment.

List of points

Select All Deselect All

Include	Point Number	Northing	Easting	Point Elevati...	Name	Raw Description	Full Description
<input checked="" type="checkbox"/>	536871097	673,151...	1,763,2...	103.90'	gps1	PMON Set	PMON Set
<input checked="" type="checkbox"/>	536871105	672,872...	1,763,4...	103.95'	cm...	CMON Found 4x...	CMON Found 4x...
<input checked="" type="checkbox"/>	536871098	673,013...	1,763,2...	105.60'	gps2	PMON Set	PMON Set
<input checked="" type="checkbox"/>	536871099	673,222...	1,763,2...	103.82'	a1	IRC Set IRC	IRC Set IRC
<input checked="" type="checkbox"/>	536871100	673,054...	1,763,2...	106.30'	a2	IRC Set IRC	IRC Set IRC
<input checked="" type="checkbox"/>	536871101	672,927...	1,763,4...	105.50'	a3	IRC Set IRC	IRC Set IRC
<input checked="" type="checkbox"/>	536871102	673,202...	1,763,1...	102.50'	cm...	CMON Found 4x...	CMON Found 4x...
<input checked="" type="checkbox"/>	536871103	673,106	1,763,1	102.50'	cm	CMON Found 4x	CMON Found 4x

Report settings

Select alignment : BL1

Save report to : C:\Users\sm970h\AppData\Local\Temp\civilreport.html

Alignment name : BL1

Station Range : Start: 10+00.00 -- End: 16+74.75

Station Equations : None

Create Report Done Help

# *CTLSRD VIEWPORTS*

- ◆ To take advantage of the view ports in the layouts, additional survey data can be inserted into the drawing.
- ◆ Switch to the desired layout.
- ◆ Unlock the viewport
- ◆ Xref a file or draw in the viewport.
- ◆ Set the viewport scale and lock the viewport.
- ◆ SAVE

# ***CIVIL 3D DESIGN SURVEY DELIVERABELS***



**DIRECT QUESTIONS TO:**

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***CIVIL 3D DESIGN SURVEY  
DELIVERABELS***

**Questions?**