Lesson 5

Roadway Plan Production

Overview

This lesson describes how to automate the generation of plan and profile design and construction sheets using the plan production tools. These tools, the Create View Frames wizard and Create Sheets wizard, eliminate the repetitive tasks associated with orienting and scaling viewports to show alignment and profile data.

Using the wizards, you can quickly create sheets that display segments of alignments and profiles in your design and construction plans. Instead of having to manually create viewports for alignments and profile views, and manually recreate sheets each time your data changes, you can now create sheets from dynamic view frame groups that automatically capture predefined areas along an alignment and a profile view.

Objectives

After completing this lesson, students will be able to:

- Create view frames in a view frame group.
- Create all plan and profile sheets in the current drawing.
- Create all plan and profile sheets in a new drawing.
- Create all plan and profile sheets in individual drawings.
- Use the AutoCAD Sheet Set Manager to manage the sheets.

Exercises

The following exercises are provided in a step-by-step format in this lesson:

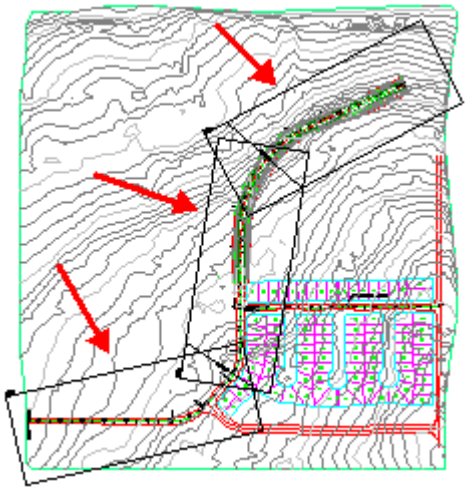
1. Create View Frames
2. Create Sheets

About Plan Production

Creating plan and profile sheets in Civil 3D involves the following steps:

- Create the view frames.
- Create the sheets.

View frames are model space objects that show the area of the horizontal alignment that is represented in each sheet.



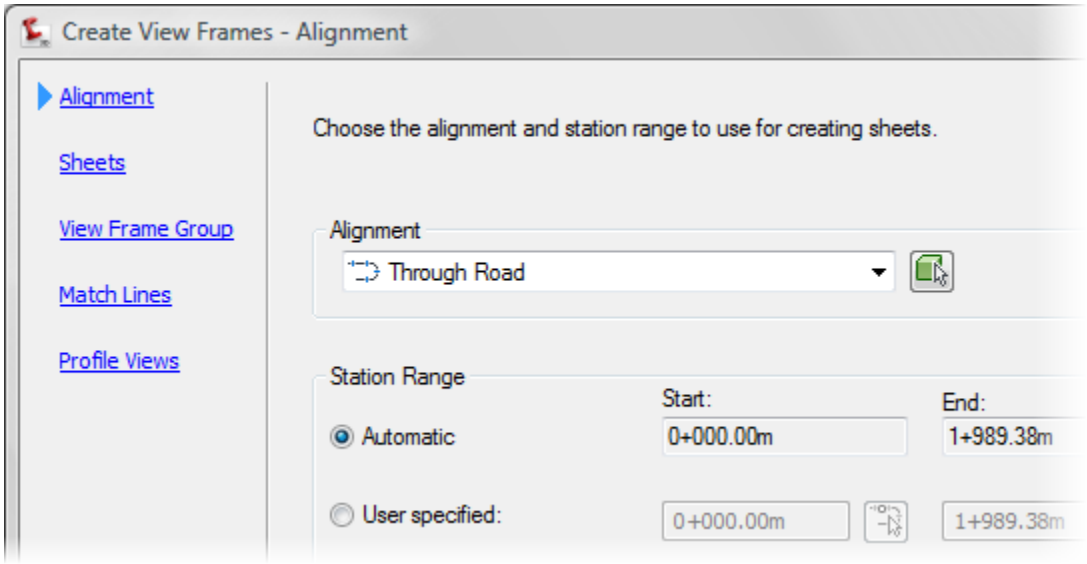
Create View Frames

You use the Create View Frames wizard from the Output tab to quickly create view frames along an alignment. Using the following areas of the Create View Frames wizard, you can plan and create your sheet sets.

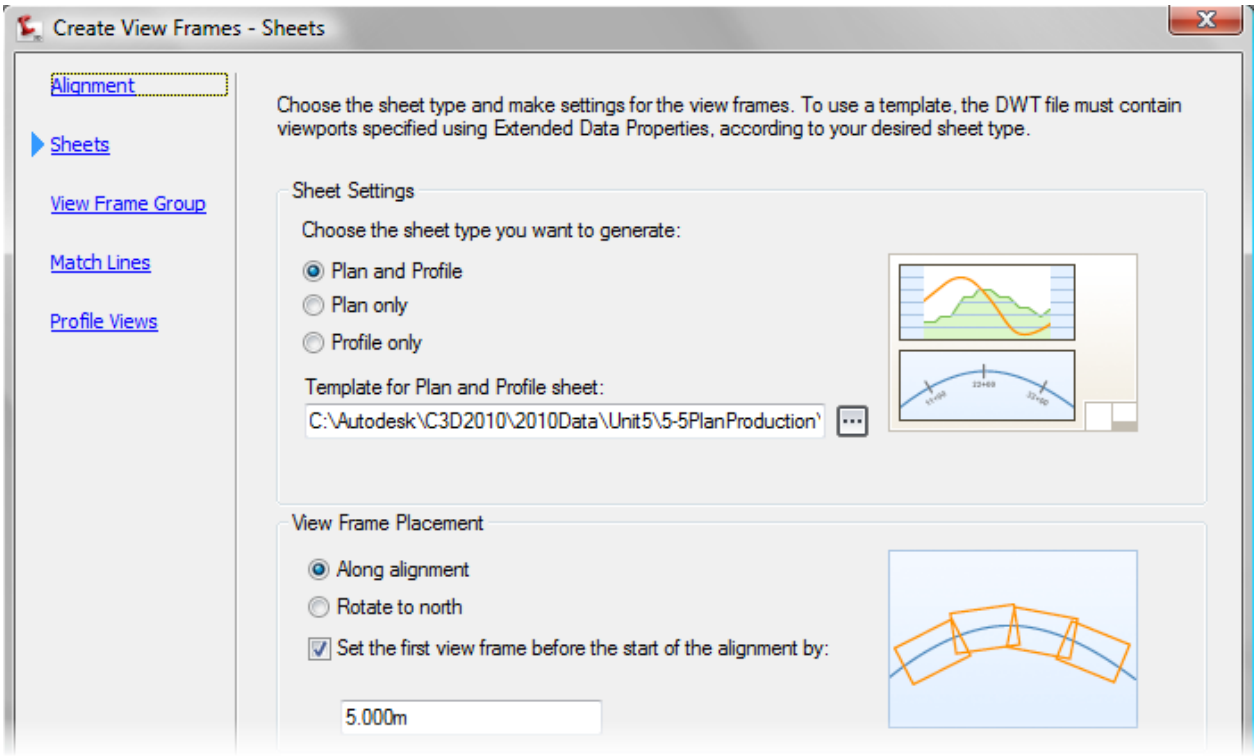
Term	Description
Alignment	Select the alignment and station range for creating view frames.
Sheets	Select the type of sheets to create, a template for the sheets, and to determine view frame placement.
View Frame Group	Specify criteria for creating the view frame group object.
Match Lines	Configure a variety of choices that determine how and if match lines

	are placed on the view frames.
Profile Views	Choose options for the profile views that are displayed in the viewports (sheets).

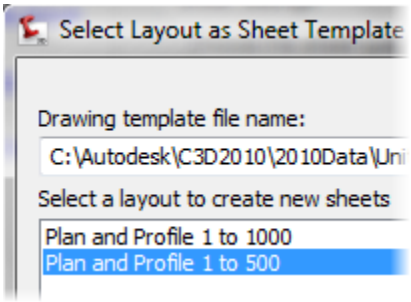
The first page of the wizard helps you select the alignment for which you wish to create the view frames. You can also choose the station range for the view frames.



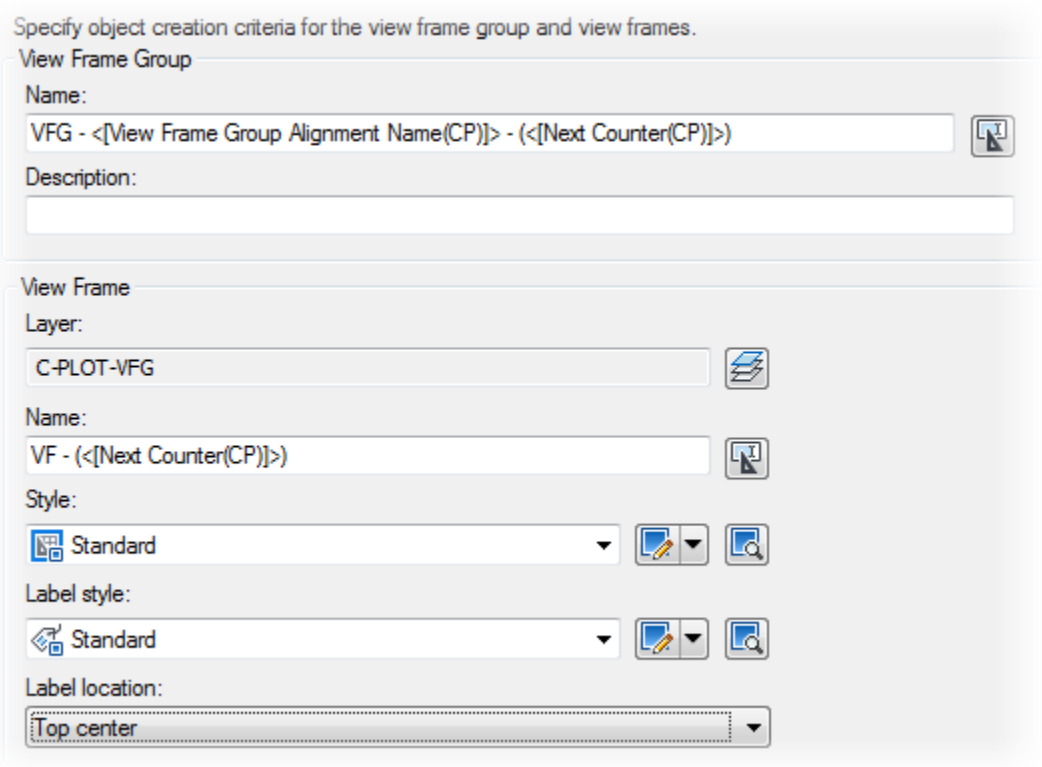
The second page of the wizard determines the type of sheet to create and the placement of the view frames. You specify a template file (DWT) with layout definitions that contain scaled viewports and the sheet borders for the type of sheet being created.



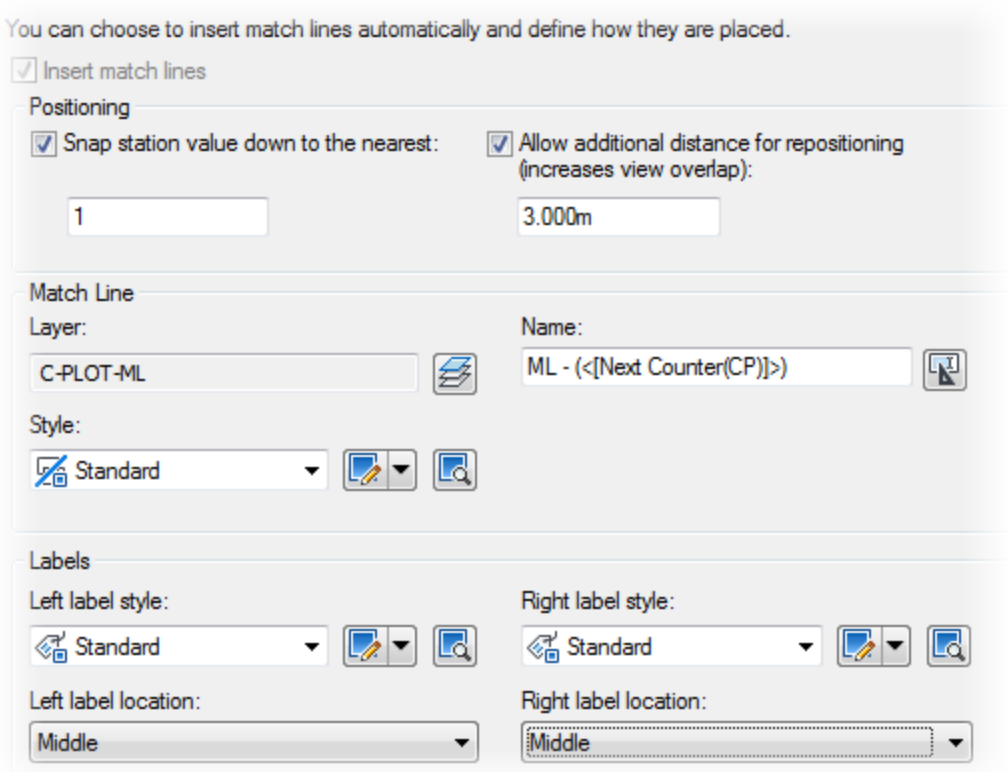
After you select the drawing template, you then select the layout definition within the template file.



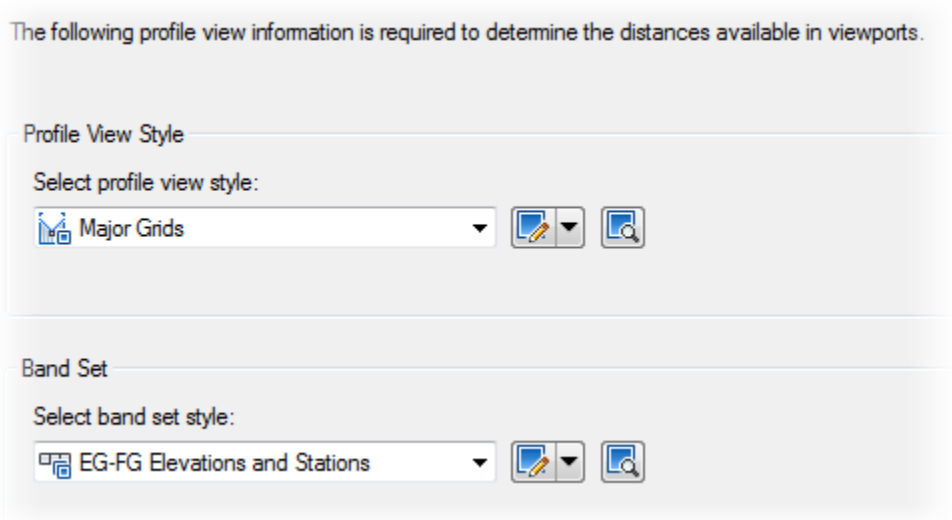
The third page of the wizard prompts you for a View Frame Group name as well as View Frame settings and styles. The View Frame Style and View Frame Label Style control the display and annotation of the view frames in model space. After the wizard is completed, you can look at Prospector and see how view frames are organized in a view frame group.



The fourth page of the wizard defines the position style and labels for match lines of the view frames. After the view frames are created, you can use grips to modify the position of the view frames and match lines in model space before creating the sheets.



The final page of the wizard sets the profile view style and the band set to use with the profile view. At this point, you are ready to create the view frames.



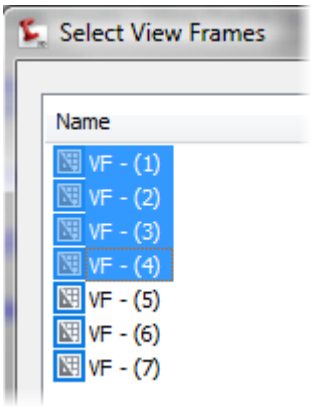
Create Sheets

After you have created the view frames, the next step is to create the sheets with the Create Sheet Wizard on the Output tab. The View Frames must already have been created prior to using this wizard.

You can use the following areas of the Create Sheets wizard to plan and create your sheet sets.

Term	Description
View Frame Group and Layout	Choose the view frame group and output settings for layout creation.
Sheet Set	Specify creation criteria for the sheet set, such as names and locations for the sheet set, the sheet set file (DST), and the sheet file.
Profile Views	View the profile view style and band set chosen during view frame creation, configure profile view options.
Data References	Select the objects to be referenced in sheets.

When you start the wizard, the first page sets the specific View Frame Group and View Frame range you use for the sheets. You can choose to create sheets for the entire View Frame range or select a few.

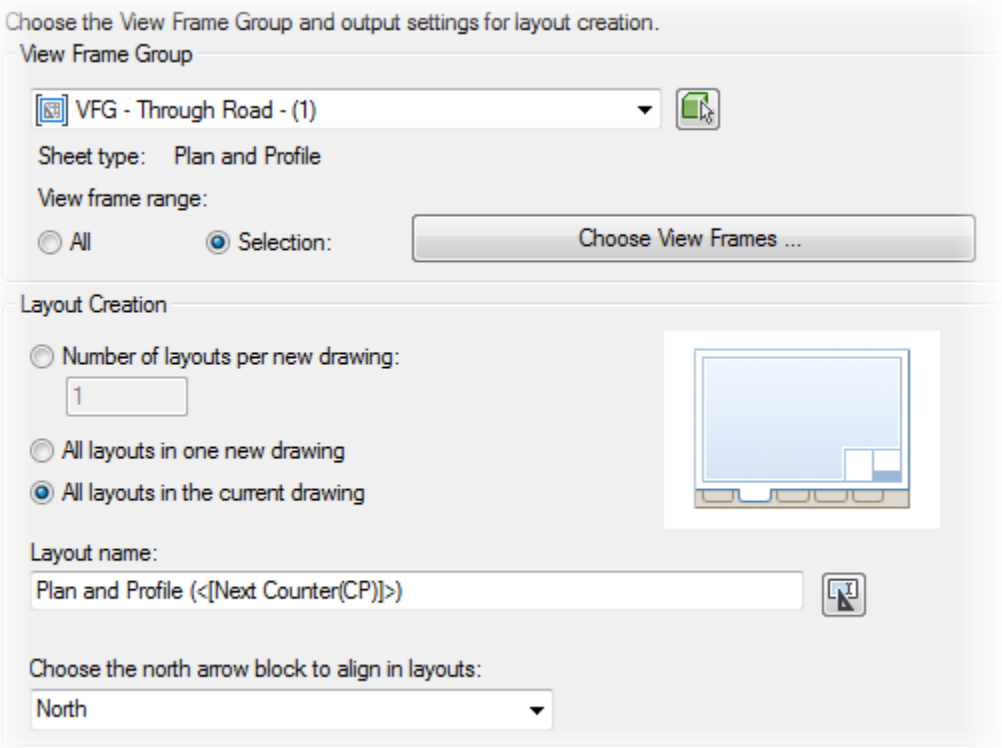


You then select how the layouts will be created regarding drawing files. The following options are available:

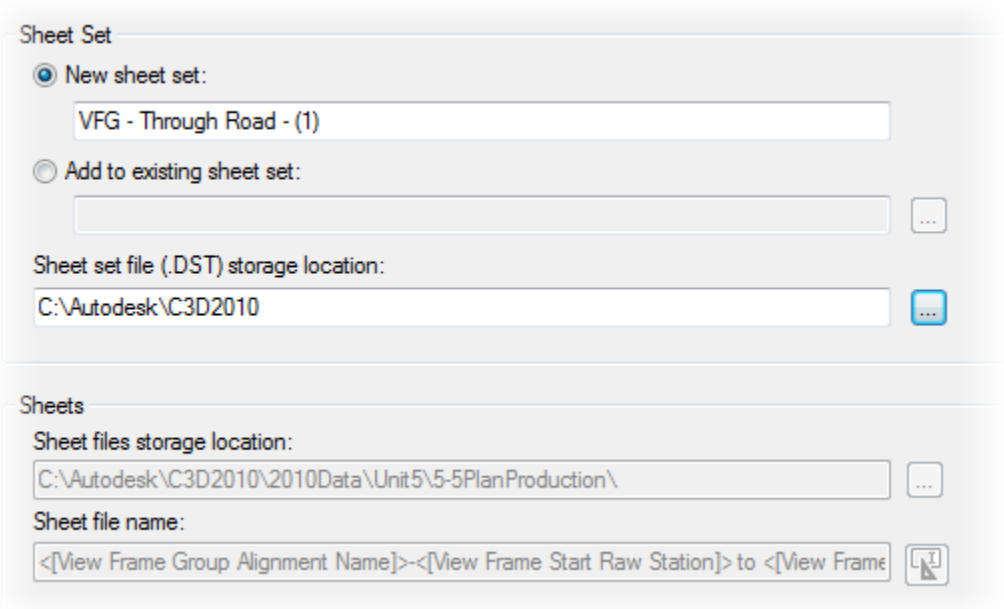
- Create all sheets on layouts in the current drawing.
  When you create the sheets and layouts in the current drawing, Civil 3D creates a layout for each sheet in the view frame group.
- Create sheets on layouts in a new drawing.
  When you create the sheets and layouts in a new drawing, Civil 3D creates a layout for

each sheet in the view frame group, and uses AutoCAD external references and Civil 3D reference objects to reference the data residing in the original drawing.

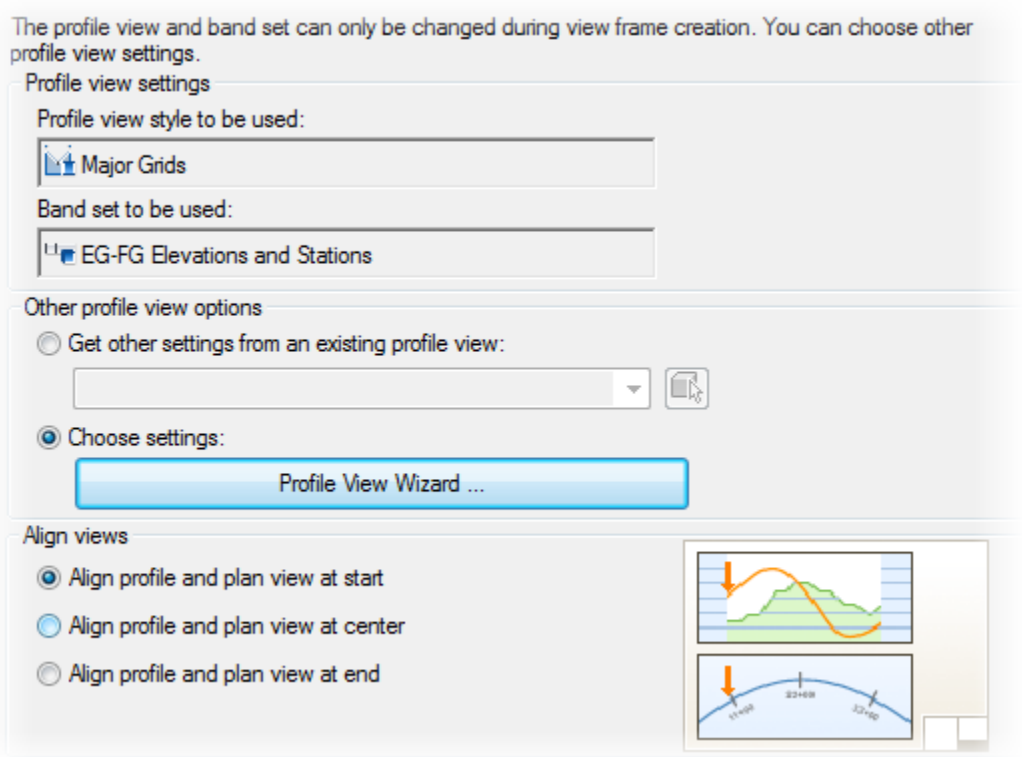
- Create sheets on layouts on individual drawings.
  Civil 3D can also create a layout for each sheet in a drawing of its own, using external references and reference objects to reference the data residing in the original drawing.



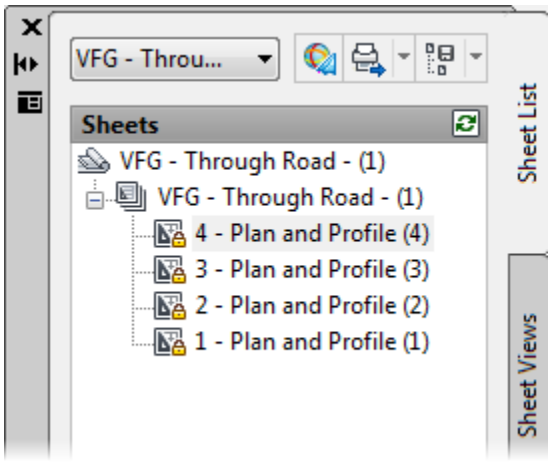
The second page of the wizard details the location of the sheet set file (DST) and whether the sheet set being created is new or should be added to an existing set.



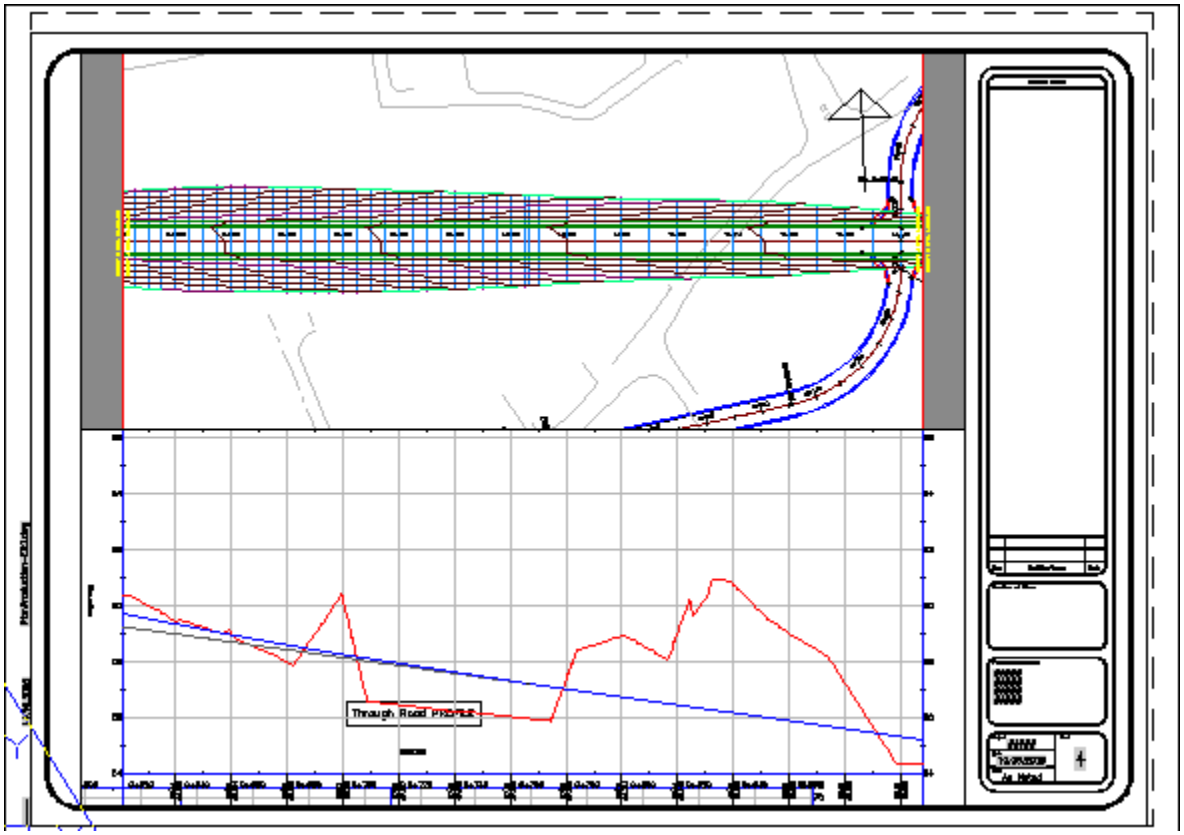
If you are creating a type of sheet where a profile view is part of the final sheet, the third page of the wizard provides options to modify the style, band set, and other profile view options.



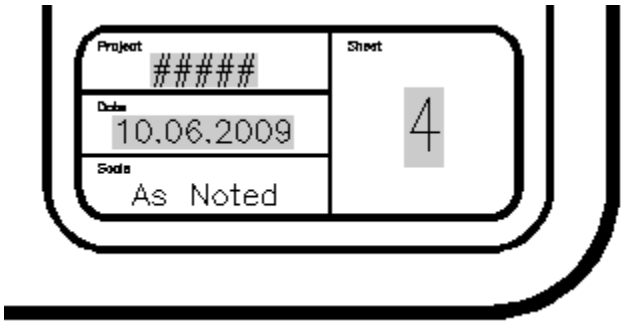
Finally, you are ready to actually create the sheets, which are managed by the Sheet Set Manager.



The sheets are viewable by double-clicking in Sheet Set Manager.



Sheet Set Manager can also be used to automate the population of relevant data in a title block, such as date and drawing number.



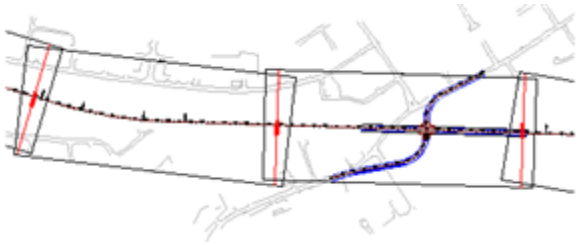
Key Terms

External Reference	An AutoCAD function used to share the graphical contents of one or more drawings with other drawings.
Layout	Used to represent a single sheet in a contract drawing set. The layout is a tab that contains a title block and viewport(s), and has details of the associated printer and paper size.
Match Line	A line drawn in plan view that indicates the separation between adjacent plan and profile sheets. The position of the match line is based on the length of profile alignment that will fit in the viewport.
Match Line Label Style	Controls the display of the match line label.
Match Line Style	Controls the display of the match line.
Reference Object	A Civil 3D function used to share Civil 3D object data residing in one or more other drawings.
Sheet Set Manager	An AutoCAD utility used for the creation and management of individual sheets within a drawing set.
View Frame	A model space object that shows the plan view portion of the model that is displayed in a plan sheet or in a plan and profile sheet.
View Frame Label Style	Controls the display of the view frame label.
View Frame Style	Controls the display of the view frame.
View Frame Group	A collection in Prospector of view frames for an alignment.

Exercise 1: Create View Frames

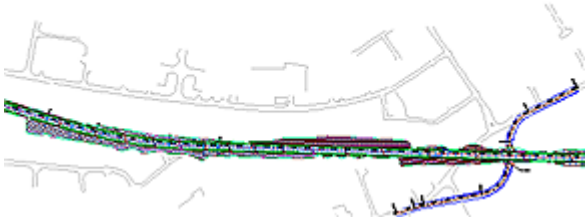
In this exercise, you use the Create View Frames wizard to develop view frames along an alignment.

At the end of this exercise, the drawing displays as shown.



For this exercise, open …*I_PlanProduction-EX1.dwg (M_PlanProduction-EX1.dwg).*

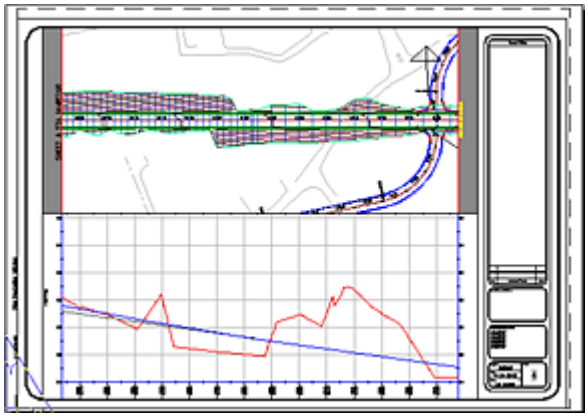
First, you use the Create View Frames wizard to generate frames for use in creating plan and profile sheets.



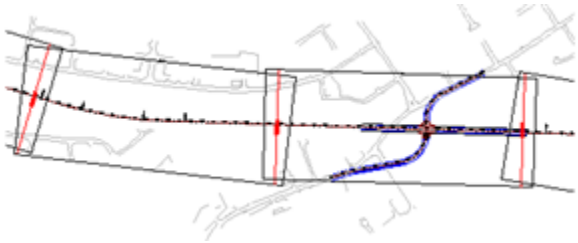
Exercise 2: Create Sheets

In this exercise, you use the Create Sheets wizard to create sheets and sheet set files.

At the end of this exercise, the drawing displays as shown.



For this exercise, open *…\I_PlanProduction-EX2.dwg (M_PlanProduction-EX2.dwg).*



Assessment

Challenge Exercise

Instructors provide a master or challenge exercise for students to do based on this lesson.

Questions

1. What is a view frame?
2. What is a match line?
3. What controls the size of view frames?
4. How are view frames organized?
5. Describe how you can edit the position of the view frames.
6. What are the three layout options available when creating sheets?
7. What does Sheet Set Manager do?
8. Can Civil 3D Plan Production be used to create cross-section sheets?

Answers

1. The view frame is the model space object that surrounds an area that is displayed when a sheet is created.
2. The match line is a line drawn in plan view that indicates the separation between adjacent sheets. The position of the match line is based on the length of profile alignment that fits in the viewport.
3. The viewport size and scale in the referenced layout in the drawing template (DWT) control the size of the view frames.
4. View frames are organized in a view frame group. The view frame group is shown as a collection on the Prospector tab of the Toolspace window.
5. You can use grips to control the position of the view frames in model space. The green circle-shaped grip is used to rotate the view frame. The blue diamond grip is used to position the view frame along the alignment. The blue square grip is used to move the view frame to any position.
6. When you create sheets you can 1) create all sheets in the current drawing, 2) create all sheets in a new drawing, or 3) create all sheets in individual drawings.
7. Sheet Set Manager is used to manage the sheets in a sheet set, regardless of how they were created.
8. Civil 3D Plan Production tools cannot be used to create cross-section sheets. There are, however, other methods for producing cross-section sheets such as cross-section group plot styles and map books.

Lesson Summary

In this lesson, students learned how to use the AutoCAD Civil 3D Plan Production tools to create plan and profile sheets.

The first step was to create the view frames, which show the plan view areas that are displayed in the individual sheets. The view frames were positioned and sized based on layout definitions residing in a drawing template file (DWT). The next step was to generate the sheets. The sheets were generated with all layouts in the current drawing. Finally, students learned how to use AutoCAD Sheet Set Manager to manage the sheets within a sheet set.