Getting Productive with Plan and Production in Civil 3D
BES219545

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Learning Objectives

- Understand and Use the Workflow of Plan and Production.
- Learn to setup drawing templates for Plan and Production.
- Create Plan, Profile, and Section Sheets using Plan and Production.
- Publish drawings created during the Plan and Production process using the SSM.

Class Description

Design projects can become challenging when working with large sites which include lengthy roadways and site features that are needed to be displayed on multiple sheets for production. With the plan and production tools in Civil 3D you can automate the process of creating plan and profile sheets quickly. We will explore how to use these tools to create multiple plan and profile sheets, sections on multiple layouts, and tying it all together in a sheet set ready for publishing your deliverable. Let’s get productive and learn how to optimize the production of final plans and profile drawings.

Speaker

Sam is a CAD Services Manager and Senior Civil Designer with Haley & Aldrich, Inc. Within these roles he presents workshops on CAD standards, tools, and productivity techniques to managers and users in both corporate and classroom settings. He provides support on a wide variety of architectural, civil, mechanical, and structural design projects. Sam has over 25 years of experience involving production design and drafting, user support, and standards coordination. He continues to be very self-motivated and enjoys working in a team environment to accomplish project objectives on time and with high quality. Sam shares his knowledge through the AKN (Autodesk Knowledge Network) and has authored 12 articles in AUGIWorld from 2011 to 2018. Sam is the owner and operator of CADproTips.com and is professionally certified in AutoCAD.

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Introduction
How do you efficiently create your final plans quickly and easily for printing in AutoCAD Civil 3D? The plan and production tools will help you quickly create sheets that automatically display station ranges of alignments and profiles in your plans. These wizards will also Create View Frames, Plan and Profile Sheets, and Section Sheets. All of which will automatically display segments of alignments, profiles, sections, and plan sheets in your design set. The Figure below shows the Plan and Production Tools located on the Output tab of the Ribbon.

You have been working on your design project for weeks and running prints for review supplying to the engineering team to check scale and the project details. We have now done the planning and it is time to produce our sheets at a scale for a deliverable. Before you start generating all sorts of sheets you must address a few concepts and prerequisites. The Plan Production features draw on several Civil 3D components to create a plan set.

We will begin with the drawing templates. Plan production tools create new layouts for each sheet in a plan set at a scale. Therefore, you have to setup templates with named viewports at each scale telling Civil 3D what you would like to produce. Most features in Civil 3D have styles which we will define those within our template.

Steps to follow while using this handout.

- Create the templates (you can start with the templates provided from Autodesk).
  - Use these as a guide to develop your own templates with your company title block
- Select the Create View Frames (shown in the figure above).
- Choose your sheet type and the template with the appropriate scale.
  - You need to define what type and scale you will be using in your design.
- You can choose View Frame Groups and Match Line Styles.
  - You can change those (and add additional after selecting).
- If you chose a profile you will have to select the Profile and Band Styles.
  - As with View Frames you can change those later.
  - Profile Views can play an important role in "white space" around your profile.
- Select the Create Sheets (shown in the figure above).
- Define your Sheet Set (new or existing; use Sheet Sets to your advantage).
- Add any Data References (only if you are creating a new drawing file).
- Select Create Sheets and the process will begin to create your new layouts.
Overview

Instead of manually creating many viewports on layouts to show segments of alignments, you can create view frames that automatically capture predefined areas along an alignment. View frames are rectangular areas along an alignment that represent what is displayed in the associated viewports on the layouts (sheets) to be created. This automation saves you from making many manual changes when your design data changes. Remember the days when you created view frames to match the scale of your design?

The image above shows an alignment of a long road with curves. The red boxes are the view frames that we are requested to show the road on Plan sheets with or without a profile.

By setting up the North Arrow and Scale on your templates you can also have the ability to have that North Arrow linked to the viewport giving it the ability to rotate to “true north” when the view changes throughout your sheets.
Templates

Several predefined template (DWT) files are provided with Civil 3D 2018. You must have templates created to follow the 4 scenarios as shown below. For this demonstration we have templates created for each instance as shown.

**Plan(s) Only**
The current drawing must contain an alignment.
You must be able to access a template that contains a viewport with a Viewport Type defined as Plan, such as the Civil 3D (Imperial) Plan Only.dwt or the Civil 3D (Imperial) Plan over Plan.dwt template located in the Template\Plan Production folder.

**Profile(s) Only**
The current drawing must contain an alignment and a profile.
You must be able to access a template that contains a viewport with a Viewport Type defined as Profile, such as the Civil 3D (Imperial) Profile Only.dwt or the Civil 3D (Imperial) Profile over Profile.dwt template located in the Template\Plan Production folder.

**Plan and Profile**
The current drawing must contain an alignment and a profile.
You must be able to access a template that contains a viewport with a Viewport Type defined as Plan, and a viewport with a Viewport Type defined as Profile, such as the Civil 3D (Imperial) Plan and Profile.dwt template located in the Template\Plan Production folder.

**Section**
The current drawing must contain an alignment, sample lines, and cross sections.
You must be able to access a template that contains a viewport with a Viewport Type defined as Section, such as the Civil 3D (Imperial) Section.dwt template located in the Template\Plan Production folder.
Templates and Viewports

We first will create our template file using specific Plan and Production Viewports. Open a title block drawing that you use for your company standard. The file you should be using will be in paperspace on a layout tab. This is the file where you define your sheet set properties which contain project specific data that will be carried throughout the project.

We will now create the viewports. On the Contextual Ribbon Layout Tools Tab select Named under the viewports panel as shown. Notice how my layer is also set to my viewport layer. When you are drawing the viewports, they will be placed on the correct layer.

In this example we will create 2 horizontal viewports for a plan and profile scenario. We will select 2 horizontal viewports with a spacing of .25 between them. If I was to create Plan only I would select one viewport.
After placing the viewports in your drawing, you must set the Viewport type. Open your properties palette (CTRL+1) to see the properties of the viewport. Select the viewport and move to the viewport type and designate the appropriate viewport that you need for the template. You can modify the properties of the viewport within the template file to ensure that you have the proper settings for your standards.

Once you have your layout type correct you will need to make sure the scale is correct on the viewports and name a sheet (layout tab) to reference the correct scale and type as shown.

The final step of completing the template is to make sure you have a North arrow and scale bar added to your sheets. You will have the options to select the North Arrow block when creating the sheets in the plan and production tools to ensure the alignment is correct.
Plan Production Commands

You can access the plan production commands from the Output tab and Plan Production contextual tab on the ribbon as shown in the introduction on page 2. The Plan Production contextual tab is displayed when you select a view frame or a match line in the drawing.

The following definitions are taken directly from the Autodesk Knowledge Network and give a good description of the general commands.

Create View Frames Wizard. Start the process of using the plan production tools by using this wizard to define a group of view frames along an alignment.

View Frame Group. The view frame group object helps you manage a single group of view frames that are displaying consecutive station ranges along the same alignment. You can set many options at the view frame group level, such as styles and labeling. View frame group objects are displayed in the Prospector tree, and you can control their default command settings in the Settings tree.

View Frames. View frames are rectangular-shaped regions along an alignment that define an area that will be displayed in a sheet. The view frame size, shape, and scale come from a designated viewport that exists on the layout tab of a specified template. After view frames are created, the properties of the view frame objects are saved in the currently open drawing. The view frame objects are displayed in the drawing and in the Prospector tree, and you can control their default style and labeling in the Settings tree.

Match Lines. In the AutoCAD Civil 3D plan production features, a match line is a straight line that indicate locations in a view frame group where one view frame intersects or matches up with another view frame. Match lines are only displayed in paper space and only in plan view. They are designed to visually indicate the locations (start and end stations) along an alignment where each view frame begins and ends. Match lines have their own object style and they typically include labels that can identify both the previous and next sheet (view frame) along an alignment. You have the option to include a left side match line label, a right-side match line label, both, or none, and you can choose where along the match line you want the label to be displayed (top, middle, end of match line). Like view frame objects, match line objects are also displayed in the Prospector tree, and you can control their default style and labeling in the Settings tree.

Create Sheets Wizard. After you have used the Create View Frames wizard, the next step is to use the Create Sheets wizard to quickly create your sheets. After you have created view frames and sheets for publishing in the sheet set manager.
The following table from the Autodesk Knowledge Network lists the plan production tool AutoCAD Civil 3D commands and briefly describes their functionality. This table includes links to the resources that are listed in the description area. You can type in the command at the command line to start the function in Civil 3D.

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CreateSectionSheets</td>
<td>Creates layouts for section plotting</td>
</tr>
<tr>
<td>CreateSheets</td>
<td>Creates plan/profile sheets for plotting from existing view frames</td>
</tr>
<tr>
<td>CreateViewFrames</td>
<td>Inserts view frames along an alignment for sheet creation</td>
</tr>
<tr>
<td>DeleteViewFrameGroup</td>
<td>Deletes the selected view frame group</td>
</tr>
<tr>
<td>EditMatchLineProperties</td>
<td>Specifies the match line style, name, and description</td>
</tr>
<tr>
<td>EditMatchLineStyle</td>
<td>Controls the display of match lines and the hatch pattern of the match line mask</td>
</tr>
<tr>
<td>EditViewFrameGroupProperties</td>
<td>Specifies view frame and match line styles, names, and descriptions for the entire view frame group</td>
</tr>
<tr>
<td>EditViewFrameLabels</td>
<td>Edits view frame or match line label style and location</td>
</tr>
<tr>
<td>EditViewFrameProperties</td>
<td>Specifies the view frame name, description, and style</td>
</tr>
<tr>
<td>EditViewFrameStyle</td>
<td>Controls the view frame border visibility and color</td>
</tr>
<tr>
<td>InsertViewFrame</td>
<td>Inserts a new view frame into an existing view frame group</td>
</tr>
</tbody>
</table>
Create View Frames

Using the View Frames Wizard view frames are created automatically. View frames are always associated with a parent view frame group.

View frames are created based on an alignment in the drawing, and on a designated plan view or profile view viewport in a template. Once the View Frames are created they will be automatically associated with a View Frame Group, and are displayed in the drawing as well as in the Prospector tree. When you choose to insert match lines, the match line objects are also displayed in the drawing and in the Prospector tree.

Most of the view frame object information is derived from the viewport information specified in the template. For example, the view frames you create get their size and scale from the viewport in the template. Similarly, the sheet layout is also derived from the referenced template. Viewports in the referenced template must have the Viewport Type property specified, depending on the type of data you want that viewport to display. Although you can move or rotate view frames, you cannot change the size of a view frame. This is because the view frame’s size is based on the size of the viewport it references in the associated template.

Before you create view frames, the desired alignment must already exist in your drawing. Depending on the type of sheets you want to produce (plan and profile or profile only), you may also need to have a profile already created. On the Output Tab of the Ribbon under the Plan Production Panel Select Create View Frames or right click view Frame Groups under prospector as shown in the figures below.

**Note:** Make sure you set the annotation scale to the scale you will be creating your viewports. **Best practice is to set the scale prior to creating the view frames.**
Choose an Alignment

The first thing we will do is choose the alignment that is contained within our drawing file. We will choose the State Street Alignment as shown. We have the option of using the automatic selection or the User specified alignment as shown. If you have multiple alignments pull the arrow down and select the one for your design project.

Click Next >

Notes

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Sheets
Moving on in the Wizard we are now going to create the Sheets. There are 3 steps to follow when creating your sheets.

Step 1: We need to first select the type of sheets that we will be generating. By moving around in the wizard, you will have the three options to choose from. Choose Plan and Profile for this example.

Step 2: Browse out to the folder containing your templates and select the desired template (DWT) containing the viewport configuration to match your selection.
Step 3: Select your view frame placement or the orientation of the views with respect to the alignment.

Click Next >

Notes
We are now at the View Frame Group section which is the first step in the process of creating the sheets. We now need to assign a name to the View Frame Group and apply specific frame and label styles to that group. The location of the View Frame group may also be applied at the bottom under the label location pull down. Let’s break this down in steps.

**Step 1:** Name for the View Frame Group you will be creating.

**Step 2:** The description. Give a good description so the next person going into the sheets will have a good understanding of why you created the view frame group.

**Step 3:** Layer. You can select the layer button to the right to create a new layer or keep as the default from Civil 3D which is C-ANNO-VFRM and is set to no plot.

**Step 4:** The Counter. Although you may not print the name of your view frame there needs to be a counter, so we know where the frames begin, connect, and end. The <(Next Counter)> option will increase the number by one each time you add a view frame.

**Step 5:** View frame Style: The current style has been created to not plot the geometry of the view frame.

**Step 6:** View Frame Label Style:

Lastly, the label location of the view frame.

Click Next >
We are now at the Match Lines Section

Step 1: You have the option of placing match lines on your drawing. As with other objects in Civil 3D these are styles which you can create or use the default. Notice how we have some that are custom to the template as shown in steps 2 and 3. By default you will be provided with a Basic Match Line style.

**Snap Station Value Down to the Nearest**: This option can be used to set the rounding value for the match line when its position is to be based on calculated stationing. The rounding station will always round down. We are going to set this to 10 feet, so the match line always is set to an even number.
**View Overlap:** Frames are matched end to end by default. If you want the frames to overlap, click the setting on the match line screen and specify the overlap and the position of the match line. This depends on how much room you need for the view frame. Let’s say your projects starts about 10 feet away from the start of the alignment, this is where you need that setting.

**Step 2:** Match line Layer, Counter, and the Style. This is where we define the match line name, style, and label within the wizard as shown. The match line layer and counter are self-explanatory. For the counter the default is ML which I have changed to MATCHLINE - «(Next Counter)>> which will start at 1 unless you manually change that number.

**Match Line Style**
The match line style consists of two components: The Match line and hatch controlling the area beyond that match line that you may or may not want displayed. We are going to create a new match line style named Match Line Mask and give it the properties as shown below. Under the display tab change the lines to a solid color and a linetype of center2. This will give us the ability to view the lines on the print. For the Match line mask, we will change the color from Byblock to a true color of 255,255,255 which will print out a blank area of the drawing. Save the Match line style as Match Line Mask.
Match Line Label Style and Location

Before we hit next, we will need to define our match line styles. Good practice would be to define these in the template which makes this step much easier. Match lines are displayed in plan view and model space only. They have their own object styles which can be modified. We are first going to change the style of the match lines, so the line will be displayed and the area beyond the match line will print white or blank on our sheet.

**Step 3:** Match line labels: This is where we will define the styles of our match line labels. As with any other C3D styles we can define the properties of the label and the location. For our example we will set the location to middle for both properties.

> ![Match Line Label Style Image]

Once the position and style criteria of the Match Lines have been set, click Next > to proceed to the Profile View dialog box. You can enter the label style composer to change the properties of the match line label as shown.

> ![Label Style Composer Image]

Click Next >
Profiles and Profile Styles

Step 1: Profile View Style: This box is used to establish the correct profile view style to be used within the profile viewport. For this example, a Profile Standard style was created.

Step 2: Band Set: These tools will use the extents of the band sets to position the profile in the viewport. In the event of text outside the band that would be hidden from the view.

Click on Create View Frames to create all the view frames with the match lines on the drawing.

View frames are created based on an alignment in the drawing, and on a designated plan view or profile view viewport in a template. When you choose to create sheets that will contain profile view data in addition to plan view data, you must also have a profile in the drawing.

Most of the view frame object information is derived from the viewport information specified in the template. For example, the view frames you create get their size and scale from the viewport in the template. Similarly, the sheet layout is also derived from the referenced template. Viewports in the referenced template must have the Viewport Type property specified, depending on the type of data you want that viewport to display. Although you can move or rotate view frames, you cannot change the size of a view frame. This is because the view frame’s size is based on the size of the viewport it references in the associated template.
Like other AutoCAD Civil 3D objects, you can edit certain properties of a view frame. For example, you can change a view frame’s object name, description, object style, or the layer on which it is displayed. The properties of the view frame are saved in the drawing in which you create the view frame.

How view frames are displayed is controlled by a view frame style, a view frame label style, and choices made on the Create View Frames wizard. View frame objects are displayed in the Prospector tree, and you can control their default style and labeling from the View Frame collection in the Settings tree.
**View Frame Groups**

A view frame group manages a group of view frames that are created while using the Create View Frames wizard. Each view frame group manages the view frames and match lines for a single alignment.

On the third page of the Create View Frames wizard—the View Frame Group page—you specify the object creation criteria for the view frame group object. For example, you enter a name for the view frame group object, and you can select the layer for the view frames.

After view frame groups are created, you can edit certain properties of the view frame group, or delete it. You can also insert a new view frame in to an existing view frame group. You can also create a reference to an existing view frame group data shortcut.

You can change a view frame group’s object name, description, or the style of the view frames and match lines, as well as the layers on which they are displayed.

The following restrictions apply to editing view frame groups:

- Although you can move view frames and match lines within a view frame group, view frame groups themselves are not designed to be moved as an entity.
- You can delete an entire view frame group, which deletes all view frames, match lines, and labels associated with the group.
- You can delete individual view frames or match lines within a view frame group.

**Note:** View frame groups are not dynamically associated with the sheet files that are created from them. Updating a view frame group, moving match lines, or moving view frames will not affect the sheet files. The same is true with the sheet files created from the view frame groups. Updating the sheet files has no impact on the view frame groups.

After a view frame group is created, you can delete the alignment from which it was created, if you need to. Labeling functionality, such as the ability to display the sheet number in labels in the view frames, is still maintained even if the original alignment from which the view frame group was created is deleted.

View frame groups persist in an AutoCAD drawing as objects with the name AeccViewFrameGroup.
Moving View Frames

When you move a view frame, the view frame stays attached to the alignment it is associated with. If a view frame is moved off the alignment, and you want to reattach it to the alignment, be certain that OSNAPS are turned on, and you can drag the center grip towards the alignment. When you move a view frame that has a view frame label on it, the label moves with the view frame. However, when moving a view frame, the match lines associated with the view frame stay positioned where they intersect the alignment, and do not move.

**Note:** If you need to move view frames after sheets have been created, instead of moving the view frames, you should make these changes to the sheet by editing the viewport. If you move view frames after sheets have been created, these changes will not be reflected in any sheets that have already been created from the view frames. To see those changes reflected in the sheets, you will have to recreate the sheets.

View Frame Grips

1. In either model space, click the view frame you want to move or rotate.
2. Click one of the following grips on the view frame:
   - Center grip: Moves the view frame freely in any direction.
   - Slider grip: Moves the view frame forward or backward along the alignment. If the view frame is moved off the alignment, the offset to the alignment is maintained. If the view frame remains parallel to the tangent to the alignment, the grips stay on alignment.
     **Note:** If the alignment associated with a view frame has been deleted, the view frame remains, but the slider grip is no longer displayed, and the view frame can be moved in any direction.
   - Rotation grip: Rotates the view frame about the center of the view frame.
     **Note:** If the view frame is set to align with a north arrow block in the drawing, the rotation grip is not displayed.
3. Drag the grip to move or rotate the view frame.
Profile View Alignment

In some cases, the extents of the profile view cannot be accurately calculated based on the profile view style. In such instances, not enough buffer area is used to accommodate all the annotations. For example, if you have a band on the left side of the profile view, the view may be shifted to the right in the viewport in order to accommodate the band title on the left side, pushing the elevation annotation on the right side of the profile view out of the profile viewport. In any case your view should be close, and you can easily move the view around by unlocking the viewport.

Note: Another work-around, is you can create "white-space" profile bands to add a buffer area around the profile, ensuring that the profile is displayed correctly.

To create and apply white-space bands

1. Create a new Profile Data band and name it appropriately (for example, “Elevations and Stations”).
2. On the Band Details Tab of the Profile Data Band Style dialog box, do the following:
   - Change the Text Box Width setting to 1.00 (or other desired size).
   - Change the Text Box Position to Right of Band.
     Note: You may need to change the position setting (and band name), depending on your profile band configuration.
3. On the Display Tab of the Profile Data Band Style dialog box, turn off the display of all components.
**Note:** If you want to see where these bands are placed around the profile view, you can leave the following two items visible, and then turn them off in the band style later when you are ready to plot:

- Band Border
- Band Title Box

4. Save the style.

5. Add the new white space band style to the Band Set that you plan to use for the profiles that will be created on the sheets.

6. On the Bands tab of the Band Set dialog box, change the Gap setting for the white space style to 2.00 as shown (or other desired distance).

7. Select this Band Set style when using the Create View Frames wizard.

**Note:** This band style must be created prior to creating the view frame group because the profile view style and band set must be known when the view frame group is created.

Notes
Create Sheets
Specify the Sheet Set options. You can add the layouts to an existing sheet set, or create a new sheet set file.

The Create Sheets window opens, and you have options to control your sheet set.

**Step 1:** Select you existing View Frame Group. This will be the name you have given the group when you created the frames.

**Step 2:** Layout Creation. You have the option to put layouts in separate drawings, create a new drawing, or place in the current drawing. See Layout Creation on the next page.

**Step 3:** The Layout name. How do you want your layouts to be named? In our example we are going with C-10<Next Counter>. This will give us C-101, C-102, etc.

**Step 4:** The North arrow that is stored within your template.
On any page of this wizard, you can click **Create Sheets** to create the sheets using the default choices on the wizard pages. If some criteria that is needed that has not been supplied, then the Create Sheets button is not available (grayed out). You can also click the links on the left side of the wizard to go directly to a wizard page.

**Layout Creating**

These options determine how the layouts will be created.

**Number of Layouts Per New Drawing**

This option may be an appropriate choice if you plan to have several people working on individual sheets. When this option is selected, and you enter 1 for the value, you get one new layout (sheet) created in each new drawing. The total number of sheets and drawings would depend on the length of the alignment selected and other criteria, such as the size of the viewports in the referenced template. If you select this option and enter a value greater than one, three for example, three new layouts would be created in each new drawing. The total number of sheets and drawings would depend on the length of the alignment selected and other criteria, such as the size of the viewports in the referenced template. You can enter an integer from 1 to 255.

**All Layouts in One New Drawing**

This option may be an appropriate choice if having each individual layout in a separate drawing is not necessary for you, and if you have less than 10 sheets. You may place all the layouts in one newly created drawing. The total number of sheets would depend on the length of the alignment selected and other criteria, such as the size of the viewports in the referenced template. For optimal results, it is recommended that you create no more than 10 sheets per drawing. Therefore, this option may not be the best choice if you have more than 10 sheets.

**All Layouts in The Current Drawing**

If you are only generating less than 10 sheets, you may want to generate the layouts in the current drawing. The total number of sheets would depend on the length of the alignment selected and other criteria, such as the size of the viewports in the referenced template. For optimal results, it is recommended that you create no more than 10 sheets per drawing. Therefore, this option may not be the best choice if you have more than 10 sheets.

**Layout Name**

Specifies the name of the layout(s) that will be created. For View Frame Range, all view frames are selected for processing by default, but you can choose a single view frame, or multiple view frames from the group by clicking Selection and then clicking the Choose View Frames button.

In the Layout Creation section, choose how the layouts will be created. A conceptual image on the right side of the wizard page provides an indication of the result.
The following image (from Autodesk) well describes the options and a description of each option to the right.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number Of Layouts Per New Drawing (1)</td>
<td>This option may be an appropriate choice if you plan to have several people working on individual sheets. When this option is selected, and you enter 1 for the value, one new layout (sheet) is created in each new drawing. The total number of sheets and drawings depends on the length of the alignment selected and other criteria, such as the size of the viewports in the referenced template.</td>
</tr>
<tr>
<td>Number Of Layouts Per New Drawing (&gt;1)</td>
<td>If you choose this option and enter a value greater than 1 (3, for example), then 3 new layouts are created in each new drawing. The total number of sheets and drawings depends on the length of the alignment selected and other criteria, such as the size of the viewports in the referenced template.</td>
</tr>
<tr>
<td>All Layouts In One New Drawing</td>
<td>This option may be an appropriate choice if having each individual layout in a separate drawing is not necessary for you, and if you have less than 10 sheets. You may place all the layouts in one newly created drawing. The total number of sheets depends on the length of the alignment selected and other criteria, such as the size of the viewports in the referenced template. For optimal results, it is recommended that you create no more than 10 sheets per drawing. Therefore, this option may not be the best choice if you have more than 10 sheets.</td>
</tr>
<tr>
<td>All Layouts In The Current Drawing</td>
<td>If you are generating less than 10 sheets, you may want to generate the layouts in the current drawing. The total number of sheets depends on the length of the alignment selected and other criteria, such as the size of the viewports in the referenced template. Note: For optimal results, it is recommended that you create no more than 10 sheets per drawing. Therefore, this option may not be the best choice if you have more than 10 sheets.</td>
</tr>
</tbody>
</table>
Create a Sheet Set

**Step 1:** Specifies the name of the sheet file(s) that will be created. Click Next to display the next page in the wizard sequence. If the view frames do not include any profile views, then the Profile Views page of the Create Sheets wizard is not available, and the Data References page is displayed next.

**Step 2:** In the Sheets section, specify a storage location and name for the sheet file(s) that will be created during this wizard session. If you have chosen to save all sheets in the current drawing (the All Layouts In The Current Drawing choice on the Create Sheets wizard View Frame Group and Layouts page), these fields are not available (read only, grayed out).

On the Profile Views page, you can specify additional settings for profile views. Note that the profile view style and the band set that were selected during view frame creation cannot be changed at this stage; however, the current profile view style and band set that will be used are displayed as read-only on this page (notice how they are greyed out as shown below). Only additional settings relating to profile views (Other Profile View Options) can be changed at this part of the process.

**Note:** If you need to change these profile view or band set style settings, you must cancel out of the Create Sheets wizard and recreate the view frames, using the updated style choices for the profile views and/or the band sets.
What you can do is Choose settings as shown. The profile view wizard will launch where you can get other settings from an existing profile view, or you can choose settings by launching the Profile View wizard at this point (from this page of the Create Sheets wizard). If you choose to launch the Profile View wizard from the Create Sheets wizard, you will be returned to the Profile Views page of the Create Sheets wizard when you are finished selecting profile view options. My preference is to go to this page and check the settings, just to be sure my profiles are not split and for a quick review.

If you are creating plan and profile sheets, you can choose how to align the data that is displayed in the plan and profile views using the Align Views options. If you are creating plan only or profile only sheets, these options are not available.

These options are useful on projects that require the data displayed in sheets to be aligned according to certain project requirements (such as aligned left, center, or right).

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Next to display the Data References page.

**Note:** The Data References page is not available if you chose All Layouts in The Current Drawing in the Layout Creation section of the View Frame Group and Layout page. In the Example shown below the Profile Views are grayed out due to us selecting plan only for our sheets. The same holds true for Data References if you do not put the layouts in a new drawing.

![Data References page](image)

Depending on your Event Manager settings, Event Manager messages may inform you of the location of the sheet sets, as well as the number of layouts created.

Once the sheets are created, the Sheet Set Manager is displayed automatically, showing the newly created sheets in a sheet set. For more information about the Sheet Set Manager, see the Sheet Set Manager Help topics in the AutoCAD Help.

If at any time during the wizard, you see a section greyed out it means that the sheets you are creating does not contain that object. For this example, there are not profiles since we selected the plan only sheets and the Profile View is greyed out as shown.

![Profile Views](image)

**Note:** The Sheet Set Manager opens and displays the newly-created sheets. Double-click on a sheet name to display it in a layout view. For more information on the Sheet Set Manager check out my Collection on the Autodesk Knowledge Network.
Sheet Set Manager Overview
Any design project you work on requires a set of drawings and specifications to accompany the report which specifies the intent of the design. All these aspects require preparation and good document and project organization. A Sheet Set is a great tool to manage your drawings from start to finish in your design. If you use Sheet Sets in the most basic way you are just taking drawing files and organizing them in proper order, so they can be easily accessed when working through your project. With Sheet Sets you can have others on your team work on one subset while you work on another making collaboration and managing your design package an easy task.

The Sheet set manager can be found on the ribbon under the application menu as shown below. If you use the menubar you can find it under the file pull down. Finally, for those of you who use the command prompt type **SSM**. After you successfully create a sheet set you can view your Sheet Set through the SSM Palette as shown below right.

For additional information and how to create a Sheet Set, templates, and an entire linked project ready for publishing check out my class at Autodesk University.

**Advanced topics using the Sheet Set Manager at Autodesk University**
Creating Section Sheets

Use the Create Section Sheets command to create layouts for plotting section views. There are some perquisites that we must consider prior to creating the section sheets. Notice on the note below how you need to Create Multiple Views in order to generate the section views.

First, we will create our sample lines then our multiple views. Select Sample Lines on the Profile & Section Views panel on the Home tab of the ribbon as shown.

After Selecting Sample lines, you can select your alignment or just hit enter to select from a list as shown.

After selecting your alignment, you will be brought to the Create Sample Line Group Dialog box as shown on the next page.
Shown below are 6 areas where you will need to focus on creating your Sample lines.

**Step 1:** Name for the View Frame Group you will be creating.

**Step 2:** The description. Give a good description so the next person going into the sheets will have a good understanding of why you created the view frame group.

**Step 3:** Layer. You can select the layer button to the right to create a new layer or keep as the default from Civil 3D which is C-ANNO-VFRM and is set to no plot.

**Step 4:** The Counter. Although you may not print the name of your view frame there needs to be a counter, so we know where the frames begin, connect, and end. The <(Next Counter)> option will increase the number by one each time you add a view frame.

**Step 5:** View frame Style: The current style has been created to not plot the geometry of the view frame.

**Step 6:** View Frame Label Style:

Click Next >
This will bring up the **Sample Line Toolbar**. This toolbar is used to create and edit sample lines along a horizontal alignment. The default format is `<SL> - <[Next Counter]>`.

- `<SL>` is the name of the sample line.
- `<[Next Counter]>` is an integer greater than or equal to one, which increments as sample lines are created in the drawing. This naming convention is based on the name template.

Enter a name or edit a default naming convention in the Name Template dialog box. Opens the Name Template dialog box. Edit the default sample line naming convention.

Prompts you to pick the horizontal alignment in the drawing to associate with the sample line. After you click the alignment in the drawing, the Sample Line Tools toolbar is reopened. We are going to pick By range of stations… as shown below which will bring up a new dialog box.

For this example, we are going to create sample lines every 100 feet along our alignment. Select By range of stations as shown.

Notice the 5 steps as shown in the dialog box below. These will indicate the settings of your sample lines that you will be using in the current and/or new drawing.

**Step 1:** Where do you want the Sample lines to start

**Step 2:** Left Swath Width. This is where you will define how far you want the sample line to extend past the alignment line.

**Step 3:** Right Swath Width. Same as the left. Most of the time these values will be the same but, in some cases, you may want to extend the sample line in one direction greater than the other.

**Step 4:** How often do you want to run a sample is controlled in the increment section.

**Step 5:** The additional controls will give you the flexibility to start at the exact start of the alignment and end at the end. You may have a few that are close together depending on the distance of your sample lines.
Hit OK and your sample lines will be created according to your preferences as shown above.
Use the Create Multiple Views command to generate production-ready section views. When creating the section views, you must select a template that contains a Section-type viewport. Click Output tab on the Plan Production panel of the Ribbon and select Create Section Sheets.

It is now time to create our multiple views prior to creating the sheets. Click the Home tab and on the Profile & Section Views Panel.

**Section Views drop-down select Create Multiple Views.**

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Step 1: In the Create Multiple Section Views wizard, on the General page, specify the following parameters: Select Alignment: (State Street) Sample Line Group Name: State Street Cross Section. Station Range: User Specified. Start: 0+00.00.

Step 2: Section View Name.

Step 3: Select Section View Layer

Step 4: Section View style: This will control how your sections look when they are created.

Click Next

Notes
We are going to use the production section and add to our template. We will use a 30 scale for this placement.

Group Plot Style will help you determine how the sections are displayed on each sheet. In this example I highlighted the array section to show how the columns and rows are displayed.

We are going to use a 50ft offset range for our sections.
Elevation Range we will accept the default value as automatic. You have the options of selecting a height or even taking it one step further and following a section.

This next one is the Section Display Options. In this dialog box similar to data shortcuts you can select the items you wish to display within your sections. Just as with any other Civil 3D style you can go back and add a surface or other data as shown.
Data bands will remain the as default.

Select Create Section views to complete the process.

Notes
Select an open area on your screen for your section views to be created. You will see that they are centered within the frame and the areas are based off the template you selected during the setup process. Now it’s time to create our section sheets.

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Create Section Sheets

We have our cross sections setup and have selected our plan and production template. Select Create Section Sheets from the Output tab on the Ribbon.

Select Create Sheets

Your section views have now been created and added to your existing Sheet Set for publishing.
About Data references

When creating new drawing sheets with the Wizard you can select the data you wish to reference into the new sheets from the current drawing sheet.

You can use the Data References page in the Create Sheets wizard, where you can select the objects that you want to be referenced in the sheets. You can select the following object types:

- Surfaces
- Alignments
- Profiles
- Pipe networks
- Pressure networks
On the **Data References** page, you can select or omit the data you want to be included in your sheets. Select the check box next to the data references you want displayed in the sheets. Some references cannot be removed from the selection, such as the alignment and profile associated with these sheets. If you are including pipe networks in the destination drawing(s), you may want to check the Copy Pipe Network Labels to Destination Drawings to also copy the labels associated with any selected pipe networks.

![Select the data you want referenced in your sheets.](image)

When you select an object by placing a check mark next to it, a data reference (data shortcut) to that object is created in the sheet. This method will provide you a way to only check the shortcuts you need for this phase of the project.

Including data references in your sheets instead the actual data ensures that the geometry of the source data can be modified only in the source drawing, not in the resulting sheet drawing. However, display styles and labels for the reference object can be modified in the sheet drawing.

Another benefit of using data references is that if the source data objects change, the information displayed in the sheets dynamically updates.

Notes
Conclusion

Autodesk first introduced the Plan and Production tools in Civil 3D 2013. In my opinion, not many people were aware of the power of these tools and how you can create plan and profile sheets that line up perfectly and efficiently. We are now at the 2018 version of Civil 3D and the Plan and Production tools remain one of the most efficient ways to create plan and profile sheets along a long alignment. Think about workflow and what you do every day at work. How about having the ability to create views and match lines without moving those objects around manually. Think about how many times you apply that task during the design process, and then think about how many designs you work on in one year. Being efficient and productive will only make you more valuable and provide profit to the company you work for.

Go back to work, create your template, and get productive with Plan and Production in Civil 3D.

“The best preparation for Tomorrow is doing your best Today”

H. Jackson Brown Jr.

Enjoy the rest of your time at Autodesk University!