

Navigating the User Interface

If you're new to the AutoCAD® Civil 3D® software environment, then your first experience has probably been a lot like staring at the instrument panel of an airplane. Civil 3D can be quite intimidating, with lots of buttons, strange shapes, and unusual icons—all packed into a relatively small area. In addition, you may be even more intimidated by the feeling that there is a lot of power under the hood.

This leads us to our main objective for this chapter, which is to alleviate that feeling of intimidation and make you feel much more at ease within the Civil 3D environment. Let me start you down that path by saying that there's a big difference between an airplane and Civil 3D. In Civil 3D, if you really mess up, you can simply close the drawing file without saving. When piloting an airplane, it's a little more difficult to undo your mistakes.

After completing this chapter, you will have achieved a greater comfort level within the Civil 3D environment by being able to identify the main user interface components and utilize them for basic functions. You will also be able to use two specific features that will serve you well throughout the program: the Transparent Commands toolbar and the Inquiry Tool.

In this chapter, you'll learn to:

- ▶ **Navigate the Civil 3D user interface**
- ▶ **Launch general commands through the application menu**
- ▶ **Launch key software commands and functions using the ribbon**
- ▶ **Navigate the design contents using the Toolspace**
- ▶ **Navigate the model using the drawing area**
- ▶ **Communicate with Civil 3D using the command line**
- ▶ **Access and modify design information using Panorama**

- ▶ Access specialized commands using the Transparent Commands toolbar
- ▶ Get information about your design using the Inquiry Tool

Getting to Know the Civil 3D User Interface

Certification Objective

To begin learning about the Civil 3D environment, let's take our airplane analogy down a notch and think about this as learning to drive an automobile. When your parents first sat you down at the wheel and talked about the car's controls, they probably didn't mention the air conditioning or the radio. Those, of course, are important parts of the driving experience, but I'm betting they started with the most important parts, such as the steering wheel, the gas pedal, and, most important of all, the brake pedal. We're going to approach your first experience with "driving" Civil 3D in much the same manner.

There are many, many parts to the Civil 3D user interface. For the purpose of this book, I'll cover just the ones that will be most important in enabling you to navigate the software effectively. Figure 1.1 shows the major components of the user interface.

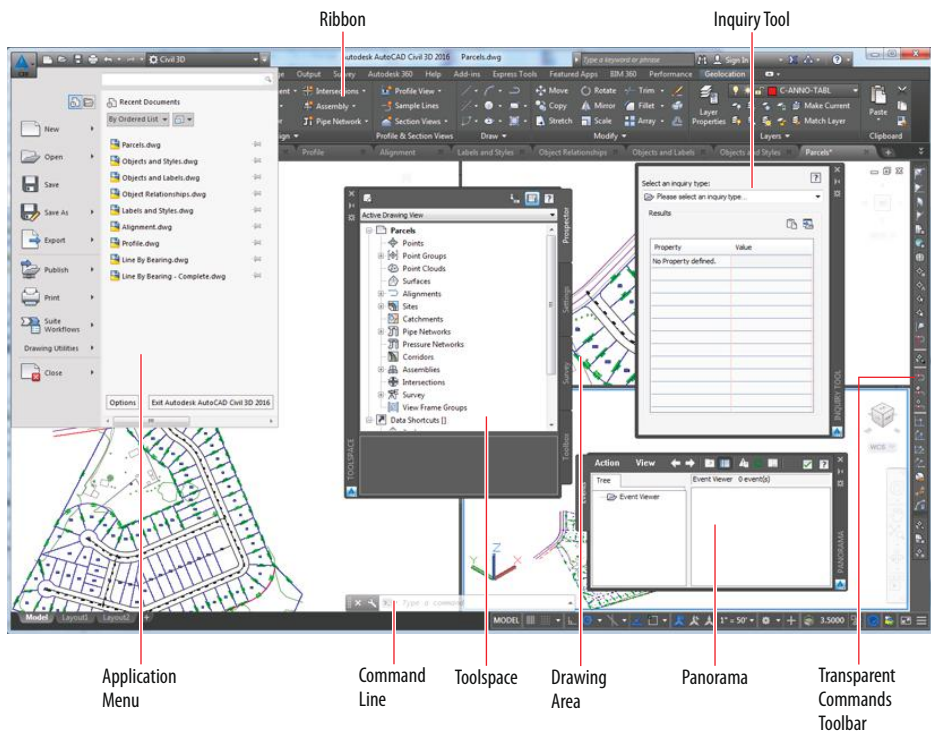


FIGURE 1.1 Major components of the Civil 3D user interface

Application Menu The place where you can find everyday file-handling commands that enable you to do things like open, save, and print your drawings

Ribbon The place where most Civil 3D commands are launched

Toolspace The Civil 3D “command center” where all the data and settings are laid out in an organized fashion

Drawing Area The place where the drawing is created

Command Line The “chat window” where you and Civil 3D talk to one another

Panorama A multipurpose window where you can view and/or edit drawing information and properties

Inquiry Tool A tool with many smaller tools within it that enable you to get information about your design

Transparent Commands Toolbar A toolbar with special commands that allow drafting and geometric construction to be done in the way that civil engineers and surveyors do it

Working with the Application Menu

The application menu (see Figure 1.2) expands out from the square AutoCAD Civil 3D icon located at the top left of your screen. Here, you’ll find commands for creating, opening, saving, and printing your drawing files.

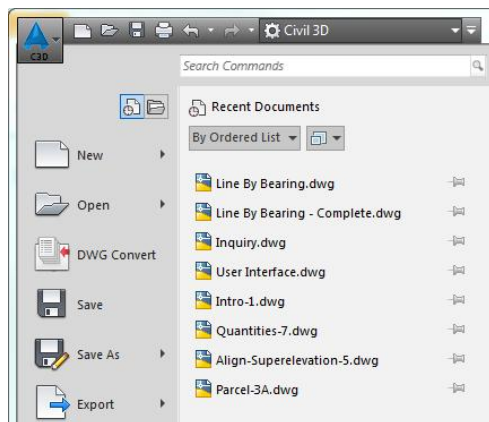


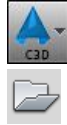
FIGURE 1.2 Part of the Civil 3D application menu

The Quick Access Toolbar just to the right of the AutoCAD Civil 3D icon is a handy subset of your most commonly used general-purpose tools. It can be customized to add more tools if you like.

If you haven't already done so, download and install the files for Chapter 1 according to the instructions in this book's Introduction.

Exercise 1.1: Use the Application Menu to Open a File

In this exercise, you will use the application menu to open a file.

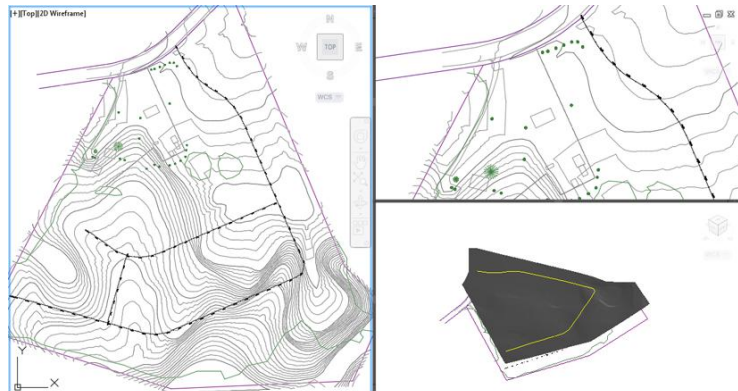


1. Launch Civil 3D by double-clicking the Civil 3D 2016 Imperial (Metric) icon on the desktop of your computer.
2. Click the application menu icon.
3. On the application menu, click Open.
4. Browse to the Chapter 01 class data folder, and open User Interface.dwg.
5. Open the application menu once more, and investigate the commands that are listed there. You'll notice that most of them have to do with creating, opening, saving, and printing drawing files.
6. Keep this drawing open for the next exercise.

Because nothing changes in this drawing file as a result of the exercise steps, no User Interface – Complete file is necessary.

IT'S ALL IN HOW YOU LOOK AT IT

This drawing, like many other drawings you'll open while working through this book, is set up with three viewports. The one on the left is top-down, or *plan view*, showing the entire project. The one at the top right is also plan view, but it is zoomed in to a different part of the drawing. The lower-right viewport is a *3D view*. These are three views of the same design, and what happens in one will happen in the other two. Think of it as three cameras showing three different viewpoints of the same subject, with each viewport being like a television monitor.



Working with the Ribbon

The *ribbon* is located at the top of your screen, and it is the launching pad for most of your Civil 3D commands. The commands that it contains are organized into groups through the use of *tabs* and *panels*. The ribbon itself is divided into a series of tabs that include Home, Insert, Annotate, and so on, as illustrated in Figure 1.3.

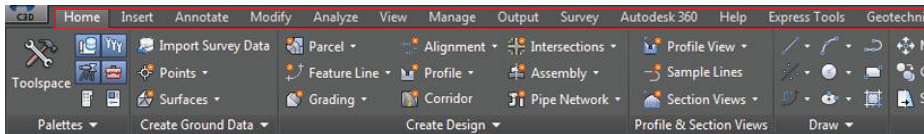


FIGURE 1.3 Tabs arrange large numbers of similar Civil 3D commands into groups.

Each tab is divided into panels. For instance, the Home tab shown in Figure 1.4 includes the Palettes, Create Ground Data, Create Design, Profile & Section Views, and Draw panels.

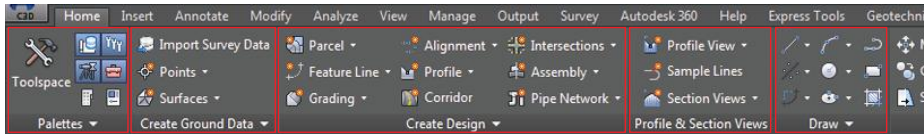


FIGURE 1.4 Panels provide another level of grouping within a ribbon tab.

Because Civil 3D groups the commands in this way, you never have to choose from more than a handful of commands once you’ve taken your best guess at the correct tab and panel. Also, you’ll find that the more you use Civil 3D, the better you will get at knowing the location of the commands. It’s not so much memorizing their positions as it is learning how Civil 3D “thinks”—that is, the way in which it relates commands to one another and categorizes them into tabs and panels.

One other thing you should know is that most panels expand downward to show you the less frequently used commands in a particular category. You’ll know that a panel expands when you see a downward-pointing white triangle next to its name. For example, Figure 1.5 shows the Home tab’s Create Design panel expanded with more commands. Don’t forget to look on these hidden panels when searching for commands.

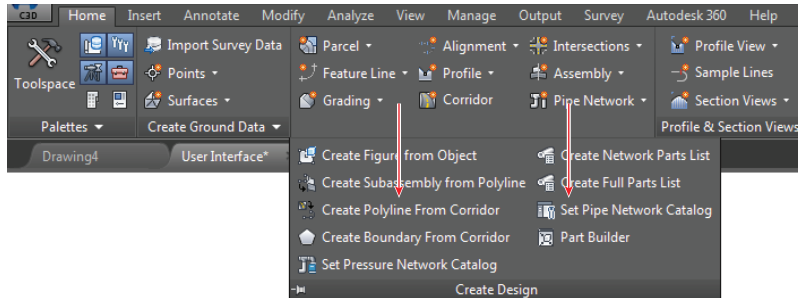
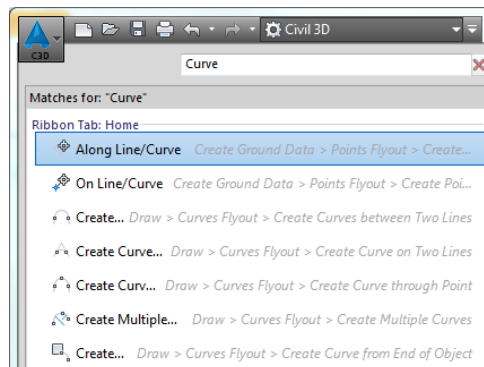


FIGURE 1.5 Most panels expand downward to reveal more commands, as is the case with the Create Design panel on the Home tab of the ribbon.

One of the best features of the ribbon is its ability to respond to what you select in the drawing area. For example, if you click a Civil 3D alignment, the ribbon changes and serves up alignment-related commands on a special tab. The same is true for surfaces, parcels, and so on. These special tabs are referred to as *contextual ribbon tabs*. They are a huge help when you're first learning Civil 3D and a huge time-saver even after you've become a master.

ANOTHER GREAT WAY TO FIND COMMANDS

Sometimes you really have no idea where to even begin looking for a command. The application menu has a handy tool that will help you find just about any command, regardless of where it is in the user interface. Simply click the application menu and type a keyword in the search bar. You'll be given a list of commands that match your keyword. You can launch a command right from the list by clicking it, or you can learn where the command is located by looking at the information shown to the right of it.



Exercise 1.2: Use the Ribbon to Launch Commands

In this exercise, you will familiarize yourself with the ribbon's tabs and panels.

1. Launch Civil 3D 2016, and open the file named `User Interface.dwg`.
2. Click the Home tab of the ribbon to bring it to the forefront (it may be there already).
3. Click the downward-pointing white triangle at the bottom of the Create Design panel and note how it expands down, as shown previously in Figure 1.5.
4. Click the Insert tab of the ribbon. Here, you see words like *insert*, *import*, and *attach*, which are all ways of bringing information into the drawing.
5. Click the other tabs of the ribbon, and see whether you can relate some of the words you see in the commands to the title of each ribbon tab.
6. Place your cursor in the left viewport, and roll the mouse wheel forward to zoom in to the drawing. Keep zooming in until you can clearly see the road centerlines labeled with stationing numbers (these are Civil 3D alignments). Click one of the road centerlines, and note that the ribbon displays a contextual tab to make alignment commands accessible (see Figure 1.6).

If you are continuing from the previous exercise, you can skip to step 2. If you don't have the necessary file(s), download and install the files for Chapter 1 according to the instructions in this book's Introduction.

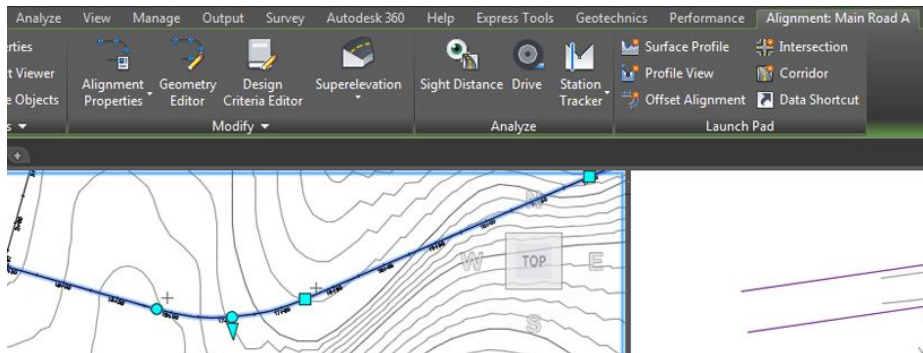


FIGURE 1.6 The ribbon displays the contextual Alignment: Main Road A tab because an alignment has been selected in the drawing (the name of the tab you see may be slightly different depending on which alignment you selected).

7. Keep this drawing open for the next exercise.

Because nothing changes in this drawing file as a result of the exercise steps, no User Interface – Complete file is necessary.

Working with the Toolspace

You can open the Toolspace by clicking the Toolspace icon on the Home tab of the ribbon.

Think of the Toolspace as the Civil 3D “command center” where all Civil 3D data and settings are laid out in a nice, orderly arrangement. It has several main functions that are represented by the different tabs it can contain. Altogether, the Toolspace can house four tabs: Prospector, Settings, Survey, and Toolbox.

Prospector Tab

Prospector is arguably the most important part of the Civil 3D user interface. As you build your design, *Prospector* arranges the different components of your design in a tree structure (see Figure 1.7). Why a tree structure and not just a list of items? Later in this book, you’ll study how Civil 3D creates relationships between different parts of your design. In some ways, this tree structure helps represent some of those relationships as a hierarchy. Another, more practical reason for a tree structure is that it’s an efficient way to show a long list of items in a relatively small area—the branches of the tree can be collapsed to make room to expand other branches.

Certification
Objective

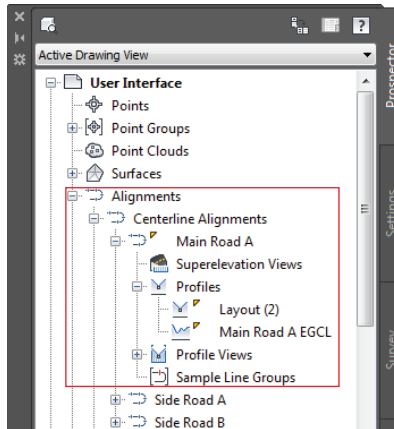


FIGURE 1.7 The Prospector tab showing a portion of the tree structure

Another way to think about Prospector is that it arranges your design categorically rather than spatially. In other words, in your drawing area, you might see road centerlines crossing through parcels, which cross through contours, which cross through survey points. Everything is in the right place spatially, but from an organizational standpoint, it's kind of a mess. Prospector sorts out this mess and puts all the points in one place, all the parcels in one place, and so on. Prospector also knows exactly where those objects are in the drawing. You can right-click an object in Prospector and use the Select command or Zoom To command to locate that object within the drawing.

Exercise 1.3: Explore the Model with the Prospector Tab

In this exercise you will use the Prospector tab of the Toolspace to explore the model.

1. Launch Civil 3D 2016, and open the file named `User Interface.dwg`.
2. If the Toolspace is not already open, click Toolspace on the Home tab of the ribbon.
3. Click the Prospector tab of the Toolspace to bring it to the forefront.
4. Explore the tree structure of Prospector by clicking the plus signs to expand the different branches.
5. Expand Alignments > Centerline Alignments > Main Road A > Profiles. This hierarchical arrangement provides effective organization and suggests a relationship between the alignment and its profiles.
6. Click within the left viewport to activate it. Then, on the Prospector tab, right-click Side Road B, and select Zoom To. Notice how Prospector knows the location of the alignment named Side Road B, even if you don't.
7. Keep this drawing open for the next exercise.

Because nothing changes in this drawing file as a result of the exercise steps, no `User Interface – Complete.dwg` file is necessary.

It's important to point out that Prospector isn't just a place for viewing your design; it's also a place where you can change the appearance of your design,

If you are continuing from the previous exercise, you can skip to step 2. If you don't have the necessary file(s), download and install the files for Chapter 1 according to the instructions in this book's Introduction.



If the Prospector tab is not visible, click the Home tab of the ribbon and then click the Prospector icon on the Palettes panel.

create new components for your design, edit your design, and so on. These types of functions are accessed through contextual menus such as the one used in step 6 of Exercise 1.3. A good rule of thumb when using Prospector is, “When in doubt, right-click it.”

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Objective**

If you are continuing from the previous exercise, you can skip to step 2. If you don't have the necessary file(s), download and install the files for Chapter 1 according to the instructions in this book's Introduction.

Settings Tab

Civil 3D has a lot of settings that control nearly every aspect of how the software behaves. In fact, one of the things that makes Civil 3D so powerful is that you can customize its settings to accommodate nearly any type of design, any company standard, or any other factor that defines the environment within which you use it. The *Settings tab* is where these settings are managed; however, you won't be spending much time here in the early part of your Civil 3D career. This area is more often the territory of a CAD manager or Civil 3D guru.

Exercise 1.4: Explore the Drawing Settings with the Settings Tab

In this exercise, you will use the Settings tab of the Toolspace to explore the drawing settings.

1. Launch Civil 3D 2016, and open the file named `User Interface.dwg`.
2. If the Toolspace is not already open, click **Toolspace** on the **Home** tab of the ribbon.
3. Click the **Settings** tab of the Toolspace.
4. Expand **Surface** > **Surface Styles**, and note the list of styles shown there. These styles control the appearance of models that represent the shape of the ground.
5. Expand **Surface** > **Label Styles** > **Contour**, and note the list of styles shown there. These styles control a certain type of label that is used to annotate surface models.
6. Keep this drawing open for the next exercise.

Because nothing changes in this drawing file as a result of the exercise steps, no `User Interface – Complete` file is necessary.



If the **Settings** tab is not visible, click the **Home** tab of the ribbon and then click the **Settings** icon on the **Palettes** panel.

Survey Tab

The *Survey tab* is specifically designed for working with survey data. You could call it “Prospector for surveyors” because it serves the same functions and works in much the same way as the Prospector tab. It displays survey data in a tree structure, and it allows you to launch commands through contextual menus.

Toolbox Tab

As if Civil 3D didn’t have enough stuff packed into it already, the Toolbox is a place where other add-ons can be plugged in. Your company may have some custom programming that is designed to run in Civil 3D, or you may have some add-on modules provided by Autodesk. This is the place where you can load and run these additional enhancements to Civil 3D.

Using the Drawing Area

The drawing area is where you can actually see and “touch” the design model you are creating. The design model is most often viewed from above, referred to as *plan view*, but it can be viewed from any perspective. For example, because Civil 3D specializes in representing designs as 3D models, you may want to display your model using a 3D view. Figure 1.8 shows a model in both plan and 3D views.

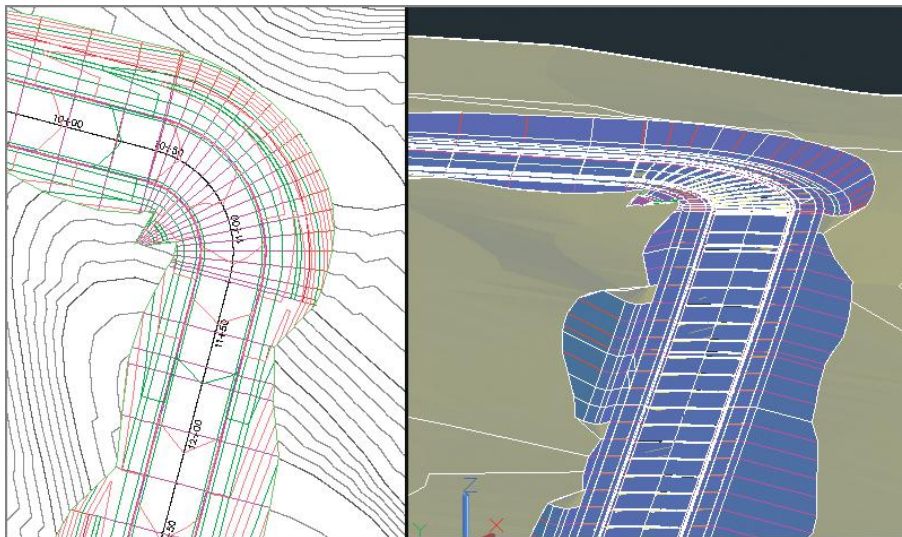


FIGURE 1.8 The drawing area showing the same model in plan view on the left and 3D view on the right

Using the Command Line

Think of the command line (see Figure 1.9) as a “chat window” where you talk with Civil 3D. Nearly everything you do is reported on the command line along with the response from Civil 3D. A response can be a request for more information, report of a result, or notification of a problem. It’s good to get into the habit of always watching the command line, because it often tells you what to do next. You can also launch commands from the command line, but you will likely find it much easier to use the visual interface provided by the ribbon and other tools.



FIGURE 1.9 A view of the command line while a transparent command (covered later in this chapter) is used to draw a line. Notice how the command line reports that the LINE command has been started and then prompts for the first piece of information: the “first point.”

Using Panorama



Panorama is a multipurpose window that is used to show and/or modify many different types of information. It works by displaying a tab for the information that you or the program has called for. For example, the Events tab (also known as the *Event Viewer*) shows up when Civil 3D needs to tell you something about the drawing. In another example, if you launch the command to edit the geometric details of an alignment, the Alignment Entities tab appears. As shown in Figure 1.10, while Panorama displays information for one task, it also displays tabs for other tasks that you can access with a single click. This enables you to multitask within the same window.

No.	Type	Tangency Constraint	Parameter Constrai...	Parameter C...	Length	Re
1	Line	Not Constrained (Fixed)		Two points	71.890'	
2	Curve	Constrained on Both Sides (Free)		Radius	143.335'	
3	Line	Not Constrained (Fixed)		Two points	33.616'	
4	Curve	Constrained on Both Sides (Free)		Radius	181.732'	
5	Line	Not Constrained (Fixed)		Two points	613.854'	
6	Curve	Constrained on Both Sides (Free)		Radius	78.540'	
7	Line	Not Constrained (Fixed)		Two points	553.949'	
8	Curve	Constrained on Both Sides (Free)		Radius	136.280'	
9	Line	Not Constrained (Fixed)		Two points	552.610'	

FIGURE 1.10 Panorama showing the Events and Alignment Entities tabs

Exercise 1.5: Explore Panorama

In this exercise, you will open the Event Viewer and Volumes Dashboard to become familiar with the Panorama.

1. Launch Civil 3D 2016, and open the file named `User Interface.dwg`.
2. On the Home tab of the ribbon, expand the Palettes panel and click the icon for Event Viewer. 
3. Experiment with resizing, auto-hiding, and docking the Panorama window. You'll find that it behaves much like other dockable windows in Civil 3D.
4. Press Esc to clear any selections in the drawing. Click one of the contour lines in the drawing to display the Tin Surface: Existing Ground ribbon tab, and then click Volumes Dashboard on the Analyze panel. 
5. Close Panorama, and close the drawing without saving.

Because nothing changes in this drawing file as a result of the exercise steps, no `User Interface – Complete` file is necessary.

Using the Transparent Commands Toolbar

As you may already know, civil engineers and surveyors draw things a little differently than architects or mechanical engineers. They use things such as bearings, curve deltas, northings, and eastings to define geometry. The Transparent Commands toolbar enables Civil 3D users to draw things based on the special geometric concepts that are unique to civil engineers and surveyors.

For example, when drawing a line, you can use the Northing Easting transparent command to specify the first point and the Bearing Distance transparent command to specify the endpoint (see Figure 1.11).



FIGURE 1.11 The Transparent Commands toolbar with red lines pointing to the Bearing Distance and Northing Easting transparent commands

◀ If you are continuing from the previous exercise, you can skip to step 2. If you don't have the necessary file(s), download and install the files for Chapter 1 according to the instructions in this book's Introduction.

◀ Note the Volumes Dashboard tab that shows up next to the Events tab in Panorama.

Certification Objective

◀ You can dock and undock the Transparent Commands toolbar by dragging the double line at the end of the toolbar to the appropriate location.

If you are continuing from the previous exercise, you can skip to step 2. If you don't have the necessary file(s), download and install the files for Chapter 1 according to the instructions in this book's Introduction.



Exercise 1.6: Use Transparent Commands to Draw Like a Civil Engineer

In this exercise, you will use one of the Transparent Commands to draw a line by bearing and distance.

1. Launch Civil 3D 2016, and open the file named `Line By Bearing.dwg`.
2. Click the `Type a` command prompt on the command line. Type **LINE**, and press Enter.
3. When prompted to specify the first point, click a point near the center of the screen.
4. When prompted to specify the next point, click `Bearing Distance` on the Transparent Commands toolbar. Refer to Figure 1.11 for the location of this command.
5. When prompted for a quadrant, either type **1** and press Enter or click in the upper-right quadrant created by the crosshairs on the screen.
6. When prompted for the bearing, type **45** and press Enter.
7. When prompted for the distance, type **500 (150)** and press Enter. Press Esc twice to exit the command. You have just drawn a line that is 500 feet (150 meters) long at a bearing of N 45° E.
8. Save and close the drawing.

To view the results of completing the exercise successfully, you can open `Line By Bearing - Complete.dwg`.

Using the Inquiry Tool

Most of the time, you'll be the one providing the information for a drawing. Sometimes, however, you need your drawing to tell *you* something. That's where the *Inquiry Tool* comes in. The Inquiry Tool is a separate window whose sole purpose is to give you information about things in the drawing. There is a long list of drawing items from which to choose, and beneath each item is a list of things that you can ask about (see Figure 1.12).

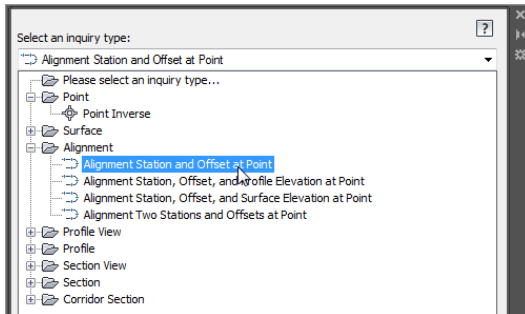
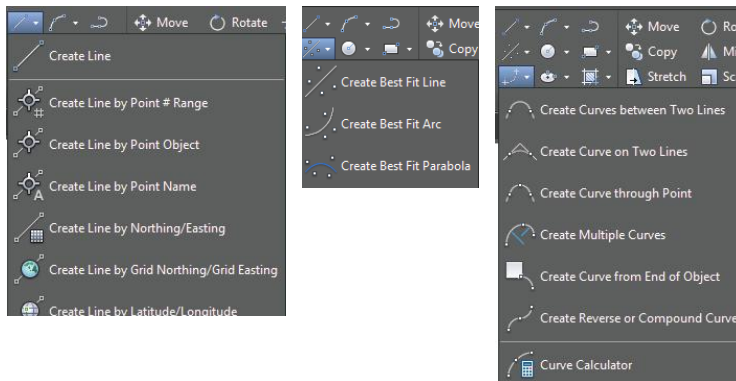


FIGURE 1.12 The Inquiry Tool showing a partial list of available inquiry types

USING SPECIALIZED LINE AND CURVE COMMANDS

Certification
Objective

Another Civil 3D feature that enables you to draw like a surveyor or civil engineer is a set of specialized line and curve commands. These commands are mixed in with the basic AutoCAD line and curve commands on the Draw panel of the ribbon. You can find specialized line commands by expanding the Line icon to reveal commands like Create Line By Bearing, Create Line By Point # Range, and so on. There is also a Curves icon that expands to reveal commands like Create Curve Through Point and Create Multiple Curves. Finally, the Best Fit icon expands to include commands for best-fit lines and curves. The following image shows the expanded form of the Line, Curve, and Best Fit icons.



If you are continuing from the previous exercise, you can skip to step 2. If you don't have the necessary file(s), download and install the files for Chapter 1 according to the instructions in this book's Introduction.

You may need to zoom in to accurately pick the end of the line.

Exercise 1.7: Use the Inquiry Tool to Answer Questions

In this exercise, you will use the Inquiry Tool to analyze the line that was drawn in the previous exercise.



1. Launch Civil 3D 2016, and open the file named Inquiry.dwg.
2. On the Analyze tab of the ribbon, click Inquiry Tool.
3. Under Select An Inquiry Type, select Point > Point Inverse.
4. When prompted to specify the first point, hold down the Shift key, right-click, and select Endpoint on the contextual menu that appears.
5. Click the southwestern endpoint of the line you drew earlier.
6. Use the Shift+right-click combination again to select Endpoint, and then click the opposite end of the line for the second point.
7. Scroll down to the Direction and Horizontal Distance values in the Inquiry Tool window. Note that they show the same bearing and distance that you entered earlier.

Because nothing has changed in this drawing file, no Inquiry – Complete file is available.

Now You Know

Now that you have completed this chapter, you are more comfortable in the Civil 3D user interface and can begin navigating it to get where you need to go. You understand how to use the application menu to access files and do other general tasks. You can use the ribbon to access Civil 3D commands and the Toolspace to explore the model contents and the drawing settings. You understand where Panorama fits in to the overall user interface makeup. You can use transparent commands to perform basic drafting using terms and geometric concepts that are unique to those working in the civil engineering and surveying fields. Finally, you can use the Inquiry Tool to answer questions about your design.

Now that you have a feel for the Civil 3D user interface, you are ready to move on in your learning experience. Next you will study the nature of the Civil 3D environment in all its dynamic 3D glory, and you will begin to build and create a design, learning new tools and concepts as you go.