Startups for AutoCAD Civil 3D®

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SEE THE LCE CAD STANDARDS AND SPECIFICATIONS MANUAL FOR CAD DRAFTING SPECIFICATIONS
**WHAT'S IN THE FOLDERS?**

All manuals are in a sub-folder called Manuals. The following are sub-folders of `\CadStd\`

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<tr>
<th>\Lisp:</th>
<th>\Plan Production Sheets:</th>
<th>\Specs &amp; Notes:</th>
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<tr>
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<td>CROSS SECTION.dwt</td>
<td>SpecBook-Gen-Notes-Master.dwg</td>
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<td>am.lsp</td>
<td>LCE BDR RW.dwt</td>
<td>Traffic Notes_Master.dwg</td>
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<td>CREATING A TABLE IN CIVIL 3D.pdf</td>
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<td>CoMap.dwt</td>
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<td>USING MAP BOOKS TO CREATE TITLE SHEET.pdf</td>
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## STANDARD DRAWING NAME CONVENTIONS, LAYOUT AND SCALES

<table>
<thead>
<tr>
<th>DRAWING TYPE(S)</th>
<th>NAMING CONVENTION</th>
<th>DOCUMENTS CONTAINED IN DRAWING</th>
<th>LAYOUT OR VIEW Mode</th>
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<tr>
<td>TITLE</td>
<td>TITLE_SHEET.DWG</td>
<td>TITLE SHEET</td>
<td>MAP IN MODEL SPACE - TITLE BLOCK IN LAYOUT</td>
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<tr>
<td>GENERAL NOTES</td>
<td>GEN_NOTES.DWG</td>
<td>MASTER GENERAL SPEC. NOTES</td>
<td>NOTES IN MODEL SPACE - SHEETS IN LAYOUT</td>
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<tr>
<td>DETAILS AND SUMMARIES</td>
<td>DET_SUM.DWG</td>
<td>DETAILS AND SUMMARY TABLES</td>
<td>DETAILS/SUMMARIES IN MODEL SPACE - SHEETS IN LAYOUT</td>
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<td>PLAN &amp; PROFILES</td>
<td>MASTER.DWG</td>
<td>OVERALL PROJECT PLAN, OVERALL PROFILE, PLAN AND PROFILES</td>
<td>OVERALL PLAN/PROFILE IN MODEL SPACE - SHEETS IN LAYOUT</td>
</tr>
<tr>
<td>CROSS SECTIONS</td>
<td>CROSS SECTIONS.DWG</td>
<td>EX. &amp; PROP. CROSS SECTIONS AND CROSS SECTION SHEETS</td>
<td>EX. &amp; PROP. CROSS SECTIONS IN MODEL SPACE - SHEETS IN LAYOUT</td>
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### SCALES:

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<th>DRAWING LTScale</th>
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<td>1</td>
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</table>
STARTING A PROJECT / NEW DRAWING

In this exercise, you will start a new drawing. To begin, start Civil 3D:

To begin your project, simply insert the “project” topo lines.dwg you received from the Survey Dept., being sure to explode it on insert. Use 0,0 as your insertion point. Click the Ribbon Insert >Block>More Options or type in Insert and click the Browse button (make sure the Specify On-screen is checked off):
Browse to the project folder where the “Lines” drawing is located, highlight it and click Open:

![Select Drawing File]

Click OK on the Insert dialog box, then type in z for zoom, then e for extents.

![Insert]

Here is your new drawing.

Now save your drawing in the project folder as Master.dwg (follow the standard naming conventions).
SURVEY FILES
This procedure is for the Lucas County Engineers Office; however, if consultants use the raw survey file format presented in this manual, they can also use the Stringer Connect program, downloadable free from [http://www.civil3dtools.com/](http://www.civil3dtools.com/).

Below is an example of the files you should receive from the Survey Dept.:

<table>
<thead>
<tr>
<th>File Name</th>
<th>Date/Time</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRADWOHL TOPO LINES.dwg</td>
<td>10/30/2013 3:25 PM</td>
<td>AutoCAD Drawing</td>
</tr>
<tr>
<td>GRADWOHL TOPO.bak</td>
<td>11/7/2013 3:32 PM</td>
<td>BAK File</td>
</tr>
<tr>
<td>GRADWOHL TOPO.crd</td>
<td>9/24/2013 10:23 AM</td>
<td>Managed Informa...</td>
</tr>
<tr>
<td>GRADWOHL TOPO.dwg</td>
<td>11/7/2013 4:30 PM</td>
<td>AutoCAD Drawing</td>
</tr>
<tr>
<td>GRADWOHL TOPO.ini</td>
<td>10/15/2013 7:42 AM</td>
<td>Configuration sett...</td>
</tr>
<tr>
<td>GRADWOHL TOPO.not</td>
<td>9/24/2013 10:22 AM</td>
<td>NOT File</td>
</tr>
<tr>
<td>GRADWOHL TOPO.rw5</td>
<td>9/23/2013 10:33 AM</td>
<td>RW5 File</td>
</tr>
</tbody>
</table>

The .crd, .dc and .raw files are not crucial to your project, they are; however, crucial to the Survey Dept. Please DO NOT erase them, as they can be used to reprocess a job if there are problems.

The files that you are interested in are the .dwg, .rw5 and .txt file.

The .txt file is the point file you will import into your drawing to create your TIN.

The .rw5 is the survey file that contains the survey data (note: it is not in coordinate format). The .rw5 file is viewable with the Stringer Connect program (freeware):

Please note-The sole purpose of this program is to allow you to check the setups and bench marks in this file against what the survey crew has written down in the field book for your project.

Start Stringer Connect. Click the “Click to Continue”.

![Stringer Connect](image-url)
Browse to the RW5 file you wish to open and click “Accept Current File”:

Here is how the RW5 file looks in the Stringer Editor. Everything is color coded. When you click on an item, be sure to click on the item in the very far left column. When an item is highlighted, the information of that item appears at the bottom of the application screen:
Here are some additional features of Stringer Connect that may be helpful:

The SAVE button not only allows you to Save the file back to .rw5, but also an AutoCAD field book file.

The COORDS button will show you this survey in a coordinates format text file:

It is possible to save this, using the SAVE button to a comma separated text file, however, it switches the Easting and Northing columns. Just an FYI.

When you are finished, you can just click the Close buttons. Do not save the coordinates file as you will be prompted to do so.
IMPORTING POINTS, MANAGE SURFACE SETTINGS AND CREATE BREAK LINES
Before importing points, be sure to do the following to the point text file:

![Image of GRADWCHL TOPO.txt]

Delete the line of text indicated above; otherwise, it will interfere with the import process.

You will then have to do a Find and Replace All of / (forward slash) with a space:

In EditPad:

![Image of Find and Replace dialog box]

In Notepad:

![Image of Replace dialog box]

Save your file.
In this procedure, you will import points from the point file of the project to the drawing.

To import points from the project point file:

1. Start Civil 3D, browse to the Project folder, open drawing created previously.

2. In Toolspace, on the Prospector tab, right-click Points. Click Create.

3. In the Create Points dialog box, click Import Points.

4. Click the + icon next to the first field.

5. Do the following steps (Steps 1 and 2 are interchangeable – Step 2 can be done first, then Step 1 or visa-versa):

   1. Browse and select the point file you just saved.

   2. Select the PNEZD (comma delimited) Format first.

   DO NOT SELECT A POINT GROUP – C3D automatically puts the points into their respective point groups.

   3. Click OK.

   4. Close the Create Points toolbar.
The imported points should be under the Points and Point Groups. You’ll notice that all the point groups are automatically grouped and filtered. Right click on each one that has the exclamation point in front of it and click update (including SRF under Surfaces):

Here is the point listing under points:

<table>
<thead>
<tr>
<th>Point No.</th>
<th>Easting</th>
<th>Northing</th>
<th>Point Elevation</th>
<th>Name</th>
<th>Raw Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1372.2270'</td>
<td>490,0020'</td>
<td>675.163'</td>
<td>MONUMENT</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>521.0620'</td>
<td>518.2829'</td>
<td>674.575'</td>
<td>L_ROD</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>1006.8340'</td>
<td>471.5080'</td>
<td>673.546'</td>
<td>L_ROD</td>
<td></td>
</tr>
<tr>
<td>105</td>
<td>876.7060'</td>
<td>519.8430'</td>
<td>675.602'</td>
<td>B.M.</td>
<td></td>
</tr>
<tr>
<td>1000</td>
<td>542.3150'</td>
<td>435.0630'</td>
<td>674.989'</td>
<td>EJP ASPH</td>
<td></td>
</tr>
</tbody>
</table>

A Civil 3D Tip:

If you right click on point groups and click properties, you’ll see this box:

If you highlight a point group, and click the up and down arrows, this will put one point group over the other, hence, filtering which point group(s) you want to or don’t want to see.
Moving 3D Lines to 3D LT/RT Layers and Creating Feature Lines for the Surface

Before creating feature lines as breaklines for the surface, we need to move the 3D lines to the 3D lines Left and Right layers. The reason for this will become apparent later in this manual, but the reasoning behind it is simple. When creating existing corridors, it will become necessary to target some of those feature lines, and doing this process now will save steps later.

New layer states have been added to the acad15.dwt that will make this process easier.

Go to the Layer State Manager and select the first 3D isolation layer state:

If no 3D lines are present for your project in the current layer state, move on to the next layer state. In this test drawing, there are no 3D Berm or 3D Curb lines, so we’ll move onto the next one, which is 3D EP Layer Isolate. At the beginning of this test project, there is a unique situation:

This is a “T” intersection, so the 3d line (indicated by the white arrow) will not be included being moved either to the 3D left or right layers. Neither will the 3d lines that designate a driveway (indicated by the blue arrow). The only 3d lines that need to be moved to the left or right layers is the EP 3D lines.
Using the command or technique you use to move entities from one layer to another, you will now, transfer the 3D lines of the EP’s to the layers 3D_EP_LT and 3D_EP_RT. Typically, I just click the line and right click, click Properties. I selected the left side first, so we will need to change the layer to 3D_EP_LT:

Repeat for the right side – 3D_EP_RT:
You will now change the layer state to the next 3D layer that has 3D lines on it for you to change to the appropriate left and right layers. Continue this process until all 3D layer states have been gone through that have corresponding left and right side layers.

Go to the Feature Line pull down on the Ribbon and select Create Feature Lines from Objects:

Select all the 3D Lines and hit Enter:
Make sure to give a Name and the boxes checked are as follows and then click OK:

You now have feature lines created for your surface to add as breaklines. Your next step will be to name them accordingly.
You are going to want to rename the feature lines so they correspond to their appropriate layers.

Here’s what you can do to accomplish this:

- At this point, go to the Feature Lines list in the Prospector. Change the names of the feature lines to reflect what layer they are on. The layer is listed two columns to the left of the name. After this is done, each line will need to be selected individually and labeled as left or right. Select the line and go to the Properties tab. Pull down the selection tab and select feature line. If feature line does not show up, turn off the 3D layers (Use the Layer States Manager) and turn on the Default layers. Doing this will turn on more layers than needed. Simply turn the unneeded layers off and begin selecting the feature lines. They will appear as white lines on top of the 3D layers. Doing these two steps now will make identifying the lines easy when it is time to target the Corridor.

- Another way to do this is to create the feature lines separately. That is, do the left side lines and then do the right side lines. It is a matter of choice but either way, this should be the time to do it.
To create breaklines for your drawing, do the following. Go to Layers on the Ribbon and click the Pull down to get to the Layer States:

Click the Layer State pull down arrow:

Click the 3D Layers to restore the 3D Layers State:
In the table below the Prospector main window, select all the Feature Lines, right click and select Add to Surface as Breakline...:

Click Ok on this box:
Give the breaklines a name and under Supplementing factors, change the distance to 10’ and click OK:

As you can see (rotated view for easier viewing), the densification of the breaklines helps create a truer, more accurate surface:

If you require even more densification, you can always delete the breaklines and re-project the feature lines as breaklines to the surface using a Distance value below 10.

*Check Surface for anomalous elevations using 3D orbit or 3D View before proceeding further!*
Topo Symbols in Civil 3D
Carlson Symbols vs Civil 3D Cogo Points

The process for using topographic symbols in the Carlson Survey and Civil 3D software is now being described in this manual. In previous versions, the symbology was controlled by Carlson Survey, generating satisfactory topo points, however, having no dynamic capabilities, rotation of the topo symbols was always necessary on projects that ran South to North, and some symbols had to be rotated no matter the orientation of the survey. Carlson Survey will no longer be used as the final application of creating topo symbols. Civil 3D will be used for this process, although, when a project is delivered to staff, they will be receiving 2 drawings from the Survey Dept., one being the original survey with the Carlson symbols and one containing just the 2D and 3D lines created by Carlson.

When topo symbols are created by Civil 3D, they are now dynamic, which means, that when the view in model space or layout tabs is rotated, the symbols automatically rotate to the view (there will be a few exceptions - see pg. 25).

Another benefit of using the C3D cogo points is you do not have to have the PNTS layers on to see the PNT NO, PNT DESCRI or PNT ELEV. Just mouse over any cogo point and Civil 3D reveals all – Point Number, the Style controlling the cogo point, the Layer that the cogo point is on, the Description, the Easting, the Northing, and the Elevation.

Civil 3D Cogo Points Labels

Labels for cogo points are controlled and edited differently than the Carlson symbols are. When you click on a cogo point, right click and then click Properties. You can then modify and make any changes to the label text in the Description Format field as shown:
**Tree Symbols**

The deciduous and coniferous trees have been modified for a more balanced look on the plans. The trees now come into the drawing based on the size of the spread, not the trunk. Below is an example of the deciduous tree:

![30" Dec. Tree](image)

Notice that the trunk size is more balanced and realistic looking in relation to the spread.

Below are the other tree and bush variations:

- **Pine Tree**
- **Multi-Stem Deciduous**
- **Multi-Stem Coniferous**
- **Coniferous Bush**
- **Deciduous Bush (Updated Block)**
Rotated Symbol Exceptions

There are two new exceptions of the symbol library that will not be dynamic in relation to rotating automatically to the view. The sign symbols sign, and sign2. The reason for this will be, depending on which side of the road these symbols are on and which direction they need to face. They need to be rotated in a certain direction. In most cases, the direction will be North, South, East or West. There will be a few cases though where there are exceptions to this rule:

- Curves on a road
- Roads that have NW & SE or SW & NE orientation

In these cases, the sign symbols will have to be manually rotated to face the correct direction. Let’s go through some examples of what needs to happen for these symbols to face the correct direction.

Let’s start with the basics of N, S, E or W direction.

Sign Example. Here is an existing sign on the east side of the road:

To get this rotated in the right direction, we merely have to re-assign the point style of the symbol. There are four point styles for sign and sign2 that are based on direction N, S, E, & W. Since this sign is on the east side of the road, the face of the sign needs to face South.

Just a note here – there will be some cases where you will have to rotate the sign symbol manually, using the rotate command, because the sign is actually facing an odd direction. In these cases, it is because it is a sign that may not be traffic related, but relates to an intersecting road or drive entrance (a sign that is posted next to an drive entrance of some business or landmark property), or could be due to the orientation of the road.
Sign Symbols

To change the rotation of this sign by Point Style, click on the sign symbol, right click and click Properties:

In the Properties box for the symbol, go the Style and change the Style from Sign-E to Sign-S:

Here is the result. The sign symbol has been rotated to the desired direction:

All symbol labels are set up to rotate dynamically by the view.
Mailbox Symbol

The mailbox symbol is now being treated a little differently than before. This symbol will rotate automatically with the view. The Survey Dept. now has two symbols for mailboxes – one left and one right, which means they will shoot mailboxes on the left side of the road as ML and mailboxes on the right side of the road as MR. When they do this, this will ensure that the mailboxes will rotate correctly to the view, no matter what the direction of the project – west to east or south to north.
CREATE AN ALIGNMENT
To define an alignment from a polyline

1. Draw a polyline in your drawing that represents the surveyed baseline that came from the Survey Department. When polyline is drawn, continue to next step.

2. In the Create Design Panel, Click Alignments pull down. Click Create Alignment From Objects.

3. Select the polyline that represents the baseline alignment.

4. Accept Alignment direction or Reverse direction

5. In the Create Alignment - From Polyline Dialog Box, specify a Site or accept the default <None>.

6. Enter a unique name for the alignment.

7. Enter an optional description for the alignment.

8. Specify an alignment style or accept the default style.

9. Specify the object layer settings.

10. Specify an alignment label set or accept the default label set.

11. Specify the conversion options.

12. Click OK.
CREATE A STATION-OFFSET REPORT
In this procedure, you will create a station-offset report.

Type in staoff in the command prompt. Hit Enter:

![StaOff dialog box]

Type in SE for Settings and hit Enter:

![Command line with StaOff settings]

Be sure to sort by Station, leave the rest as is. Click OK:

![StaOff settings dialog box]

Type in PO and hit Enter. Select _All Points and click OK:

![Select point groups dialog box]

Hit Enter after you have clicked OK.
Go to your Project folder and open up the _staoff.txt file:

Here is your station offset report:

```
<table>
<thead>
<tr>
<th>PT NUM</th>
<th>STATION</th>
<th>OFFSET</th>
<th>ELEV</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1015</td>
<td>0+00.48</td>
<td>-39.618</td>
<td>666.543</td>
<td>CL1 -7</td>
</tr>
<tr>
<td>1033</td>
<td>0+14.81</td>
<td>33.031</td>
<td>666.350</td>
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<tr>
<td>1054</td>
<td>0+14.85</td>
<td>27.630</td>
<td>666.279</td>
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<tr>
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<td>0+15.06</td>
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<td>0+15.28</td>
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</tr>
</tbody>
</table>
```


C3D DOES HAVE A BUILT IN STATION OFFSET REPORT, BUT OUR OFFICE PREFERENCES THE SINCPAC VERSION.

32
Profiles and Cross Sections

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CREATE A PROFILE
To create a Profile (create profile in the Master.dwg - Note: Disregard Alignment Name as some of these instructions were taken from previous manual procedures.)

1. Under the Create Design Tab, click Profiles pull down ➤ Create Surface Profile.

2. In the Create Profile From Surface dialog box, in the Alignment field, select your alignment:

On the right side of the dialog box, click Add. A centerline profile is added to the Profile List.

3. Click.

This is the Create Profile View Wizard. Give your profile view a name, check other settings, click Next:

Note: Most settings for the Profile and Profile View are preset.
Keep your Station Range to Automatic or customize it to your project needs:

Adjust the Profile View height:

Click Next.
Here are the explanations of Split Profile Views:

**Split Profile View**

 Specifies that the profile view will be split if the height of the profile extends beyond the User-Specified height value of the profile view.

**First Split View Style**

 Specifies the profile view style to use for the first split profile view segment. Use the standard controls to edit the style or create a new one.

**Intermediate Split View Style**

 Specifies the profile view style to use for the all split profile view segments between the first and last segments. Use the standard controls to edit the style or create a new one.

Click Next.

Profile Display Options (you shouldn’t have to do anything to this):

![Profile Display Options](image-url)

Click Next.
Data Bands (you shouldn’t have to do anything to this either):

Pipe Network Display

- Data Bands
- Profile Hatch Options

Profile Hatch Options (to be covered at a later time):

- Data Bands
- Profile Hatch Options

Click Create Profile View. Select your Profile View origin.
EXISTING PIPE NETWORKS
TO CREATE AN EXISTING PIPE NETWORK

Here you have two existing storm manholes:

Now, go to the Pipe Network pull down>click

Pipe Network Creation Tools:

You should now have a box like this. Be sure to select all the pull downs, then click OK:
The Pipe Network Creation Toolbar will appear:

Make sure to select the type of structure you need and the size/type pipe. By default, it is ready to put the first structure in. (Note: If you only want to put the structures in first, select the drop down arrow next to the icon. You have the option of putting a structure only in or a pipe only).

When you are ready to put the first structure in, use either the center snap or the insert snap, snap onto the first manhole. Then snap onto the next m.h. or pipe end:

You should end up with something like this:
If you need to add more pipes and structures to the pipe network you have just created, click on the last structure and right click, then click Edit Network:

The Network Layout Tool appears for this pipe network. You can change the mode depending on what type of feature you are continuing for this pipe network.

We will just add another structure and pipe run to this network. Since we are snapping onto an ex. C.B., we will change the structure type to the C.B. Snap onto the structure that connects to the catch basin or whatever feature you are adding:

Hit Enter.
Here is the end result. Erase the labels from the plan by just selecting each one and hit the Delete key on your keyboard, as the labels for structures only appear in the profile and cross sections.

Ex. C.B., 36" Dia.
Sta. 0+17.61, 50.18' Lt.
Ex. Rim = 647.27
Ex. R 12" C.P. N = 645.80
Bottom=643.60

Ex. M.H., 48" Dia.
Sta. 0+60.84, 93.44' Lt.
Ex. Rim = 646.92
Ex. R 12" C.P. SE = 648.95
Ex. R 12" C.P. S = 646.95
Bottom=644.95

0
Ex. M.H., 48" Dia.
Sta. 0+39.62, 0.22' Lt.
Ex. Rim = 649.64
Ex. R 12" C.P. NW = 647.97
Bottom=645.97

1

To draw (project) your pipe network pipes and structures to your profile, do the following. First, click on and right click on one of the structures you are projecting to your profile, and choose Draw Parts in Profile View:
Go to your profile and select the Profile View:

Your M.H. structure should look like this:

Note: Do not be concerned about the inner wall and floor showing up just yet. There is a LISP routine that will be used near the end of the project to fill in all existing and proposed structures in the profiles. The LISP routine is very simple and it automatically draws in the correct wall thickness and floor thickness / bottom invert.
Now just add the rest of your Pipe Network(s) to the profile:

To adjust invert elevations in the pipes and structures, here are the basics.

Click, then right click on one of the structures, and select Structure Properties:
Here you can modify the rim and invert properties and behavior of the structure and pipes to match the Rim, Sump and Pipe Inverts collected in the field:

<table>
<thead>
<tr>
<th>Structure Properties</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure Easting</td>
<td>1639943.8816'</td>
</tr>
<tr>
<td>Connected Pipes</td>
<td>1</td>
</tr>
</tbody>
</table>

**Insertion Rim Behavior**
- Insertion Rim Elevation: 648.470'
- Surface Adjustment Value: 0.000'
- Automatic Surface Adjustment: True

**Sump Behavior**
- Sump Elevation: 642.303'
- Sump Depth: 2.000
- Control Sump By: Depth

**Rim to Sump Height**: 6.167”
**Wall Thickness**: 6.000”
**Floor Thickness**: 6.000”
**Material**: Reinforced Concrete
**Frame**: M.H.
**Grate**: Standard
**Cover**: Standard
**Frame Height**: 9.000”
**Frame Diameter**: 18.000”
**Frame Length**
**Frame Width**
**Barrel Height**
**Barrel Pipe Clearance**: 6.000”
**Cone Height**: 24.000”
**Slab Thickness**
**Inner Structure Diameter**: 48.000”

For Catch Basins, be sure to modify the inner structure diameter to the actual size of the existing structure – size of ex. structure is usually indicated in the survey field notes.
Once you have the existing pipes and structures in the profile and the rim elevations, and inverts of the pipes and structures to their correct elevations, use the following LISP routines to draw in the inner walls of the structures. If for any reason, you have to relocate an existing structure or move a proposed structure, delete the inner wall from the structure, relocate it and then re-use these routines to draw them back in.

**Steps for Inner Wall Creation**
Type in appload in Civil 3D. Browse to g:\data\engineer\cadstds\lisp and select PMH.lsp or PCB.lsp (PMH is for manhole structures and PCB is for catch basin structures):

![LISP file selection](image)

Select the desired Lisp file and click Load. (If you hold down the CTRL key you can highlight both). You can now click Close:

![Loaded Applications](image)
Now type in either PMH or PCB, depending on the structure. For this example, I will be doing both.

1. Hit Enter

2. Select the top midpoint of the MH structure:

Select the top and then the bottom of the structure:

3. 4. 5. Done.

Use the PCB command for catch basins. You will be asked to provide the inner structure diameter. For this example, we will use 2, since the structure is a 3’ structure. Now just select the top and bottom of the structure as you did before:
CREATE P&P OR PLAN ONLY SHEETS IN THE MASTER DRAWING
Go to the ribbon, and click on the Output Tab> Create View Frames:

Click Next after choosing your baseline and adjust Sta. Range (if necessary):

Make your choice of Plan and Profile or Plan Only and your template is set:

After that, just make sure these settings are as follows:
Click Next. Click Next again to this screen. Click the 2\textsuperscript{nd} checkbox and make the value 50 or 100. The value of 50 will give you 550’ of plan view and 100 will give you 500’:

You can click Next, and then click Create View Frames or just click Create View Frames.

Next, go back to the ribbon and click Create Sheets:

Be sure to check All layouts in the current drawing – click Next:
Click Next:

Click Create Sheets:

You’ll see this:

Click OK
You will be prompted to select an insertion point for the profiles for each sheet:

Command: _AeccCreateSheets

Select profile view origin:

Pick a point in your drawing. You will see this:

Now you’ll have the profiles for each sheet in your model space and each plan and profile sheet for your layouts:
Note: After you have created the sheets, you will have to adjust the elevation range of each sheet profile in model space.

To do this, click, then right click on the Profile View and select Profile View Properties...:

Now, make sure you are on the Elevations tab, and then change the range to make it more suitable for the sheet (Do this for each sheet profile):

Click OK.
CREATE SAMPLE LINES
In this procedure, you will create a set of sample lines along the alignment. This is the first step in generating cross sections.

The sample lines define the stations at which the cross sections are cut, and also the width of the sections to the left and right of the alignment. A set of sample lines is stored under a Sample Line Group for the alignment. Each sample line group has a unique name. Each line within the group also has a unique name.

To create sample lines

1. Click the Profiles and Section Views ➔ Sample Lines.

2. At the Select an Alignment prompt, press Enter to display the Select Alignment dialog box.

3. Select your alignment. Click OK.

4. On the next dialogue box, be sure to select the layers for Sample line layer and the Section sampling defaults layer.

Click OK.
5. On the Sample Lines Tools bar, click this pull down to get the station range option:

You should get this box. Fill it in as shown:

Now select specific locations along your baseline, (such as drive locations, existing storm drain structures, etc.) to include them with the sample line creation. Be sure to include the swath widths (Note: Consult your driveway summary to specify drive locations by stations):
CREATE EX. EDGES OF PVMT. FOR CROSS SECTIONS
In your Cross Section drawing, create an Assembly called “EX-EP”:

Be sure the settings are as follows:

Click OK.
Pick a point to locate your new assembly:

Next, make sure your markers are on:
Click the light bulb to turn them on and click OK:

Make sure your Tool Palettes is up to see the assemblies:
Select the following assembly component under the Imperial – Generic Tab:

**LinkWidthAndSlope**

Next, go to your properties box and make sure the side is set to right:

Now, select the assembly maker:
You should see this:

Go back to Tool Palettes and select the same component LinkWidthAndSlope, then go to properties and switch the side to Left:

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version</td>
<td>R2008</td>
</tr>
<tr>
<td>Side</td>
<td>Left</td>
</tr>
<tr>
<td>Width</td>
<td>10.000</td>
</tr>
<tr>
<td>Slope</td>
<td>2.00%</td>
</tr>
<tr>
<td>Point Codes</td>
<td>P2</td>
</tr>
<tr>
<td>Link Codes</td>
<td>Top, Datum</td>
</tr>
<tr>
<td>Omit Link</td>
<td>No</td>
</tr>
</tbody>
</table>
Now, select the assembly marker again and you should see this:

Go back to your Tool Palette and select LinkVertical:
Go to properties and change the Vertical Deflection to -1:

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version</td>
<td>R2008</td>
</tr>
<tr>
<td>Vertical Deflection</td>
<td>-1.000'</td>
</tr>
<tr>
<td>Point Codes</td>
<td>P2</td>
</tr>
<tr>
<td>Link Codes</td>
<td>Top,Datum</td>
</tr>
<tr>
<td>Omit Link</td>
<td>No</td>
</tr>
</tbody>
</table>

Now select one end marker and hit enter until you get the Command Prompt to insert the Link Vertical component. Repeat for the other side:
Now go to your Prospector Tab and right click your assembly called “EX-EP” and click properties:

Make the Construction tab active, right click on the Group Names and rename them to something meaningful:
Like Existing EP group:

Click on the Right LinkWidthAndSlope (Right), and under the Default Input Value, change the Omit Link to Yes. Repeat for LinkWidthAndSlope (Left):
Now click OK.

Go back and turn off your markers.
You are now going to create a new corridor for your new assembly. Click the Corridor pull down and click Create Corridor:

Hit Enter to select from a list. Select the project baseline. Click OK.

Enter and select profile by clicking OK:
Enter and select the EX-EP assembly by clicking OK:

Give the corridor an appropriate name (description optional) and click Set All Targets:

Click on the Right Assembly Group Name field to target the Alignment:

Set the Offset Target type to Feature Lines, etc. pull down (above) - click Select by Layer:
Select the 3D_EP_RT layer and click OK.

Your feature lines have been added as targets for the right side EP’s. Click OK.

Now repeat for the left side, and you should have a result shown below:

Now, click on the Target network Name for the right side:

Note: Make sure you are only targeting the feature lines. If 3d polylines show up in the selected entities display, just highlight each one and delete it from the list using the red X box to the right of the list (see the arrow above).
Again, following the same procedures as above, select the pull down to change to the Feature Line option, Select by Layer, click OK, then click OK again. Repeat the same steps for the left side. Do not target the Right and Left LinkVertical Subassemblies.

<table>
<thead>
<tr>
<th>Target</th>
<th>Object Name</th>
<th>Subassembly</th>
<th>Assembly Group</th>
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<tr>
<td>Surfaces</td>
<td>&lt;Click here to set all&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Width or Offset Targets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Target Alignment</td>
<td><strong>Varies</strong></td>
<td>LinkWidthAndSlope (Right...) RIGHT</td>
<td></td>
</tr>
<tr>
<td>Target Alignment</td>
<td><strong>Varies</strong></td>
<td>LinkWidthAndSlope (Left...) LEFT</td>
<td></td>
</tr>
<tr>
<td>Slope or Elevation Targets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Target Profile</td>
<td><strong>Varies</strong></td>
<td>LinkWidthAndSlope (Right...) RIGHT</td>
<td></td>
</tr>
<tr>
<td>Target Profile</td>
<td>&lt;None&gt;</td>
<td>LinkVertical (Right) - (212) RIGHT</td>
<td></td>
</tr>
<tr>
<td>Target Profile</td>
<td><strong>Varies</strong></td>
<td>LinkWidthAndSlope (Left...) LEFT</td>
<td></td>
</tr>
<tr>
<td>Target Profile</td>
<td>&lt;None&gt;</td>
<td>LinkVertical (Left) - (209) LEFT</td>
<td></td>
</tr>
</tbody>
</table>

Click OK...and OK again and your Corridor is created.

Now add your new corridor to your sample line group:

Right click on the Sample Line group and click Properties.

Click Sample more sources...

Highlight your corridor and click Add>>.

Click OK, then click OK again.
CREATING SECTION VIEWS
Before creating Section Views, you will have to change the scale under the general settings of the drawing. Follow these steps:

In the Toolspace, click the Settings Tab:

Next, right click on the drawing name and click Edit Drawing Settings:
You are going to change the scale from 20 to 5, so the section views come into the drawing, looking correct. Just change the 20 in the Custom scale field to 5, then click OK:

Now you are ready to create your Section Views.

On the ribbon, click the Section Views pull down, and click Create Multiple Views:
On this first screen, you would typically want to do an Automatic setting for the Station range, but I’ve specified a range to reduce the amount of Section Views for this training document. The rest of the settings are fine as is. Click Next:

If the template is not set to the proper template file, click the button with the 3 dots next to the field, and browse to G:\data\ENGINEER\CadStds\Plan Production Sheets\cross section 2015.dwt. Set the Group Plot Style to as shown. Click Next:
On this screen, you can adjust the swath width of the Section Views, based on the Portrait or Landscape format of the template. The default should be set for Portrait, -40 and 40. Click Next:

Specify the Section view height option to follow a section – SRF. Click Next:
On this screen, you can choose to include or exclude the SRF and pipe networks by checking or unchecking the boxes. By default, they will be checked. Click Next:

Be sure on this next screen that the band set is set to LCE Standard. Click Create Section Views:
Here is the result:

You’ll notice that the pipe entering the structure does not look right. We can fix this.

In your plan that shows your sample lines, you’ll see that the sample line is cutting straight through the structure and because the pipe is at an angle to the sample line, the pipe is actually shown correctly in the section. We need to change how the sample line is cutting through the structure and pipe:

- Straight Sample Line
- Draw line thru run to BL
- Move SL by grip to line
Hit Esc. You’ll notice the section has extended out past the swath width of the sections. This may not happen all the time, depending on where the end of the sample line ends in relationship to the other sample lines.
This is easily fixed. Just click the section view and right click and click Section View Properties:

Click the Offset Tab and change the Offset range by User specified settings, so that the left and right side are at an equal distance, which should be 40. Click OK:

Now the section view looks correct:
Remember, when you initially run the Create Multiple Section Views wizard, you can set the User Specified Offset range Settings to -40 Left and 40 Right and this will control any pipe networks or pipe crossing that goes beyond the sample line and section view limits.

**ADDITIONAL STEP**

You will need to adjust the location of the section views to be centered in the layouts of the Cross Section Sheets when they are created. Use the Move Step A for Portrait style cross section sheets and Move Step B for Landscape style.

**Move Step A**

Use the Move command > select all your section views > enter > select your base point > type in the following:

@4,5

Hit enter.

**Move Step B**

Use the Move command > select all your section views > enter > select your base point > type in the following:

@5,5

Hit enter.
ADDING ADDITIONAL PIPE NETWORKS IN SECTION VIEWS
To add additional pipe networks to your section views, do this. After the pipe network has been created in your Topo drawing, be sure to add it as a data shortcut. Right click on the data shortcuts in Prospector and click Create Data Shortcuts:

If you want, you can check the Hide already published pipe networks to show just the pipe networks that you want published.

Check the pipe network(s) that you want published and click OK:
You see that this pipe network has been added as a data shortcut:

Click Save in your Topo drawing. Now open or switch to your Cross Section drawing. You will see the following balloon notification if you already had your Cross Section drawing opened:

If you do see this, click the Synchronize. If you re-opened your Cross Section drawing, the new data shortcut will have synchronized automatically. You will still need to make a new reference to the new data shortcut. Do this...right click the new data shortcut and click Create Reference:
Depending on the type of pipe network you’ve referenced, be sure your settings are correct, then click OK:

Now drill down in Prospector to your Sample Line group, right click and click Properties:
Be sure the Sections tab is active, click the Sample more sources button:

Click on the available source(s) you wish to add and click the Add>> button:

Then click OK, and click OK again.

This is what was added to the Topo drawing...

And this is what has been updated in the Cross Section drawing:
LABELING PIPES AND STRUCTURES IN SECTION VIEWS
Select the pipe or structure pipe network in the section and right click:

Select Add Label:

To move the label, just click it to highlight it and select the grip, move the label and pick a new location for the label:

1)  

2) Repeat procedure for structures.

3)
Sheet Management for AutoCAD Civil 3D®

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CREATING P&P SHEET LAYOUTS USING PLAN PRODUCTION
PLAN PRODUCTION – USING THE PLAN PRODUCTION TEMPLATE

Typical Plan and Profile

When you are ready to create your sheet layouts, follow these steps.

Click on the Output Tab, then click Create View Frames:

Make sure you have your proper Alignment chosen and specify the type of Station Range:

Click Next.
Under the Sheet Settings, click on the Browse button next to the Template for Plan and Profile sheet field (note-the template field may be already filled in with a default location-disregard this location):

In this box, again select the Browse button to navigate to the LCE standard template file:

By default, the Open box should navigate to the Support folder out on the network. Click the Up Folder icon to go to the previous folder:
Select the Plan Production Sheets folder:

Select the PLAN PRODUCTION.dwt file and click Open:
Now your selection becomes clear. Select the appropriate layout you wish to use. In this case, we will use LCE PP6-20:

In the View Frame Placement settings, the default should be standard for our use. You may only need to change this setting in certain situations:

Click Next:
Give your View Frame Group an appropriate name and click Next:
These settings are pre-set in the command settings or this wizard. You may change the Repositioning setting if for any reason you would need to reposition any of the match lines. Click Next:
In this box, you can pre-set the type of display you wish to see when your profile views are created. For now leave these settings as is and click Create View Frames:

The following profile view information is required to determine the distances available in viewports:

- **Profile View Style**
  Select profile view style:
  ![Option: LCE Design View]

- **Band Set**
  Select band set style:
  ![Option: LCE Design View]

You see your View Frames:

![View Frames Diagram]

It’s time to create your sheet layouts. Go back to the Ribbon and click Create Sheets:

![Ribbon with Create View Frames and Create Sheets options]
As you can see, you have some control over what you can create here. In the Layout Creation, you will have to make the determination of where the layouts are going to go based on the type and length of the project you are doing. For this tutorial, I am putting them into a separate drawing (this coincides with the new work flow chart). Click Next:

Now an explanation of the new north arrow block feature. Our north arrow is now a block that resides in each of the plan production layouts. By default, the wizard is automatically set to use our north arrow block called “narrow”. When the sheet layouts are created, Civil 3D automatically orientates the north arrow to the orientation of the project. I specifically picked this test project to show exactly how this works, since this project is orientated from south to north:

You will see this at the end of this tutorial.

Click Next:
Here you can create a new Sheet Set or add what you are creating to an existing Sheet Set. Take note of the Sheet file name under Sheets. It is already set to be called Plan Production, again based on our new work flow chart. Do not change this. Click Next:
In this next box, it shows the Profile view settings styles that will be used, the profile view options. Notice that the profile I had created previous to the starting of this tutorial is called Overall Profile. I think this may be a good practice for all users in the future. Click Next:
In this next box, since we are “transporting” the sheet layouts and the plan and the profile by x-ref over to a new drawing called “Plan Production”, you can include any or all data shortcuts automatically just by choosing them here. Make your choices and click Create Sheets (notice you can copy your pipe network labels as well to your destination drawing):

Select the data you want referenced in your sheets:

- Surfaces
- Alignments
- Sites
- Pipe Networks
- Networks

Click OK to this next prompt:

AutoCAD Civil 3D 2010

⚠️ To complete this process your current drawing will be saved.

OK Cancel
Select a location for your new profile views:

When the process is completed, if you have created the layouts in the current drawing, then the new profile views and the sheet layouts should of appeared in your current drawing. Since we told the wizard to create a separate drawing for the profile views and layouts, we need to open the drawing called Plan Production in the project folder. Let’s do that, shall we?
Go to the quick access toolbar, and click the Open folder icon. Select the Plan Production drawing file and click Open:

Once opened, if you zoom in on the first profile view, you will notice that the profile is riding low in the view.
This is a small bug in the software. Back in the wizard, there was a step where you could base the profile views elevation range on the overall profile already created or you could manually enter in the elevation range that you wanted:

Had we selected the Profile View Wizard, this is what we would of seen:

As you can plainly see, there is no way to change the elevation range here, because it’s grayed out. So we’ll have to adjust each profile view as we go along. Here’s the quick way. Select and right click on the profile view. Click Profile View Properties:

Click on the Elevations Tab, and put in a reasonable elevation range:
Now we are going to deviate a little from the current process to explain the two different grid styles. (Please refer to this section of this tutorial as a reference for any other plan production tutorials for switching between profile view styles and profile view band styles.) Ok, here we go.

By default, the profile view and the profile view band are set to what’s known as the LCE Design View styles. We are going to change it to the LCE Plot View styles. Since you have the Profile View Properties still up, click on the Information Tab and click the Object style pull down and change the style to the Plot View style:

```
<table>
<thead>
<tr>
<th>Information</th>
<th>Stations</th>
<th>Elevations</th>
<th>Profiles</th>
<th>Bands</th>
<th>Hatch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Description:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Object style

LCE Plot View
LCE Design View
LCE Plot View
Standard
```

Next, click the Bands Tab, and double click the Style under the Bands List. Click the pull down and select the Plot View Style and click OK:

```
Band type: Profile Data
Select band style: LCE Design View

List of bands

Location: Bottom of profile view

<table>
<thead>
<tr>
<th>Band Type</th>
<th>Style</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profile Data</td>
<td>LCE Design View</td>
<td></td>
</tr>
</tbody>
</table>
```

Next, click the Bands Tab, and double click the Style under the Bands List. Click the pull down and select the Plot View Style and click OK:
Click OK:

Notice the change in the view:

To reverse the display, just reverse the process. Select Profile View, right click, select Profile View Properties, Information Tab, change object style back to Design View, click Bands Tab, change the style under the Bands List back to Design View, and click OK and voila you’re back:
OK, back to the Plan Production drawing. Here is one of the layout sheets:

Now, just a bit of explanation to the Plan Production Layout Sheets, the grid and the north arrow block. As you may already know, the grid no longer resides within the actual plan and profile block. We are now using the Civil 3D grid that is created with the Profile View. Here is the spacing details for the grid itself:
As for the north arrow, you no longer have to manually deal with this block. The Plan Production wizard does it for you:

This ends this tutorial.
CREATING SPLIT PROFILE SHEETS USING PLAN PRODUCTION
PLAN PRODUCTION SPLIT PROFILE – USING THE PLAN PRODUCTION TEMPLATE
Typical Split Left and Right Plan and Profile

Before using this process, be sure that your pipe networks are separated by the left and right sides, because this process can take that into account and make adding your pipe networks to your split profiles much easier.

When you are ready to create your overall profile and split profile layouts, follow these steps.

Be sure you are on the Home Tab, then click Profile View, then Create Profile View:

Next, give the Profile View an appropriate name, and make sure the stacked profile view is selected and click Next:
Specify your Station Range, give the length of each view as 550’ and click Next:

<table>
<thead>
<tr>
<th>Station range</th>
<th>Start:</th>
<th>End:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic</td>
<td>92+00.00’</td>
<td>131+93.93’</td>
</tr>
<tr>
<td>User specified range</td>
<td>92+00.00’</td>
<td>131+93.93’</td>
</tr>
<tr>
<td>Length of each view:</td>
<td>550.00’</td>
<td></td>
</tr>
</tbody>
</table>

For Multiple Profile Views, C3D only allows specific height, not Elevation Range. Use default:

<table>
<thead>
<tr>
<th>Profile view height</th>
<th>Minimum:</th>
<th>Maximum:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic</td>
<td><strong>Varies</strong></td>
<td><strong>Varies</strong></td>
</tr>
<tr>
<td>User specified</td>
<td>20.00’</td>
<td></td>
</tr>
<tr>
<td>Profile view datum by:</td>
<td>Mean elevation</td>
<td></td>
</tr>
</tbody>
</table>

SPECIAL NOTE – The next section may be a bit confusing, but the best explanation is this. This section pertains to profiles that have larger elevation ranges where you would need to “split” the profile vertically across the profile view, just as it shows when you enable this feature:

Do not use this feature unless your profile requires it. In most if not all cases, you will not need this feature. By default, it is not enabled. Leave the box unchecked.
Click Next:

On the next screen, this is where the stacked profile settings are determined. The command settings for this feature are already set up for you. Click Next:

- Number of stacked views: 2
- Gap between views: 20.00'
- Top view style: LCE Design View
- Middle view style: LCE Design View
- Bottom view style: LCE Design View

Specify profile and pipe network display options for each of the vertically stacked profiles in the following two pages.
Here are the Profile Display options. In the Specify profile display options area, click the check box under Draw:

Select stacked view to specify options for:
- Top View
- Bottom View

Specify profile display options:

<table>
<thead>
<tr>
<th>Name</th>
<th>Draw</th>
<th>Clip Grid</th>
<th>Split At</th>
<th>Descrip...</th>
<th>Type</th>
<th>Data S</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRF - Su...</td>
<td>✓</td>
<td>✗</td>
<td>✗</td>
<td></td>
<td></td>
<td>SRF</td>
</tr>
</tbody>
</table>

Now click the Top View and repeat the same step:

Select stacked view to specify options for:
- Top View
- Bottom View

Specify profile display options:

<table>
<thead>
<tr>
<th>Name</th>
<th>Draw</th>
<th>Clip Grid</th>
<th>Split At</th>
<th>Descrip...</th>
<th>Type</th>
<th>Data S</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRF - Su...</td>
<td>✓</td>
<td>✗</td>
<td>✗</td>
<td></td>
<td></td>
<td>SRF</td>
</tr>
</tbody>
</table>

Click Next:

This next screen allows you to add your pipe networks to your split profiles.

Select stacked view to specify options for:
- Top View
- Bottom View

Select pipe networks to draw in profile view:

<table>
<thead>
<tr>
<th>Name</th>
<th>Select</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipe Crossing Test</td>
<td></td>
</tr>
<tr>
<td>Pipe Test 2</td>
<td></td>
</tr>
<tr>
<td>Monclova Ex. Stm. Pipe Network</td>
<td></td>
</tr>
<tr>
<td>Storm #1 (Right)</td>
<td></td>
</tr>
<tr>
<td>Storm #2 (Left)</td>
<td></td>
</tr>
</tbody>
</table>

Be sure to assign the proper pipe network to the correct view. Any left side pipe network will be assigned to the Top View and any right side pipe network the Bottom View.

Top View:

Select pipe networks to draw in profile view:

<table>
<thead>
<tr>
<th>Name</th>
<th>Select</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipe Crossing Test</td>
<td></td>
</tr>
<tr>
<td>Pipe Test 2</td>
<td></td>
</tr>
<tr>
<td>Monclova Ex. Stm. Pipe Network</td>
<td></td>
</tr>
<tr>
<td>Storm #1 (Right)</td>
<td></td>
</tr>
<tr>
<td>Storm #2 (Left)</td>
<td></td>
</tr>
</tbody>
</table>

Bottom View:
The next screen should not be fooled with, just click Next:
Again, do not worry about the next screen either and click Next. At the last screen, if the screen doesn’t look like this, change the settings to the following, and click Create Profile Views:

Here are the split profile views. Your Profile Views may look different in that the profiles will be lower in the profile view itself. Not to worry, we will fix this issue a little later:

Now, click on the Output Tab, then click Create View Frames:
Make sure you have your proper Alignment chosen and specify the type of Station Range:

Click Next.

Under the Sheet Settings, the Template for Plan and Profile sheet field will probably already be set to the proper location. If not, see the Plan Production-Typical Plan and Profile tutorial to browse to select the Plan Production template. Select the Browse button next to the template field:
Select the LCE PPSPLIT 20 layout and click OK:

Be sure your offset distance is the way you want it and Click Next:
Give the View Frame Group an appropriate name and click Next:
Just click Next:

You can choose to insert match lines automatically and define how they are placed:

- **Insert match lines**
- **Positioning**
  - Snap station value down to the nearest
  - Allow additional distance for repositioning (increases view overlap)
    - Minimum: 50
    - Maximum: 50.0000'

**Match Line**
- **Layer:** Match Line
- **Name:** MATCH LINE STA. <Match Line Staio
- **Style:** LCE Standard

**Labels**
- **Left label style:** LCE Standard
- **Right label style:** LCE Standard
- **Left label location:** Middle
- **Right label location:** Middle
In this box, you can pre-set the type of display you wish to see when your profile views are created. For now leave these settings as they are and click Create View Frames:

You should see your View Frames:

It’s time to create your split profile sheet layouts. Go back to the Ribbon and click Create Sheets:
As you can see, you have some control over what you can create here. In the Layout Creation, you will have to make the determination of where the layouts are going to go based on the type and length of the project you are doing. For this tutorial, I am putting them into a separate drawing (this coincides with the new work flow chart). Click Next:

Click Next:
Here you can create a new Sheet Set or add what you are creating to an existing Sheet Set. Take note of the Sheet file name under Sheets. It is already set to be called Plan Production, again based on our work flow chart. Do not change this. Click Next:
In this next box, it shows the Profile view settings styles that will be used, the profile view options. Notice that the profile I had created previous to the starting of this tutorial is called Test - Split Profile. I think this may be a good practice for all users in the future to call these elements that mean something. Click Next:
In this next box, since we are “transporting” the sheet layouts and the plan and the profile by x-ref over to a new drawing called “Plan Production”, you can include any or all data shortcuts automatically just by choosing them here. Make your choices and click Create Sheets (notice you can copy your pipe network labels as well to your destination drawing):

Click OK to this next prompt:

**AutoCAD Civil 3D 2010**

⚠️ To complete this process your current drawing will be saved.
Select a location for your new profile views:

Here is the result. Notice the Profile Views it created are not split, but we’re not going worry about that, as we are not going to use these Profile Views:
When the process is completed, if you have created the layouts in the current drawing, then the new profile views and the sheet layouts should appear in your current drawing. Since we told the wizard to create a separate drawing for the profile views and layouts, we need to open the drawing called Plan Production in the project folder. Let’s do that, shall we? Go to the quick access toolbar, and click the Open folder icon. Select the Plan Production drawing file and click Open:

![Select File dialog box](image)

Once opened, if you zoom in on the first profile views, you will notice that the profiles are riding low in the views.
This is a small bug in the software.

So we’ll have to adjust each profile view as we go along. Here’s the quick way. Select and right click on the profile view. Click Profile View Properties:

Click on the Elevations Tab, and put in a reasonable elevation range like the following:

<table>
<thead>
<tr>
<th>Elevation range</th>
<th>Minimum:</th>
<th>Maximum:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic height</td>
<td>647.061'</td>
<td>678.171'</td>
</tr>
<tr>
<td>User specified height</td>
<td>660.000'</td>
<td>680.000'</td>
</tr>
</tbody>
</table>

Again, you will have to do this for each profile view.
Now we are going to deviate a little from the current process to explain the two different grid styles. (Please refer to this section of this tutorial as a reference for any other plan production tutorials for switching between the two new profile view styles and the two profile view band styles.) Ok, here we go.

By default, the profile view and the profile view band are set to what’s known as the LCE Design View styles. We are going to change it to the LCE Plot View styles. Since you have the Profile View Properties still up, click on the Information Tab and click the Object style pull down and change the style to the Plot View style:

Next, click the Bands Tab, and double click the Style under the Bands List. Click the pull down and select the Plot View Style and click OK:
Click OK:

Notice the change in the view:

To reverse the display, just reverse the process. Select Profile View, right click, select Profile View Properties, Information Tab, change object style back to Design View, click Bands Tab, change the style under the Bands List back to Design View, and click OK and voila you're back:

Change the Profile View settings back to Plot View or simply undo.
OK, back to the Plan Production drawing. Here is one of the layout sheets:

Obviously, this is not the right profile, so let’s use the Align Space method to get to the split profiles we want to see (Note-you will have to use this procedure for each sheet layout.)
First, click and right click on the profile viewport and click Properties (Note-if you have troubles selecting the viewport, just select the border block and send it to the back using the Display Order command, by clicking the block, right click, Display Order, Send to Back):

When the properties come up, change the locked setting to unlocked (No):

Hit the Escape key afterwards.
Double click inside the profile viewport:

Now pan to the split profiles that are associated with this view:
You should notice a point that’s part of the border block. This will come in handy when you follow the next steps:

Click the Express Tools Tab:

Click Align Space:
Snap by Endpoint to the location indicated:

Hit Enter. Then, holding the shift key on the keyboard, right click and select Node:
Select the point that was pointed out earlier:

Hit Enter.

Here is your Plan Production Split Profile Sheet:

Proceed with re-aligning the rest of the sheet layouts. You can then delete the profile views that were created by the Create Sheets step of the Plan Production.
CREATING DOUBLE PLAN SHEETS USING PLAN PRODUCTION
To start, go to the Ribbon Output Tab > Create View Frames:

This will be similar to the process for the Plan and Profile sheet generation steps. Choose your settings or leave as is. Click Next:

For this next setting, select Plan only and then click the Template for Plan sheet button:
Browse to g:\data\engineer\cadstds\plan production sheets and choose LCE PSHT2.dwt and click Open:

Now, just click OK:
If you need to set the view frame before the start of the alignment, check the box and set the preferred distance value. Click Next:

Give the View Frame Group a name:

Click Next:

Click Create View Frames:
Here are your View Frames:

Next, go back to the Plan Production panel > Create Sheets:
Use the following settings, then click Next:

- Choose the View Frame Group and output settings for layout creation.
  - View Frame Group:
    - Gunn Road
  - Sheet type: Flat only
  - View frame range:
    - All
  - Choose View Frames...

- Layout Creation:
  - Number of layouts per new drawing:
  - All layouts in one new drawing
  - All layouts in the current drawing

- Layout name:
  - STA. <[View Frame Start Station Value]> TO STA. <[View Frame End Station Value]>

- Choose the north arrow block to align in layouts:
  - Narrow

Click Create Sheets:

Click OK:

To complete this process your current drawing will be saved.
As you can see, only the top plan is created.

This was the only way to get this process to work; however, here is the quick workaround. Go to the quick View Layout and click on to the second layout:
Select the top viewport, right click, Clipboard and click Copy with Base Point:

Select the upper left hand corner of the viewport by endpoint of this layout:

Hit Escape.

Click back on the first layout.

Hit the combo keys ctrl-v or right click>Clipboard>Paste.
Select the lower left hand corner of the upper viewport using endpoint:

And there you are, your double plan sheet:

Now, using this technique, you should be able to move and copy the rest of your viewports into their respective layouts until you are done. Delete any layouts you have left over. You will have to rename your layouts to reflect the new stationing per layout.
CREATE A TITLE SHEET USING ARCGIS FOR AUTOCAD
ArcGIS for AutoCAD – Title Sheet Location Maps

Start a new drawing using the Title Sheet template in Plan Production:

Type in the command GIS and the ArcGIS for AutoCAD tool will load in the ribbon:

Next, click on the Add Service icon:
Click the Assign button to assign a State Plane coordinate system:

![Warning: No Coordinate System Defined]
This drawing does not have a coordinate system defined.
Click Assign to assign a coordinate system or click Ignore to bypass this step.

Click to open the Projected Coordinate Systems folder:

- Geographic Coordinate Systems
- Projected Coordinate Systems
- Vertical Coordinate Systems

Click to open the State Plane folder:

Click the NAD 1983 HARN (US Feet):
Scroll down to the Ohio North coordinate file, and open it:

Highlight the 2nd option, which is the Lucas County GIS Services:

Select a GIS Server

Click Next:
The Feature Services Load:

You will then see a box like:
Before going any further, an explanation of what is available and what will be available in the near future is needed here.

At the time of this tutorial being written, some of the Engineer’s GIS layers were still not available. A base map of layers has been created for the very purpose of creating location maps as backgrounds in AutoCAD, but have not been deployed to the ArcGIS Server as services. To continue the demonstration of this tutorial, other available GIS layers will be used. However, the steps and concepts for these procedures will be the same. In the future, the services being used for our purposes will typically be under the Engineer folder.

You can open up any of the Service folders to load the Feature Service you desire to load into your drawing. We will be selecting from the Tyler folder to add the Lucas County centerlines:

Once selected, the dialogue box on the right will appear as follows:
You have many different options to choose from based on the need of the drawing you are working on.

You can set the bounding box for different quantifications:

- **Service Full Extent:**
  This option gives you the entirety of the service layer(s) being added

- **Service Initial Extent:**
  This option gives you the entirety of the service layer(s) being added based on the extent of the service layer(s) when published, which may differ from the option above.
  If you desire the Full Extent, the option above is recommended

- **Drawing Extents:**
  This option will bring in the service layer(s) based on the current drawing extents (which means the service layer(s) will be cropped at those extents)
Current View:
This option is similar to the Drawing Extents, with the exception that the service layer(s) will be cropped at the extent of the current view

Select corners…:
Again, this option, being similar to the previous two options, will be based on a selection of two corners picked within the current view of your drawing

(Customized):
This option will be based on actual min. and max. x and y coordinates manually input into the coordinate fields provided

The Update added service option you can leave at the default of Dynamically:

Update added service: [Dynamically]
Image Format: [PNG24]
Transparency: [30]

Image format can be changed to the following formats:

Image Format: [PNG24, PNG, JPG, TIFF, BMP]
Transparency: [30]

Service Information:

It may not be all that important for which format you select. Just keep in mind that some formats may regenerate faster than others because different formats use varying amounts of memory in the drawing
This information explains where the service is coming from, who created it and what it can be and should be used for

Add vs. Export...

Adding is always better than using Export, as Export is not dynamic once attached to the drawing. Labels and feature lines that are not viewable in the layer service based on zoom level, will not appear in the drawing. It is highly recommended to always use Add

Let’s get started creating the location map for the Title Sheet.

Once the Centerline service layer has been selected and all the options have been selected accordingly, click Add

You will see in the dialogue box the service being requested from the server:

AntialiasingMode: Fastest
TextAntialiasingMode: Force
Keywords: Tyler,centerlines

When completed, it will tell you so:

AntialiasingMode: Fastest
TextAntialiasingMode: Force
Keywords: Tyler,centerlines

Requested service complete

Click Close.
Now, zoom extents and you should see this:

This may look odd and you are asking yourself, “Where are the rest of the roads?” A small explanation is in order here...every service layer, when published, can have certain ArcGIS restrictions assigned to them. Whether a feature service (in this case, centerlines) or a label, some of these service layers can have zoom level restrictions on them that will allow you to see them only after you are zoomed into them.

If you zoom into a certain area, then you will see what you would expect:
As mentioned previously, depending on the service layer you have selected and how it was published, will determine how it will be viewed in AutoCAD. When the Engineer’s version of the centerlines are published, they may look a little differently.

Once you have the area of your project in the current view, select the indicated icon on the Ribbon:

![Icon](image)

This will set the current feature service layer to limit it to the current view in the drawing.

NOTE: Be aware that if you require more than one map for the Title Sheet, you should not perform the above procedure as you will need other areas of the map to perform the following procedures for each location map window.

As you can see, when zoomed out, the limit of the attached service layer has now been confined to the current view that was established:

![Map](image)

This is now the limit of the attached service layer, which cuts down on regeneration time.
Using the ID command, ID 2 points in your map that would represent a rectangular window. The 1st point would be the lower left hand corner of the window and the 2nd point would be the upper right corner of the window. You can also draw a box around the project area and ID the appropriate corners. Make note of the x and y coordinates of each:

<table>
<thead>
<tr>
<th>Command: ID</th>
<th>Specify point: X = 1638256.6390</th>
<th>Y = 710380.7195</th>
<th>Z = 0.0000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Command: ID</td>
<td>Specify point: X = 1643052.8766</td>
<td>Y = 714359.9840</td>
<td>Z = 0.0000</td>
</tr>
</tbody>
</table>

You can round each of these numbers up. Either copy and paste these numbers or write them down to use them for the next step.

Switch to the Title Block layout:
Zoom into the Location Map area:

Under the Express Tools tab, click Align Space:

You will be prompted for the first X and Y coordinate point. Copy and paste the numbers you ID’d previously in or type them and hit Enter:

FIRST alignment point in MODEL space: 1638256,710380

Repeat for the second X and Y coordinates and hit Enter:

SECOND point in MODEL space or <Return> for none: 1643052,714359
Now you will be prompted to pick a point in Paperspace. Snap the endpoint of the lower left hand corner of the location map window:

Next, snap the endpoint of the upper right hand corner of the location map window:
Here is your new location map:

Now, double click inside the location map window area, and type in Plan and hit enter twice. Your map will adjust itself. You may have to pan or zoom a little for the labels to re-appear.
CREATE CROSS SECTION LAYOUTS
We will continue to follow the older procedure of creating Cross Section sheets using MAP BOOK, because the settings within the latest version of Civil 3D do not address the format of our Cross Section Sheet template. After the Section Views are created, the Section Views will have to be moved into a format that is compatible with the older procedure using MAP BOOK. The Section Views will have to be moved, (in columns of 5 or 6 Section Views), based on the distance indicated below.

After your Section Views are created, there should be a constant distance of 100′ (portrait) between the centers of your columns of Section Views:

Draw a polyline beginning at the center base point of your 1st Section View in the last column and draw it up to the top endpoint of the center of the last Section View in the same column:
Move the polyline you just drew 100’ (180’ for the landscape procedure) to the right:

This will be your starting point for creating your tiles for MAP BOOK.

Depending on how deep your Section Views are, you should be able to fit 5 or 6 views to one cross section sheet.

Now, count your Section Views and divide by 5 or 6. This will give you the number of cross section sheets you will need to create using MAP BOOK. In this example, there are 52 Section Views, and because these are not deep sections, we should be able to fit 6 sections on a sheet. So 52 views divided by 6, you end up with 8.67 or rounded up, 9 sheets.
First, let’s array the polyline we just moved. Using the array command, array the polyline using these settings:

```
Command: _arrayrect
Select objects: 1 found
Select objects:
Type = Rectangular  Associative = Yes
Select grip to edit array or [ASsociative/Base point/COUnt/Spacing/COLumns/RRows/Levels/eXit]<eXit>: col
Enter the number of columns or [Expression] <4>: 9
Specify the distance between columns or [Total/Expression] <1.0000>: 100
Select grip to edit array or [ASsociative/Base point/COUnt/Spacing/COLumns/RRows/Levels/eXit]<eXit>: r
Enter the number of rows or [Expression] <3>: 1
Specify the distance between rows or [Total/Expression] <135.0000>: 
Specify the incrementing elevation between rows or [Expression] <0.0000>: 
Select grip to edit array or [ASsociative/Base point/COUnt/Spacing/COLumns/RRows/Levels/eXit]<eXit>: “Cancel”
```

We should now have 9 polylines at 100’ apart:

![Image of polylines]

Now, using the Move command, move the appropriate number of Section Views to each line using the Endpoint snap to snap the endpoint of the center base point of the beginning Section View and move the 1st group to the first line, then the 2nd group to the 2nd line; etc. until you end up with the following:

![Image of moved polylines]

Now we can run the new lisp routine that will create the tiles for MAP BOOK.
Run the command APPLOAD. Browse to the G:\data\engineer\CadStds\Lisp folder:

Scroll down to the file called tgenp15.lsp. Highlight it and click Load. You can also add this lisp routine to the History List and/or the Startup Suite:
Type in the command tgp and hit Enter:

![Command output](image1)

Type in the No. of Cross Section Columns needed:

![Command output](image2)

Using the Endpoint snap, Select the Tile Point indicated in the command line below:

![Command output](image3)
You should now have 9 tiles generated for each column of Section Views:

Now we are ready to use Map Book!

Start the Map Book process. Click on the Map pull down and click Map Book...:
You will most likely get this error message. Click OK:

Easy one time fix:

**Issue:**
In Civil 3D 2015, when you go to Task Pane >> Map Book >> New >> Map Book, you encounter the following error:

**Solution:**
1. Run **OPTIONS** in the AutoCAD command line.
2. Expand the Support File Search Path and add the following path and then click OK:
   `C:\Program Files\Autodesk\AutoCAD 2015\Map\Support`

Now the Create Map Book dialog should launch as you expect.
Once the path is added, just click OK:

Go back to the Map pull down and click Map Book… again and you should see this:

You will need to change the Source, Sheet Template, Tiling Scheme, Naming Scheme, and Sheet Set.

Give a name to the Map Book Name field eg: Gradwohl Cross Sections.
Click on Sheet Template Settings and click the button for the top field below:

Browse to the network G:\data\engineer\CadStd\Plan Production\ and choose CROSS SECTIONS.dwt and click Open:

Make sure the settings are as follows:
Next, click on the Tiling Scheme – Custom. Click the Select Tiles button:

Select the tiles in the drawing, starting with the 1st one (be sure to pick them in sequence) and hit Enter:

You’ll notice the tiles you have selected. Change the Overlap to 0%:

Under Naming Schemes, click Sequential and change the fields below to 1:
Create a new Sheet Set. This is what came up as the default. Just leave it as is:

![Sheet Set creation screenshot]

Click the Generate button:

![Generate button highlighted]

If you click the double arrow pointing down next to Model below the Command line, you’ll see the Cross Section sheets listed in the layouts:

![Model layout screenshot]
Click on one of the Cross Section layouts and you will see the Cross Section Views are aligned with the Cross Section sheet:

Perfect!
SETTING UP GENERAL NOTES AND TRAFFIC NOTES DRAWINGS
SETTING UP GENERAL NOTES OR TRAFFIC NOTES SHEETS

Start a new drawing. Click New:

Click the indicated icon:

Click on the Plan Production Sheets folder:
Click either of the indicated files (LCE_NBDR – General Notes or LCE_TNBDR – Traffic General Notes):

For this example, we’ll use the LCE_NBDR.dwt. Click that file:

Click on the main pull down in the upper left hand corner of Civil 3D and click Save As:

Name this file LCE_GNotes.dwg as directed in Chapter 1 and click Save.
LABELING P&P AND CROSS SECTION SHEETS
LABELING P&P AND CROSS SECTION BLOCKS GLOBALLY
Before we begin, please note this process will not work for all block attributes. Some are unique to each layout (labels e.g.: Sheet Number, Station to Station). Here we go...
After creating and organizing your sheet layouts, click on the first layout sheet:

At the command prompt, type in “ssx” and hit enter:
Command:
Command: ssx
Select object/<None>: 
Select the P&P sheet block:

You will see this at the command prompt:

```
Select object/<None>: 
Filter: ([0 . "INSERT") 2 . "Ieppsht8") (8 . "") (56 . 1) (210 0.0 0.0 1.0))

>>Block name/Color/Entity/Flag/Layer/LType/Pick/Style/Thickness/Vector:
```

Hit enter.

Now go to the Properties box and click the Select Objects button:
Type in “p” for previous:

Command: _PSELECT
Select objects: p
5 found

Select objects: |

Hit enter.

Down at the bottom of the Properties box, you will see this:

<table>
<thead>
<tr>
<th>Block:ceppsh8</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRAWNAME</td>
</tr>
<tr>
<td>DESNAME</td>
</tr>
<tr>
<td>OFSHTS</td>
</tr>
<tr>
<td>SHTNO</td>
</tr>
<tr>
<td>LCRN</td>
</tr>
<tr>
<td>ROADNAME</td>
</tr>
<tr>
<td>STATION</td>
</tr>
</tbody>
</table>

Fill out the appropriate information:

<table>
<thead>
<tr>
<th>Block:ceppsh8</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRAWNAME</td>
</tr>
<tr>
<td>DESNAME</td>
</tr>
<tr>
<td>OFSHTS</td>
</tr>
<tr>
<td>SHTNO</td>
</tr>
<tr>
<td>LCRN</td>
</tr>
<tr>
<td>ROADNAME</td>
</tr>
<tr>
<td>STATION</td>
</tr>
</tbody>
</table>

Again, these fields should be left blank as they are unique to each layout and should be filled in later. Just hit Esc when you’ve completed filling in the information.

Now you’ll notice that each sheet in each layout is labeled appropriately:

This is the first and second sheet layout of this example.

Use this same technique for cross section sheets.
AutoCAD Civil 3D® Tips

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CREATING A TABLE IN CIVIL 3D
Type in the command Table and hit enter

Click the button next to the Table Style selector

Use this Table Style dialogue box to bring up the Table Style Editor-Click New or Modify

If you click New, give your Table Style a name, then click Continue

Now back at the main dialogue, you have some insert options:

Once you have your table formatted the way you want it, click OK Set your Table Style current, then Close the previous box
You can start from scratch using an empty table. We’ll do that one first. Set your Insertion behavior, Column and row settings and cell styles:

Click OK:

Pick an insertion point by clicking a point or by typing one in:
You are now presented with this (Please note the font for the style you created is not the default-will continue to check on this and bring any updates to you):

![Table setup](image)

You can start typing in a label name for the table if you wish. Click OK when you’re done.
Now double click the first cell:

![First cell](image)

You can start typing, when filled in, just hit the TAB key and voila, you are in the next cell, just like Excel:
Just repeat until the table is filled.
Another nice feature is the auto fill feature:

<table>
<thead>
<tr>
<th>PART NO.</th>
<th>DATE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4/14/2008</td>
</tr>
</tbody>
</table>

If your table has numbers, dates or any other type of data that runs sequentially in order, just like in Excel, you can click once on the first cell, then click the lighter colored snap in the lower right hand corner of the cell and drag it down to fill in the other cells:
Repeat for the next cell column:

![Image of Excel table]

<table>
<thead>
<tr>
<th>PART NO.</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4/14/2008</td>
</tr>
<tr>
<td>2</td>
<td>4/15/2008</td>
</tr>
<tr>
<td>3</td>
<td>4/16/2008</td>
</tr>
<tr>
<td>4</td>
<td>4/17/2008</td>
</tr>
<tr>
<td>5</td>
<td>4/18/2008</td>
</tr>
<tr>
<td>6</td>
<td>4/19/2008</td>
</tr>
<tr>
<td>7</td>
<td>4/20/2008</td>
</tr>
<tr>
<td>8</td>
<td>4/21/2008</td>
</tr>
<tr>
<td>9</td>
<td>4/22/2008</td>
</tr>
<tr>
<td>10</td>
<td>4/23/2008</td>
</tr>
</tbody>
</table>

Pretty cool – so far...

Let’s try another type of insertion. Go back to Insert > Table and do this. Change the Insertion Option to – From a Data Link:

1. Click the button next to the data link field
2. You should get the box to the right –click on Create a new Excel Data Link
3. You will see this:
   - Name: MY OTHER TABLE
   - Fill in the field and click OK.
Let’s go browsing:

![Excel Data Link: MY OTHER TABLE window]

Use an existing Excel file or browse for a new one:

- **Browse for a file:** Select a file.
- **Preview:** No preview available.

Click **Ok**.

---

Browse for the excel file you wish to use.

![Save As dialog window]

- **File name:** My Other Table.xls
- **Files of type:** Microsoft Excel (*.xls;*.xlsx)

Click **Open**.
Here is the result:

Choose an Excel file:

Link options
Select Excel sheet to link to:
- Link entire sheet
- Link to a named range:
- Link to range:
  <Example: A1:M9>

Preview

You have some options here – Link the whole Excel sheet, or a named range or Link to a range. Click OK. Then click OK once more and once again to insert your new Excel table. Click or type in an insertion point:

<table>
<thead>
<tr>
<th>S.</th>
<th>S.</th>
<th>W. S.</th>
<th>North</th>
<th>South</th>
<th>900' to 1200'</th>
<th>1300' to 1350'</th>
<th>1351'</th>
<th>1400'</th>
<th>TYPE 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>601</td>
<td>91</td>
<td>Still</td>
<td>0129.00C</td>
<td>Waterville</td>
<td>Waverly Road</td>
<td>4/14/2006</td>
<td>W.S., D.W.L.</td>
<td>East</td>
<td>1095' to 2199'</td>
</tr>
<tr>
<td>601</td>
<td>92</td>
<td>Stetson</td>
<td>0129.00C</td>
<td>Waverly</td>
<td>River Road</td>
<td>4/13/2007</td>
<td>W.S., D.W.L.</td>
<td>West</td>
<td>1095' to 2399'</td>
</tr>
<tr>
<td>601</td>
<td>93</td>
<td>Strait</td>
<td>0104.00C</td>
<td>Waverly</td>
<td>S. A. 200A</td>
<td>4/14/2006</td>
<td>W.S., D.W.L.</td>
<td>West</td>
<td>1350' to 3059'</td>
</tr>
<tr>
<td>601</td>
<td>94</td>
<td>Sugar</td>
<td>0172.00C</td>
<td>Washington</td>
<td>Alavis Road</td>
<td>2/14/2006</td>
<td>G.W.</td>
<td>East</td>
<td>320' to 434'</td>
</tr>
<tr>
<td>601</td>
<td>95</td>
<td>Sugar</td>
<td>0172.00C</td>
<td>Washington</td>
<td>Wimmers</td>
<td>2/14/2006</td>
<td>G.W.</td>
<td>East</td>
<td>1407' to 5777'</td>
</tr>
<tr>
<td>601</td>
<td>96</td>
<td>Sugar</td>
<td>0172.00C</td>
<td>Washington</td>
<td>Noelmar</td>
<td>2/14/2006</td>
<td>G.W.</td>
<td>East</td>
<td>2687' to 6955'</td>
</tr>
<tr>
<td>601</td>
<td>97</td>
<td>Sugar</td>
<td>1890.00C</td>
<td>Washington</td>
<td>Walden City Limits</td>
<td>2/14/2006</td>
<td>G.W.</td>
<td>East</td>
<td>180' to 700'</td>
</tr>
<tr>
<td>601</td>
<td>98</td>
<td>Sykes</td>
<td>0190.00C</td>
<td>Richfield</td>
<td>S. A. 285</td>
<td>4/23/2009</td>
<td>W.S., D.W.L.</td>
<td>North</td>
<td>2046' to 2093'</td>
</tr>
<tr>
<td>601</td>
<td>99</td>
<td>Syke</td>
<td>0190.00C</td>
<td>Richfield</td>
<td>South Road</td>
<td>4/23/2009</td>
<td>W.S., D.W.L.</td>
<td>South</td>
<td>6359' to 6359'</td>
</tr>
<tr>
<td>601</td>
<td>100</td>
<td>Syke</td>
<td>0190.00C</td>
<td>Sylvania</td>
<td>Centennial Road</td>
<td>4/23/2009</td>
<td>W.S., D.W.L.</td>
<td>North</td>
<td>1479' to 2351'</td>
</tr>
<tr>
<td>601</td>
<td>101</td>
<td>Syke</td>
<td>0190.00C</td>
<td>Sylvania</td>
<td>Sylvania Road</td>
<td>4/23/2009</td>
<td>W.S., D.W.L.</td>
<td>North</td>
<td>1852' to 2249'</td>
</tr>
</tbody>
</table>
If you make a change in the Excel spreadsheet while still in the AutoCAD drawing, you will be notified that a change has been made and do you wish to update the drawing:

<table>
<thead>
<tr>
<th>To</th>
<th>173</th>
<th>TYPE-5</th>
</tr>
</thead>
</table>

Data Link Has Changed
A data link has changed. Any tables using this data link may need to be updated.
Update tables using the data link: MY OTHER TABLE

If you noticed the last cell in the table called out for all Type-5 guardrails. The updated table in AutoCAD now looks like this:

<table>
<thead>
<tr>
<th>0193</th>
<th>S. River Road</th>
<th>617-205-12</th>
<th>Woodland Road</th>
<th>4/26/2005</th>
<th>5.5 DEG 6.35</th>
<th>North</th>
<th>South</th>
<th>1000' to 1050'</th>
<th>1000' to 1150'</th>
</tr>
</thead>
<tbody>
<tr>
<td>0194</td>
<td>S. River Road</td>
<td>617-205-12</td>
<td>Woodland Road</td>
<td>4/26/2005</td>
<td>5.5 DEG 6.35</td>
<td>East</td>
<td>West</td>
<td>1000' to 1050'</td>
<td>1000' to 1150'</td>
</tr>
<tr>
<td>0195</td>
<td>S. River Road</td>
<td>617-205-12</td>
<td>Woodland Road</td>
<td>4/26/2005</td>
<td>5.5 DEG 6.35</td>
<td>West</td>
<td>East</td>
<td>1000' to 1050'</td>
<td>1000' to 1150'</td>
</tr>
</tbody>
</table>

Enjoy creating tables from now on!
CORRIDORS, OBJECT VIEWER AND PERFORMANCE

A post in the discussion group today got me thinking about something I do and take for granted. He was complaining, rightfully so, about how slow corridors are in the object viewer. Read on to find out a way to improve your performance.

The performance of the Object Viewer seems to be inversely proportional to the amount of data you’re trying to view. Corridors have a ton of information in them typically.

1. You have corridor sections every X feet or metres; the more you have, the slower it will be.
2. Each corridor section has a ton of information as well. Just think of a LaneOutsideSuper.
   13 links
   10 markers
   4 shapes
   That’s 27 objects...and that’s just a single subassembly. A typical urban road may have over 120 pieces that make up EVERY corridor section.

We may need all of that when we create our assembly, but we don’t need to display all that info inside our corridor. Really, we just need the Top.

Show All (122 objects)

Show Top Only (8 objects)
A savings of 114 objects per corridor section. A 93% reduction in objects. Even the most jaded techie can appreciate that.

How do we do this? Easy...the dreaded Code Set Styles.

To make a long story short, here is an image of my code set style. Notice that the styles for EVERYTHING except Top links are turned off.

Apply this to your corridor in the corridor properties and go to town in the object viewer

Just to make sure you’re not missing anything. When you are creating those “No Markers” type of styles make sure you turn off the Links, Markers, or Shapes in both the 2D view and the 3D view. If you forget the 3D view then, well, you’ve done a lot of work for nothing.
There is even more you can do to help yourself. Turn off all those pesky corridor feature lines that you really don’t need...like all those that lie underground. You’ll find a Feature Lines tab in corridor properties.
CIVIL 3D TEMPLATE FILE LOCATIONS AND DESCRIPTIONS
Location for the following - g:\data\engineer\cadstds\support:
   ACAD.DWT – This file is the template that contains the Lucas County Engineers Standards by which all procedural and drawing standards are held by (Layers, Linetypes, Textstyles, Civil 3D Styles; etc.)
   CoMap.DWT – This file is the template by which you can create the Title Sheet from

Location for the following - g:\data\engineer\cadstds\plan production sheets:
   LCE TITLE.DWT – This file is the template that is used in conjunction with Map Book to create each project’s Title sheet
   LCE PP6-20.DWT – This is the plan and profile template file with the smaller profile grid that is used with Plan Production
   LCE PP8-20.DWT – This is the plan and profile template file with the larger profile grid that is used with Plan Production
   CROSS SECTION.DWT – This is the cross section template file (landscape) that is used with Map Book
   CROSS SECTION.DWT – This is the cross section template file (portrait) that is used with Map book
   LCE NBDR.DWT – This file is the template by which you can create the Master General Notes from. All 6 pages and their associated layouts are already set up in this template. Modify as necessary for each project
   LCE TNBDR.DWT - This file is the template that is used to create the Master Traffic Notes from. All 4 pages and their associated layouts are already set up in this template. Modify as necessary for each project
TECH. NOTE PAD (AN AREA TO MAKE NOTES):