

Welcome to the Civil 3D Environment

To paraphrase, Civil 3D isn't your father's AutoCAD. If you're just getting into the Civil 3D environment, want to learn how to get around in models, and would like to understand the object styles and labels, then this is the place to start. Even if you've had a class or two, this chapter will provide a good review of some definitions, terms, and techniques used throughout the book.

This chapter starts by examining the general interface of Civil 3D, the various palettes that are part of Civil 3D tasks, and some parts of the interface that are new to 2009 in general. You'll learn how to create a new Civil 3D-based drawing in order to understand the way Civil 3D uses styles to display the various objects that are part of your projects. You'll explore the differences between plan, isometric, and profile styles for various objects, and how these styles and layers work together. The chapter then discusses some general labeling topics, including the relationship between Civil 3D text and drawing scale, how styles determine label accuracy and placement, and how you can share styles of all sorts with the rest of your office. As a last bit, you'll look at the help system, and we'll point you to some great online resources for further exploration.

This chapter includes the following topics:

- The Toolspace palettes
- Object display styles
- Object label styles
- Navigating in 3D
- Creating new Civil 3D drawings
- Sharing styles and template creation

The Civil 3D Interface

As soon as you load Civil 3D for the first time, you'll see some changes afoot. Unlike most versions of AutoCAD, Civil 3D asks you to pick a workspace right off the bat, before you even really know what you're selecting. This section explores the menus and palettes that are unique to Civil 3D.

Civil 3D is built on AutoCAD, and there are many good texts on learning AutoCAD. *Mastering AutoCAD 2009* by George Omura (Sybex, 2008) is a popular choice. Because this text is focused on learning Civil 3D, issues or customization options that are based on the AutoCAD technologies will generally be mentioned more in passing than in detail.

When you first launch Civil 3D, you're presented with a question about workspaces. The default is Civil 3D Complete, so most users select that. It's also where you'll be working for most of this book.

WHAT'S A WORKSPACE?

Workspaces are Autodesk's answer to having the right tool at the right time for the right job. Workspaces allow you to pick and choose the toolbars, menus, and palettes that make up your screen. By picking different combinations based on the tasks at hand, you can minimize the number of toolbars on your screen, limit the number of options presented to new users, and spend less time in menus and more time working. Civil 3D comes with five workspaces right out of the box: Design, Annotation and Drafting, Survey and Topographical, Visualization and Rendering, and Civil 3D Complete.

When Civil 3D has finished loading (and assuming you've accepted the default Civil 3D Complete workspace), it looks something like Figure 1.1. There are all kinds of new buttons and controls along the bottom of the drawing area—be sure to check out the AutoCAD Help for more information.

Here are a couple of basic definitions:

- **Palette set:** A container for palettes. In Civil 3D, this typically contains the Toolspace, Panorama, and Tool palettes. A palette set can be turned on and off; it can collapse automatically when the mouse moves away, and you can make it semitransparent. Palettes within Palette Sets can be toggled on and off.
- **Palette:** One tab within a palette set. Most AutoCAD users are familiar with the Tool palettes set, and the ability to control which palettes (such as Hatching, Rendering, Blocks, and so on) appear. In Civil 3D, you turn on and off the Survey and Toolbox palettes within the Toolspace palette set by choice, and palettes will come and go from the Panorama palette set as needed to give you feedback.

It's all much more confusing to read than it is to use, so don't worry.

Civil 3D includes a number of different palettes for handling blocks, plotting, Xrefs, layers, and so on. These are great tools, but first let's examine the palette sets that make up the power of Civil 3D: Toolspace and Panorama.

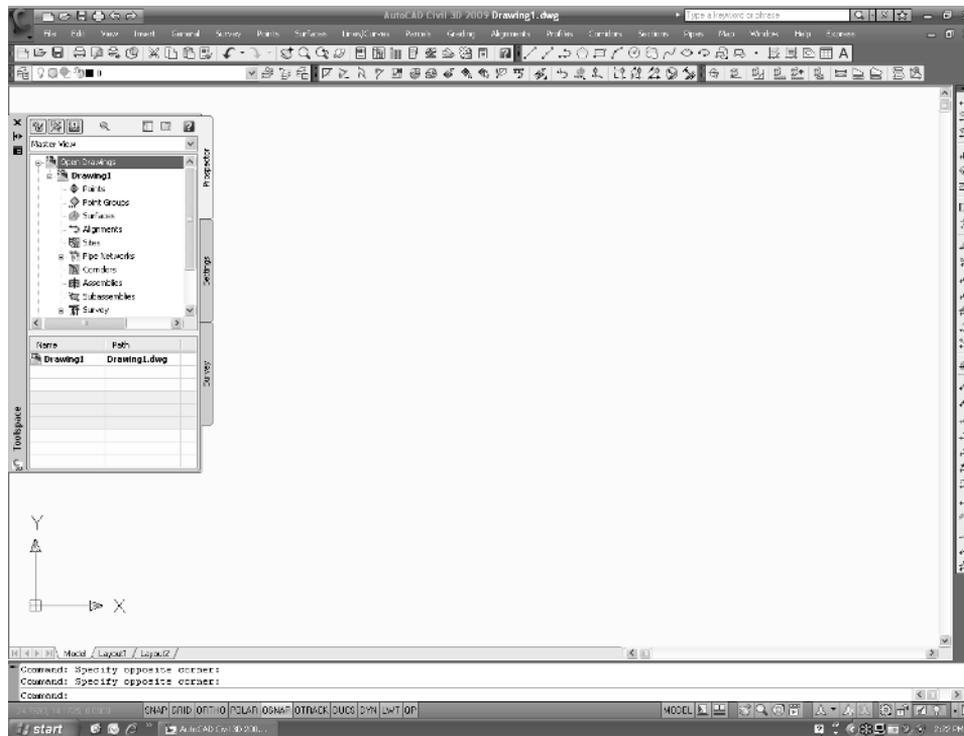


Figure 1.1
Civil 3D in its initial
setup form

Toolspace in Civil 3D

In Figure 1.1, the only palette set showing by default is the Toolspace. You'll find that you're in Toolspace almost constantly as you work with Civil 3D, so most users leave it open and docked to one side or another. If you have a second monitor, dragging it to the second screen is a suggested plan as well. Toolspace is where you will spend most of your time interacting with Civil 3D's model and the settings that drive it. Additionally, this is where you'll work with Survey information and generate reports to XML or text formats. Model information, drawing settings, survey, and reporting are each handled by separate palettes: Prospector, Settings, Survey, and Toolbox respectively. This chapter focuses on Prospector and Panorama because they're part of the overall package. Chapter 4, "Survey," deals with the Survey palette, and Chapter 2, "General Tools," covers the Toolbox.

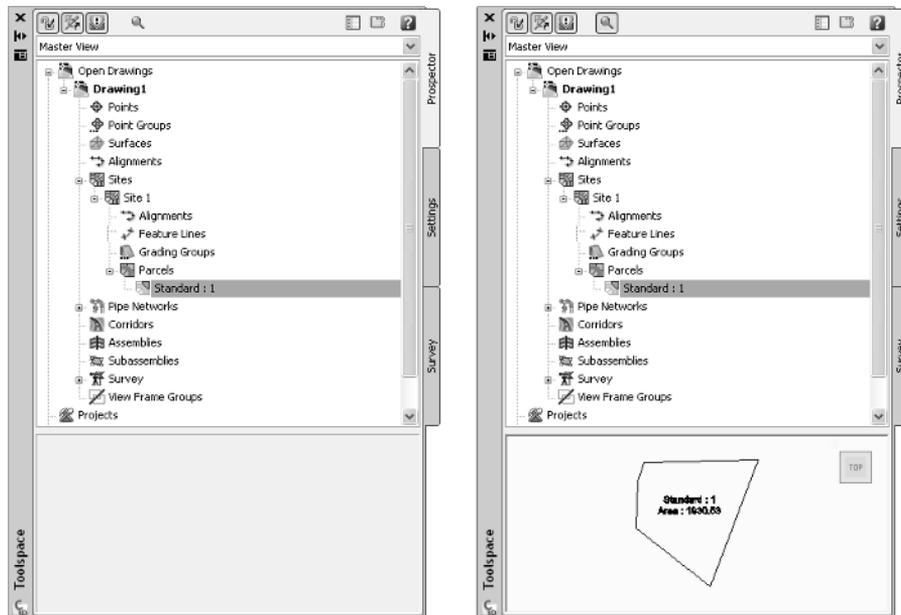
Prospector

Prospector is the main entry to the model you'll build with Civil 3D. This is where you'll dig into the various objects, work with Project Data, and create new drawings. Prospector has some major controls that we want to look at before getting deeper into individual model items. Because there is so much going on, let's start at the top with a couple of buttons that make getting around in Prospector easier.

The first button you'll want to know about is the preview toggle that turns on and off the object previews on a global level. As drawing objects are created, they generate previews that can be displayed in Prospector in a preview pane. This button toggles that pane on and off. For example, Figure 1.2 shows the different results when you select a parcel with the preview toggle on versus when it's off.



Figure 1.2
Preview toggled off
(left) and on (right)
when reviewing a
parcel. The preview
is a 3D view.



As you are looking at objects in a preview window, it's important to remember two things. First, previews can be toggled on and off for Prospector, as well as for the object branches such as Surfaces, Parcels, and so on. If you don't see the preview when the master toggle is on, check the object branch by right-clicking on the branch and reviewing the menu for Show Preview. Alignments, Surfaces, Networks, Corridors, Assemblies, and Subassemblies can display previews within Prospector. Second, the preview area is a 3D view, so you can use the ViewCube in the upper right to rotate, spin, or twist your perspective. (You'll learn more about this cube in the next chapter, which discusses basic AutoCAD tools that help in Civil 3D modeling.)

The second button you'll want to familiarize yourself with is the Item View Orientation toggle. When using Toolspace as a floating-palette set, this toggles where the Civil 3D list view of various object is oriented, at the right, or at the bottom of the palette. Figures 1.3 and 1.4 show the two options. This toggle can make large amounts of data much more accessible when you're working with list view, so just remember it's there.

The last piece of the main controls you'll want to familiarize yourself with is the drop-down menu for view selection. In this menu, you can select between Master View and Active Drawing View. In Master View, all the branches are presented, including multiple drawings if you have more than one open, the Projects branch, the Data Shortcuts branch, and the Drawing Templates branch. In Active Drawing View, you will see only the data relating to your current drawing. This is handy when you're working with a large number of drawings in general, so you can have them all open but focus on one drawing for the current tasks.

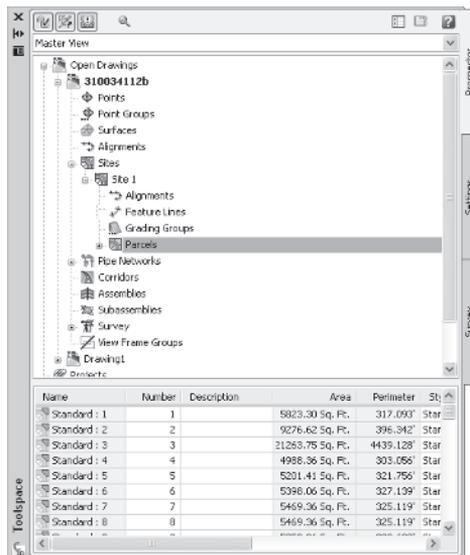


Figure 1.3
List view displayed at the bottom of Prospector

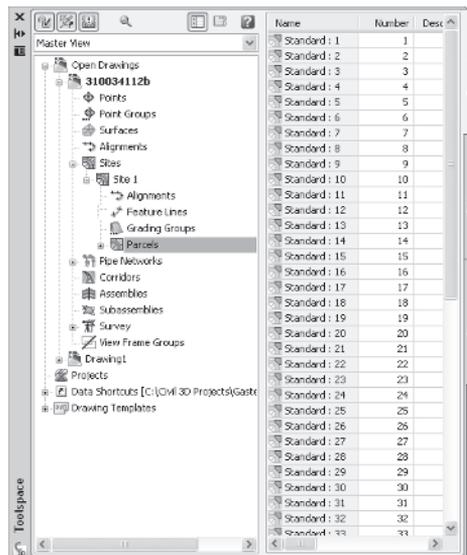


Figure 1.4
List view displayed at the side of Prospector

TEACHING PAINTING OVER THE PHONE

The exercises in this chapter might be more difficult than they should be, simply because you aren't seeing the same things we are. Just to give you a fighting chance, the setup used for the exercises and image captures is the default Civil 3D 2009 Civil 3D Complete workspace, displayed in a 1280×1024 window. Toolspace and Panorama will be floating, and not docked as we use them. We have used the resize handles on some windows to make things easier to read.

Beyond the controls, Prospector has one main pane that never goes away, and an additional pane that shows the list and preview areas when needed. This main pane resembles Windows Explorer's Folder view, with plus symbols designating areas that have deeper objects. These symbols also allow for expansion and contraction as needed to manage the display of various data objects. Let's take some time to review the buttons discussed earlier, and explore the relationships between various objects.

1. Open the Exploring Prospector drawing file. (Remember, all the data for this book can be downloaded from www.sybex.com/go/introducingcivil3d2009.) This drawing shows a typical subdivision layout, with parcels and alignments defined.
2. Within Toolspace, make sure the Prospector palette is selected by clicking its tab.
3. Change the view selection to Active Drawing View to turn off the extraneous information for now. Your Toolspace should look something like Figure 1.5.
4. Expand the Alignments branch, and then select Carson Circle by left-clicking. Note that no preview appears as you might expect.
5. Right-click on the Alignments branch and select Show Preview as in Figure 1.6.
6. Pick Carson Circle again and notice that the preview is now displayed at the bottom of the preview pane.
7. Select the Alignments branch, and note that the full collection of Alignments is now displayed at the bottom of the list area. If your Toolspace is too narrow, you can use the scroll bar to move across all of the columns.

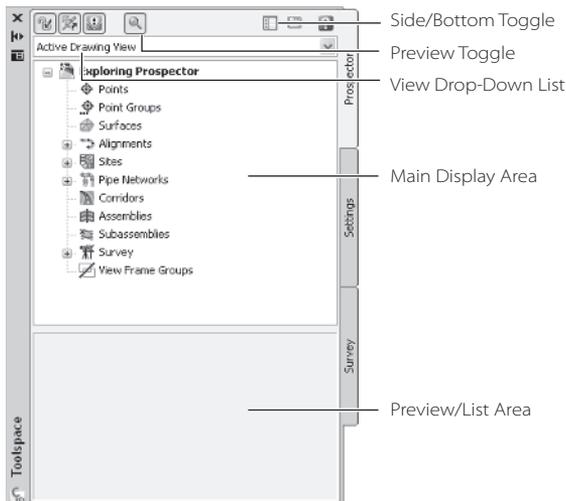


Figure 1.5
Prospector showing the collapsed tree view of the Exploring Prospector drawing file. Note that some branches have plus signs indicating that they contain more subbranches.

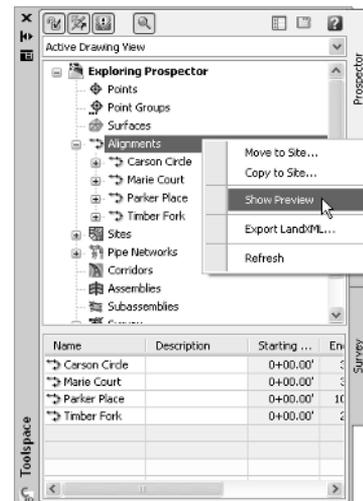


Figure 1.6
Turning on Previews for Alignments

8. Click the plus sign next to Sites to expand that branch, and then expand the Site 1 branch as well.
9. Click the Parcels branch to have the parcels in the drawing listed at the bottom of the list area. This list is fairly long, so the short, wider window isn't as efficient at showing the data.
10. Click the Side/Bottom toggle as indicated in Figure 1.5 and note that the list area jumps from the bottom of your palette to the side as shown in Figure 1.7.

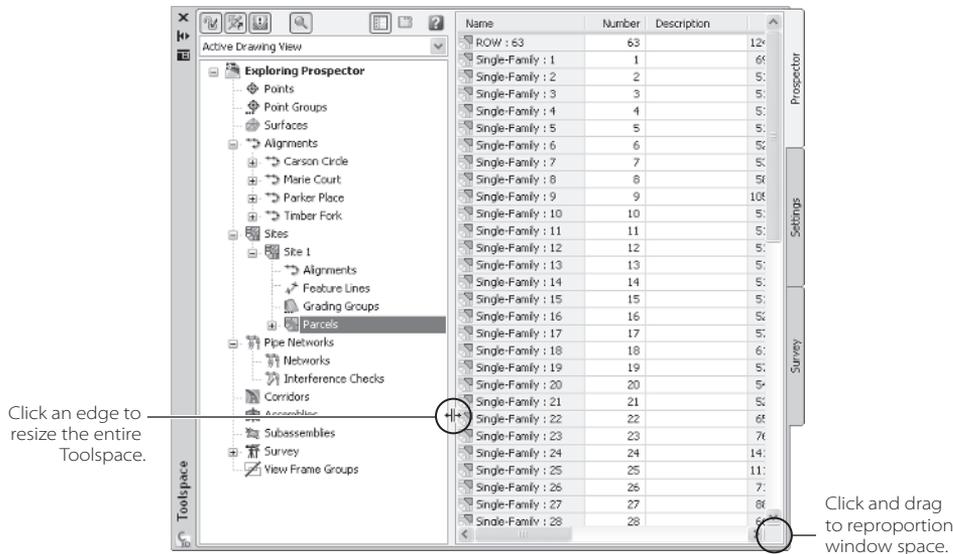
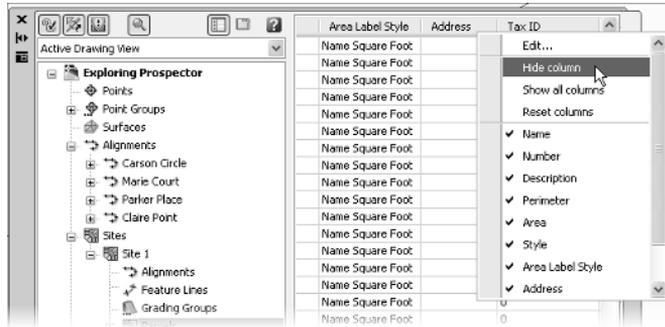


Figure 1.7
List view at the side with the palette resized and repropotioned to make more data visible

You can also customize the columns and data displayed in the list view to make it more concise. Beyond the preview and list views of objects, Panorama can also be used to make quick edits without moving into the drawing space, navigate the drawing, or make easy changes to multiple items. These changes often come when you're trying to change the labels on a series of Parcels, or want to change the style of all your alignments at once. Now you'll work with some of the controls in the preview area to customize the data presented:

1. Continuing with the Exploring Prospector drawing, make sure Parcels are still selected, populating the list view.
2. In the List area, scroll to the right until the Perimeter column is visible.
3. Click and drag the header to rearrange the Perimeter column to the left of the Area column. Any time a list is presented in this view, you can drag the column headers to rearrange the view.
4. Once you've moved Perimeter, scroll a little further to the right to see the Address column.

Figure 1.8
Hiding a column in
the list view



5. Right-click on the Address column header and select Hide Column as in Figure 1.8 to make it disappear. You can use the Hide Column option to make an individual column disappear, or you can move down the list that appears and uncheck columns as you see fit. These changes are persistent, which makes customization worth the seconds it takes.
6. Select the Alignments branch to display the alignments in the list view.
7. In the list view, double-click the Name field for Timber Fork, and notice that the name becomes editable.
8. Change the name to Claire Point and press Enter. Notice that this immediately updates the main Prospector pane as well.
9. In the list view or tree view, right-click the renamed Claire Point, and select Zoom To. The ability to zoom to almost any object using right-click menus makes project and model navigation very easy.
10. Click the Alignments branch one more time to bring back the list view back.
11. Select the first item in the list to highlight it.
12. Hold down the Shift key and click the last item in the list. This will highlight all the items between the two selected. If you need to remove an item from this selection, hold down the Ctrl key as you pick individual items.
13. With all the alignments highlighted, scroll to the right to find the Style column.
14. Right-click the Style column header as shown in Figure 1.9 and select Edit to bring up the Select Style dialog.
15. Select Layout from the Style drop-down list, and click OK to dismiss the dialog. Note the change in the arc portion of Claire Point.

The Prospector and its various views can be invaluable in working with data efficiently. When you're trying to find a short alignment or zoom to the correct profile view, the navigation aids in Prospector can shave a few seconds off every search. The ability to mass-change styles and properties is available only in Prospector.

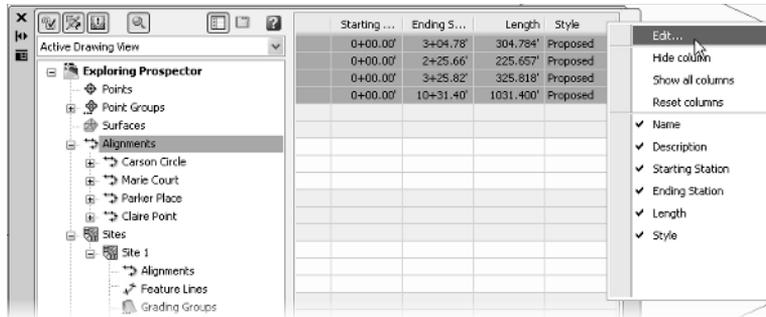


Figure 1.9
Pick the column header, not the cells, to get the Edit option to appear.

The two branches related to Project and Data Shortcuts that appear in the Prospector pane when Master View is selected are discussed in Chapter 14, “Projects.” The Drawing Templates branch is merely a list of the files that are included in the default drawing template folder in your installation, and it can be generally ignored. For most people, the power of Prospector is in the Drawings area, which we’ve already covered, so let’s look at the Settings tab.

Settings

Although most of your time making Civil 3D really come alive will be spent using the settings and styles, we won’t go in to great detail in this text. The purpose here is to give you a basic understanding of all the things that are going on, letting you know the major controls, and keeping you moving forward. At a basic level, there are three items in this palette you should understand:

Drawing settings control the coordinate system default layer and naming conventions and abbreviations.

Object styles control the display of the Civil 3D model objects (such as alignments, profiles, surfaces, and so on) in Plan, Model, and Profile views.

Label styles control the rotation, layering, text, accuracy, and display of all object labels and tables.

The following sections discuss drawing settings and styles and include some exercises to illustrate how the changes made in this palette ripple through the drawing itself.

DRAWING SETTINGS

When you first create a new blank drawing in AutoCAD or Civil 3D, you’ll find yourself hovering around a coordinate of 0,0. This works fine on objects and designs that have no dependence or tied relationship to the real world, such as a house, or a bolt, or a new car design, where the coordinates of the drawing simply don’t matter very much. With land development, however, most projects are going to be built in the real world, with real sites and coordinates, and location is precisely determined on both the front and back ends of the project.

To solve this problem, Autodesk has built coordinate systems into the Civil 3D system, you simply have to tell the program which coordinate system you'd like to use. Let's take a quick look at this setting, and some of the other items in the Drawing Settings dialog.

1. Open the Exploring Settings drawing file.
2. Change to the Setting tab in Toolspace. Note that the same view drop-down menu exists as in Prospector with some different options: Active Drawings Settings View, Active Drawings Labels Only View, and Labels Only View. For the purpose of this exercise, you'll stay in Master View.
3. Right-click the Exploring Settings file name and select Edit Drawing Settings, as shown in Figure 1.10, to bring up the Drawing Settings dialog.

The Units and Zone tab provides options for Units, Conversion Factors, Scale, and Zone. For the most part, you'll use the Zone portion of this dialog to get your drawing into a real coordinate system.

4. On the Categories drop-down list, select Honduras.
5. On the Available Coordinate Systems drop-down list, select Honduras, Norte; Meter. If you know the Coordinate System Code for the area you're working in, you can enter it where indicated in Figure 1.11.

Figure 1.10
Accessing the Drawing Settings dialog

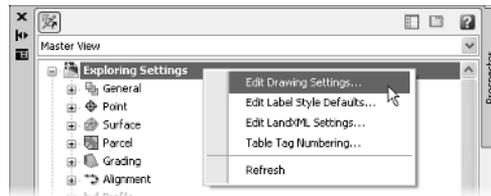
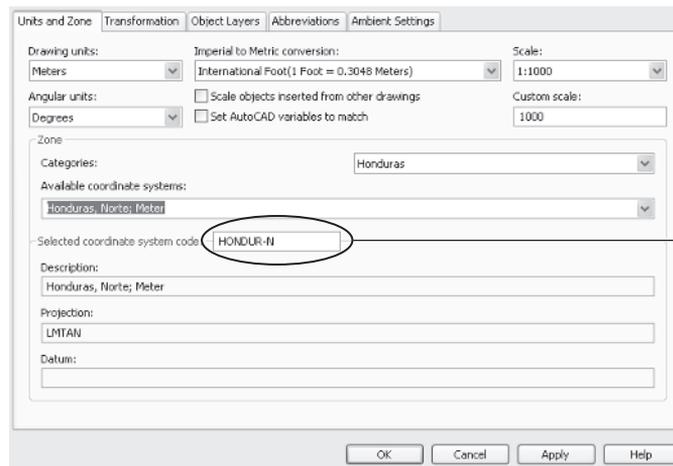


Figure 1.11
Preparing a new Civil 3D drawing for work in La Ceiba, Honduras



Enter codes here.

You're now prepared to do survey work in La Ceiba, Honduras, should you ever get a job there. Beyond the coordinates, the most common changes generally relate to abbreviations and terminology, so you'll fix them next.

6. Click on the Abbreviations tab. The settings here are the values that Civil 3D uses when it abbreviates or calls out an option in a label style.
7. Click in the Value column for the Left row and the ellipsis button will appear just to the right. Click the ellipsis button to open the Text Component Editor.
8. Click just to the right of the L and enter **t**. Then click OK to close the dialog.
9. Repeat this process for the Right row to change the value to **Rt.**.
10. Click OK to dismiss the dialog.

These simple changes will tell Civil 3D to use Lt. or Rt. anytime it abbreviates a direction, such as in an offset label. There are also options for Point of Curvature, Reverse Spiral Point, and so on, which can be set however you desire. Now that you've modified a few drawing level settings, let's explore some object settings and styles. This is where the real power of Civil 3D comes to light.

OBJECT STYLES

Working with object styles is where most people begin to see the real changes in Civil 3D versus other drafting or design packages. The ability to change dramatically the display of objects with just a few clicks really makes it easy to repurpose information. You can create new uses for data that were previously more effort to produce than they were worth. Let's look at a surface style to better understand some of the common components of an object style, and some of the power inherent in the applications of style.

1. Open the Exploring Object Styles drawing file. This file has a surface and a preconfigured set of viewports that will help you understand how object styles come into play in various view configurations.
2. Select View → Viewports → Named Viewports to display the Viewports dialog.
3. Select Exploring Styles from the Named viewports list on the left. Click OK to dismiss the dialog, and your screen should look something like Figure 1.12.
4. On the Settings palette, expand the Surface Branch, and then expand Surface Styles.
5. Right-click Contours 2' and 10' (Background) and select Copy to bring up the Surface Style dialog shown in Figure 1.13.
6. Click the Name field and change the name to **Exhibits**. Change the description to **A style used for public meeting exhibits**, and click Apply to see the changes. Note that the Last Modified By field now reflects your username.
7. Change to the Contours tab, and expand the Contour Smoothing option by clicking the plus sign next to it.

Figure 1.12
Three views of the
same McKinney
Surface

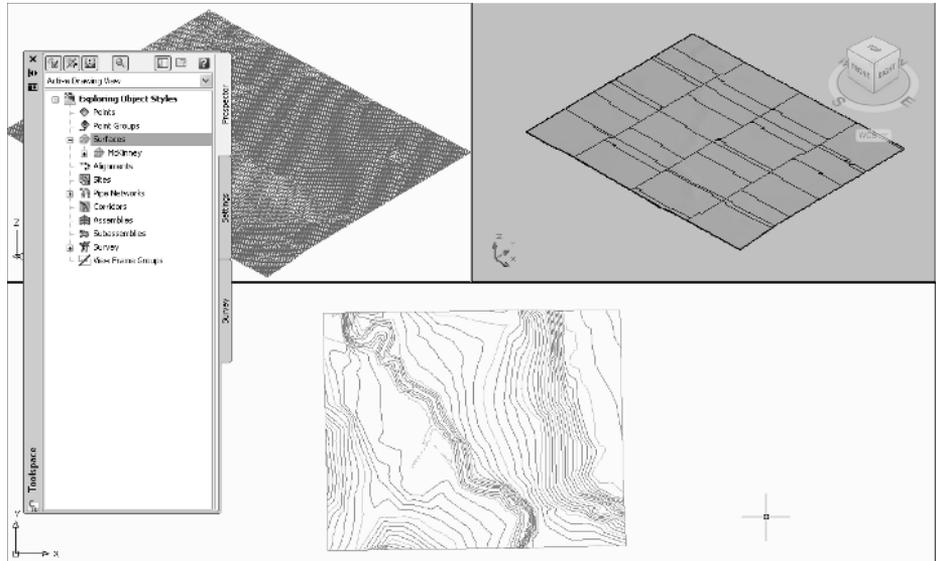
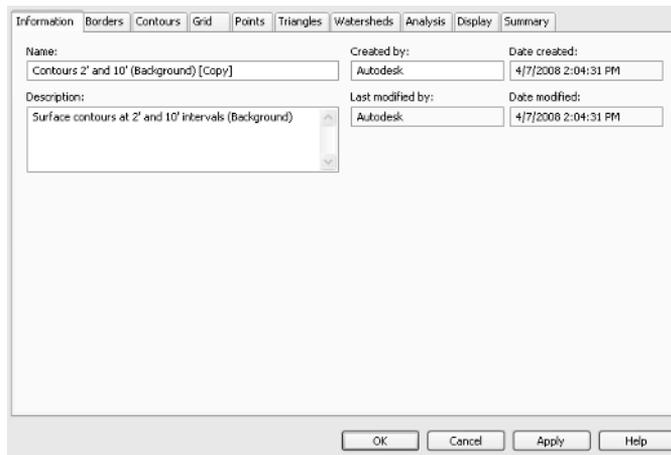


Figure 1.13
The Surface Style
dialog. The Informa-
tion, Display,
and Summary
tabs are common to all
object styles.



8. Change the Smooth Contours value to True. Remember, this is for meetings, not for plans, so displaying the contours is more about aesthetics than precision. Smoothing in a plan production situation is not generally recommended.
9. Change to the Analysis tab, and expand the Elevations options.
10. Change the Scheme to **Land**, the Number of Ranges to **12**, and the Display Type to **3D Faces**.
11. Change the Elevation Display Mode to **Exaggerate Elevation**, and then change the Exaggerate Elevations by Scale Factor to **5**. The Analysis dialog should now look like Figure 1.14.

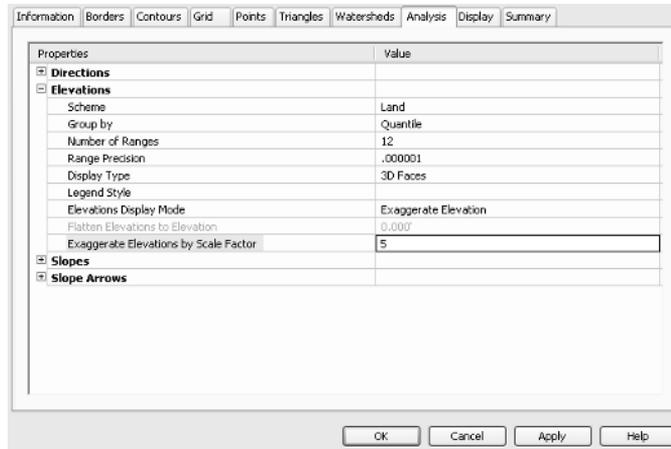


Figure 1.14
Completed changes
to the Elevations
portion of the
Analysis tab

At this point, you've modified the way things will look when they're turned on, but not the objects that are on and off. The Display tab is a common component to all object styles. It controls the display of individual components within an object, and how they are viewed in Civil 3D based on the viewpoint. This level of control allows you to have different representations of a single object in plan views and 3D (or Model as it's used here) views.

12. Change to the Display tab. The View Direction drop-down menu on this tab offers three options for a surface: Plan, Model, and Section. We like the contours as handled in Plan, but let's change what happens in 3D views.
13. Select Model from the list and note that the selections in the Component display area change, most notably in terms of what is visible in a given view. This is indicated by the lightbulb icon being on or off.
14. Click the bulb in the Triangles row and turn it off. Then click the bulb in the Elevations row to turn it on. The Display tab should now look like Figure 1.15.

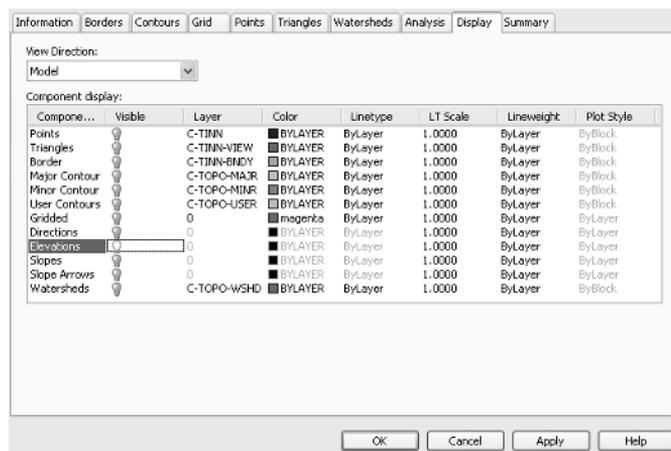


Figure 1.15
Turning on the
Elevations display
in the Model View
Direction. Make sure
the View Direction
is set when modifying
your style.

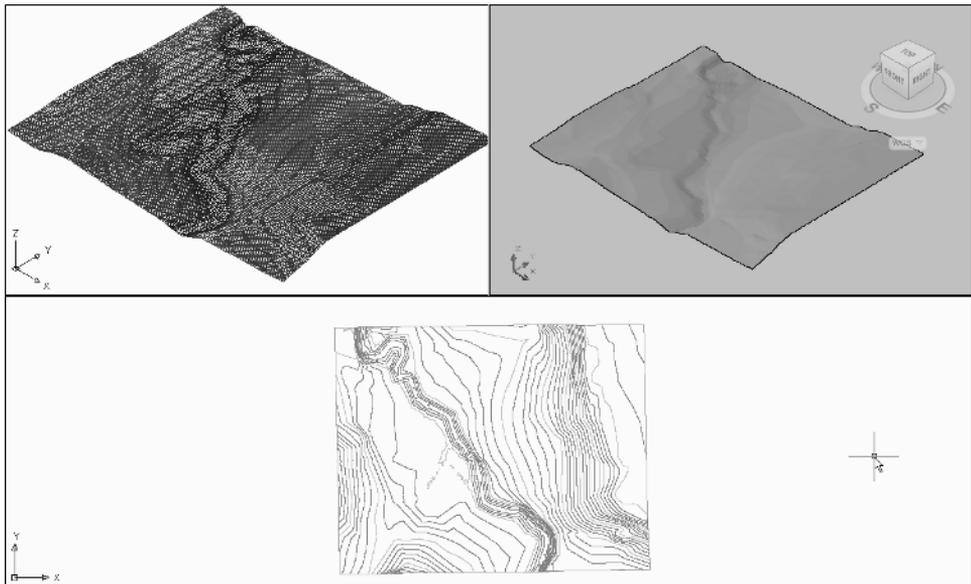
15. Click OK to close the dialog, and you'll see that Exhibits is now listed under your Surface Styles.

Building a style is all well and good, but until it's applied, it's hard to see any actual changes. Next, you'll modify the surface to use your new style, and you'll see the results of your work.
16. Change to the Prospector palette, and expand the Surfaces branch under the Exploring Object Styles drawing.
17. Right-click McKinney and select Surface Properties to display the Surface Properties dialog.
18. On the Information tab, select Exhibits from the Surface Styles drop-down list.
19. Click OK to close the dialog. Your screen will update to reflect the new colors assigned as part of the Elevations analysis. Each viewport will shift some, because the 5X exaggeration will cause the data to be higher in the z-axis than it was.
20. Click in each viewport and pan to recenter the surface in your view. When complete, it should look like Figure 1.16.

By using styles, you'll be able to change the appearance of your Civil 3D model objects in an instant. Much as you changed the style of the Alignments in a prior section, you can change styles to reflect various modes and display requirements. Now, let's discuss how you can label all these dynamic elements.

Figure 1.16

After assigning a new style, the 3D views have changed dramatically. (We closed Toolspace to make the image cleaner.)



LABEL STYLES

Showing a surface, alignment, pipe, or any number of things in different ways is great. As we work through each chapter, we'll talk about individual labeling requirements, but it's important to look at some common elements here.

1. Open Exploring Label Styles. This drawing contains a surface with both spot labels and contour labels. You'll use both to explore issues within the label settings.
2. Zoom in on some of the contour labels. Notice that they're showing two decimal places. This is a stock style out of the box, but not many people show two decimal places in their contour labels.
3. In Toolspace, switch to the Settings palette, expand the Surface branch, and then expand Label Styles → Contour.
4. Right-click Existing Major Labels and select Edit to display the Label Style Composer dialog shown in Figure 1.17.
5. Open the Layout tab.

This label is only one bit of text, but some labels are considerably more complicated. Each piece of text, line, or block is called a component, and appears in the drop-down menu near the top left of this dialog. If you get the task of building every label style for your firm, you'll want to explore all the options. For the purpose of this text, you're just going to change the accuracy of this label to something more reasonable.

6. Click the Value cell in the Contents row under the Text section. A small button will appear to the right with an ellipsis (...) on it.
7. Click the Ellipsis button (also referred to as the More button) to access the Text Component Editor dialog shown in Figure 1.18.

Figure 1.17
The Label Style Composer dialog is the same for almost every label you'll create in Civil 3D. Become familiar with it.

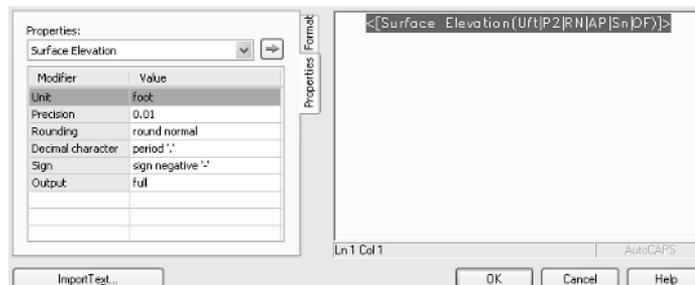
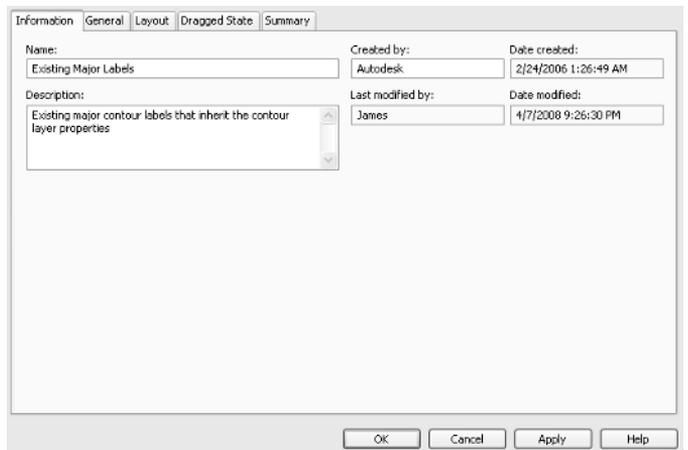
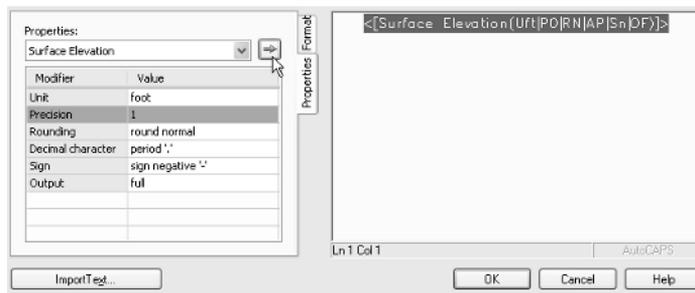


Figure 1.18
The text component editor has two areas: the Properties area on the left and an entry area on the right.

8. Click on the text in the entry area to highlight the value. The less-than and greater-than symbols indicate values that are derived from Civil 3D model information, which in this case are Surface Elevation values.
9. Press the Backspace or Delete key to remove the text.
10. In the Properties drop-down menu, select Surface Elevation.
11. Click the Value field of the Precision row, and change the value to 1. This indicates a whole number will be used, with no decimal places.
12. Click the blue arrow button to inject this value into the entry area at the right. Your dialog should look like Figure 1.19.

Figure 1.19

Click the blue arrow, or nothing will happen! This will bite you more often than you'd ever expect.



13. Click OK to close the dialog, and note that the preview area has updated to reflect your changes. You may need to zoom in the preview area to see them.
14. Click OK to close the Label Style Composer and update the drawing.

You'll notice that some of the labels have updated, and some have not. This is because the minor contours are using a different label style than the major contours. If you want, you can repeat this process to update the style called Existing Minor Labels.

In the following exercise, you take a look at that spot label to understand how the Civil 3D labels react to different view orientations:

1. Continuing with the Exploring Label Styles drawing, zoom in on one of the surface spot labels as shown in Figure 1.20.
2. Select the label and then right-click and select Edit Label Style to display the Surface Spot Elevation Label Style dialog.

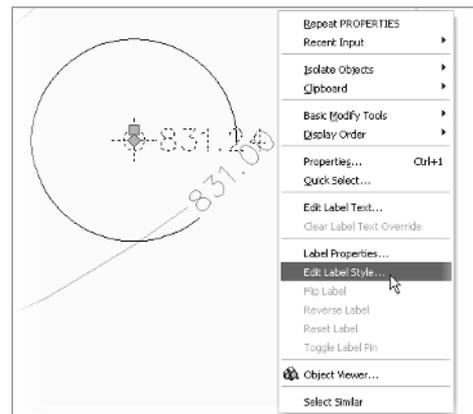


Figure 1.20

Using right-click menus will make editing much faster, but you have to make sure the correct object is selected first.

On the dialog, to the right of the Style drop-down list is another button with a drop-down menu. This button appears every time you have the option to select a style, and it gives you the ability to create a new style, copy the current style, edit the current style, pick from drawing, or create a child style. The idea is that you don't have to stop the task at hand to dig through the full settings tree to edit or create a style; you can do it on the fly.

3. Click the Edit button to display the Label Style Composer. You looked at the basics of the layout tab earlier, so now you'll look at the view orientation options.
4. Switch to the General tab.
5. In the preview area, click one of the rotation arrows as shown in Figure 1.21.

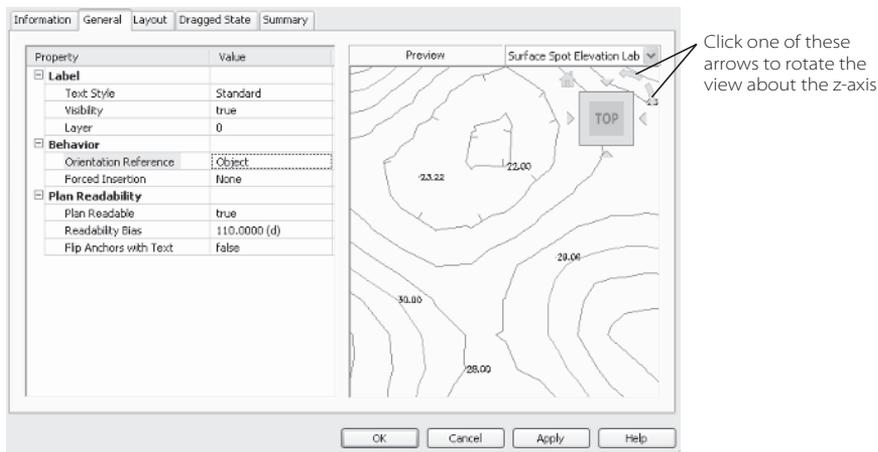


Figure 1.21
Rotating the
preview drawing

6. Change the Orientation Reference dropdown list to **View**. Note how the labels adjust to reflect this change. By setting a label's orientation reference to View, they'll be placed in relation to the screen or viewport, regardless of the rotation of your view.
7. Click OK to close the dialog, and click OK to return to your drawing.

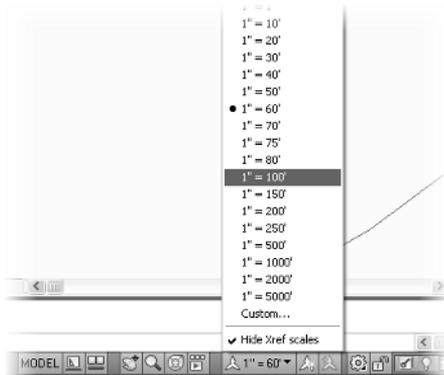
Although there is no obvious change, you can experiment with rotating your view, or moving to paperspace and creating viewports with various rotations. Thanks to the view orientation setting, the labels will update accordingly.

Before we leave the topic of labels entirely, let's look at one last feature of Civil 3D: the ability of labels to scale with drawing scale.

8. Click the Annotation Scale menu and select 1" = 100', as shown in Figure 1.22. The Annotation Scale menu is located in the lower right of your screen by default.

The size of the drawing labels and text is directly related to the scale of the drawing, so as you work, you can assign a drawing scale, knowing that a change in the scale come plan time won't mean you've wasted all your effort.

Figure 1.22
Changing the effective scale of a drawing updates the size of Civil 3D labels across the board.



Panorama

The Panorama palette set is Civil 3D's way of talking back to you. The palettes that appear on the Panorama are typically designed for special purposes such as editing pipe or manhole data, viewing the full array of alignment information, or warning you about surface building issues. Take a look at the following quick example so you're familiar with the interface:

1. Open the Exploring Panorama drawing file.
2. In the drawing, select the Parker Place alignment as shown in Figure 1.23. Right-click and select the Edit Geometry option to display the Alignment Layout toolbar.

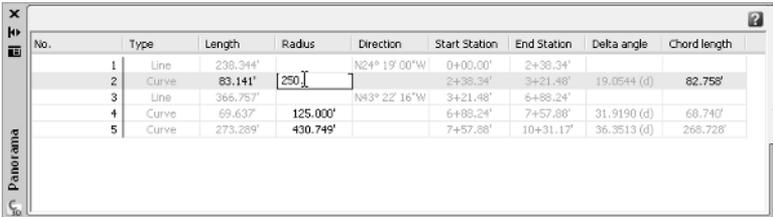
Figure 1.23
Accessing the Alignment Layout toolbar



3. Within the new toolbar displayed, click the Alignment Grid View button (the third button from the right) to display Panorama with an Alignment Entities palette.

When Panorama is activated, various palettes will come and go as needed for the task at hand. When alignment is being edited, it's one palette; when a pipe network is being edited, there's one palette for pipes and another for structures. Within the palettes, some interface conventions hold true across the board: gray text cannot be edited, and columns can be turned on and off just as in the list view of Prospector.

4. Click in the Radius column for Row 2, and change the value to **250** as shown in Figure 1.24.



No.	Type	Length	Radius	Direction	Start Station	End Station	Delta angle	Chord length
1	Line	238.344'		N24° 19' 00"W	0+00.00'	2+38.34'		
2	Curve	83.141'	250		2+38.34'	3+21.48'	19.0544 (d)	62.758'
3	Line	366.757'		N43° 22' 16"W	3+21.48'	6+88.24'		
4	Curve	69.637'	125.000'		6+88.24'	7+57.88'	31.9190 (d)	68.740'
5	Curve	273.289'	430.749'		7+57.88'	10+31.17'	36.3513 (d)	268.728'



Figure 1.24

Data can often be modified directly in Panorama for instant changes in the model.

5. Right-click on the Chord Length column header, and scroll down to turn on the Chord Direction value. A new column will appear to the right of the Chord Length column, listing the relevant values.
6. Close Alignment Layout Tools by clicking the close button on the top of the palette.

There aren't many tricks to Panorama, but remember that when it appears, it's generally trying to tell you something important, so be sure to read the messages and information being passed until you're familiar with what will and won't trigger an appearance by Panorama.

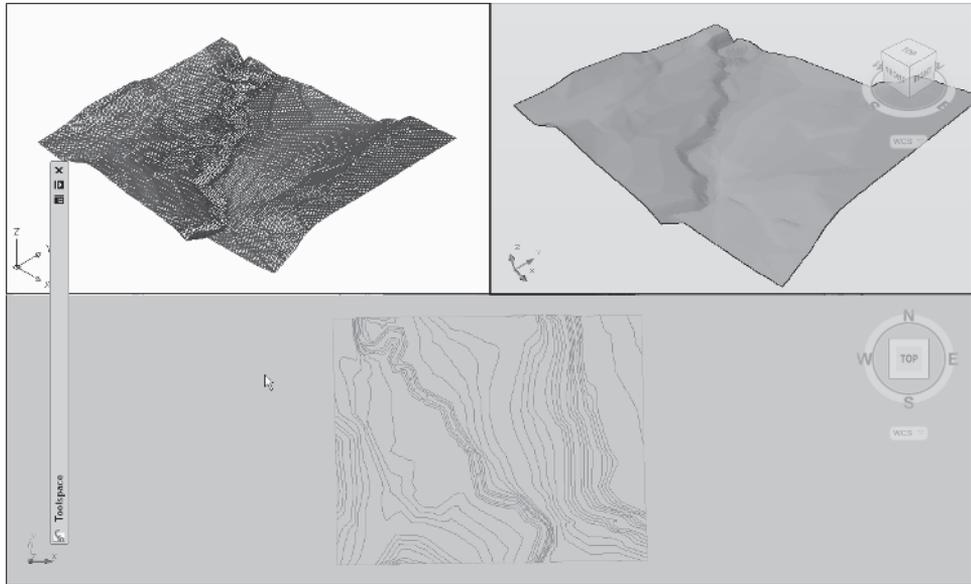
Getting Around in 3D

When you're dealing with a 3D model, you should know how to get around in 3D space. Because many Civil 3D users come from a very flat CAD background, this section describes some tools and options for dealing with the model: the ViewCube that's handy for getting around the model and the visual style options.

1. Open the Exploring 3D Space drawing; it contains three viewports showing the same surface in various representations. In the lower view of the screen is your typical Plan view, the top left is a 2D Wireframe view of the surface, the top right is a 3D Conceptual view.
2. Click in the Plan view area to activate the viewport.

Figure 1.25

One surface, three views. The upper left is still considered a 2D view by AutoCAD.



3. From the main menus, select View → Visual Styles → 3D Wireframe, and your screen should look like Figure 1.25. Note the ViewCube in the upper right of the two 3D styled views.

THINKING ABOUT A NEW VIDEO CARD?

Performing this sort of work—where you display multiple view angles of the same objects, with different texture and display options—is a good way to stress out your video card. With older cards, you might get some unpredictable results. We recommend reviewing the Autodesk approved list if you're thinking of upgrading. Visit www.civil3d.com/resources and look for the link to the Autodesk approval list.

4. Still within the Plan view, move your mouse near the ViewCube, and you'll see various arrows appear. Experiment with rotating the model by clicking the arrows and the various edges of the cube to spin the model.
5. Click an edge to rotate the model out of a Planimetric view. Notice that the style display changes to show the color banding that is part of the style.

Feel free to experiment with various visual style combinations with these objects. Most civil engineers and land development professionals don't spend a lot of time working with realistic conceptual styles, but knowing what they look like and having the ability to move about in three dimensions to view your model is crucial to taking advantage of the full product.

Summary

Civil 3D is designed to work in a new way. The pieces from which you build your design are no longer lines arcs and text; they are representations of real world objects you design. This brings the power of dynamic modeling to the desktop, allowing you as a designer to experiment with multiple solutions, looking for a better solution instead of just the first working solution. Accessing the model through palettes such as Panorama, Prospector, and Settings gives you access to the design constraints and information that you'll build the plans from as you work through the process. Finally, because these objects represent real-world items, they have length, width, and depth—which means that you need to understand how to view the model from every conceivable angle. Welcome to the next generation of land-development design.

