FIGURE 10.28 *The secretary desk with the keyboard shelf added*

30. Save the Family, click Yes to overwrite the existing family if prompted, and then click the ***Load into Project*** button.

- In the "Family Already Exists" dialog, choose the "Overwrite the existing version and its parameter values" option.
- On the Project Browser, right-click the *3D View 1* and choose Rename.
- Type: **Camera at Secretarial** for the new name.
- Double-click to open the *Camera at Secretarial* 3D view.

Notice how the update to the desk now appears in the project.

- Save the project.

Congratulations. You have completed your first custom Family. In the coming topics, we'll create a new Family from scratch and get into more advanced Family creation techniques.

BUILDING CUSTOM FAMILIES

In most cases, the preceding process will enable you to produce the Family you need by leveraging your existing library content. However, sometimes it will be necessary or easier to start from scratch. In this case, you will simply create a new Family file and begin modeling the item you require. All new Families are created from pre-defined Family templates. Revit ships with a large collection of pre-made Family templates from which to choose. It is important to select the Family template which best corresponds to the kind of Family you wish to create. This is because the template you choose determines the category of the Family and whether or not it requires a host. While possible to modify the category later, you cannot change the hosting behavior of a Family once it has been created. There are also other less obvious behaviors that Families inherit from their templates, so choose your template carefully.

Creating Custom Elevation Tags

If you completed Chapter 4, one of the steps we conducted in the process of setting up the commercial project was to import a custom elevation tag. This was accomplished in the "Loading Custom Elevation Tags" topic. In this passage, we will revisit that topic and go through the process of creating the elevation tags from scratch. The ability to create custom elevation tags has been a long requested Revit feature and is new to Revit 2011. Creating annotation Families like the elevation tag is

straightforward. These are simple two-dimensional Families, but many of the broader concepts also apply to more complex 3D Families, so this is a good "warm-up" exercise.

1. On the QAT, click the Switch Windows drop-down and then choose **Desk-Secretary.rfa - 3D View: View 1**.

- From the Application menu, choose **Close**.

  If prompted to save, choose Yes.

47. On the QAT, click the Switch Windows drop-down and then choose **10 Commercial.rvt - Floor Plan: Level 3 [10 Commercial-Metric.rvt - Floor Plan: Level 3]**.

- From the File menu, choose **Close**.

  If prompted to save, choose Yes.

- If any other files are open, like the Executive Chair loaded from Seek, switch to them and close them too.

Following this process, you will basically have closed all open files. The Recent Files screen should display in response.

2. From the Application menu, choose **New > Annotation Symbol**.

This will open the "New Annotation Symbol – Select Template File" dialog box to the folder that contains all the available Annotation Family templates.

To create a custom elevation tag, we actually need to build two separate Elevation Mark Families: Elevation Mark Pointer and Elevation Mark Body. We will start with the pointer.

3. From the list of available templates, choose the *Elevation Mark Pointer.rft* template file and then click Open (see Figure 10.29).
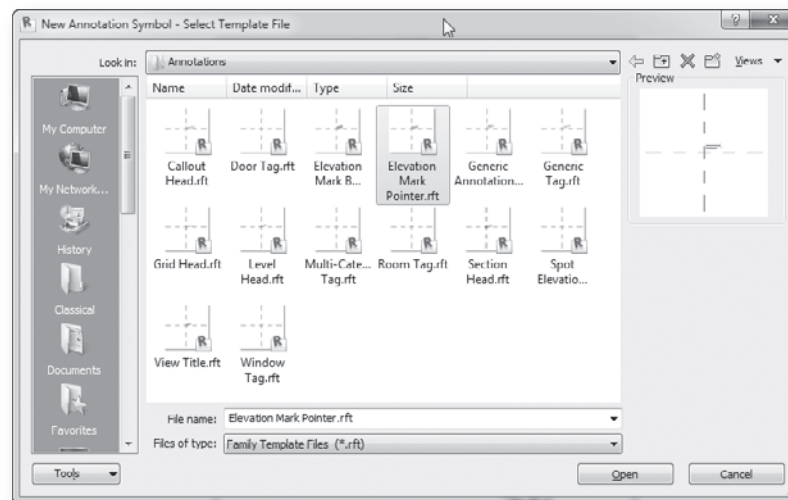

FIGURE 10.29 *Create a new Annotation Family and choose an appropriate template*

Most annotation Family templates contain two Reference Planes marking the insertion point of the Family and a descriptive note with some instructions. In this case, the note reads:

"Place elements/labels to represent the pointer element of an elevation mark.

> The direction of the pointer is vertical from the
> intersection of the ref planes.
>
> Insertion point is at intersection of ref planes.
>
> Delete this note before using."

Pay close attention to these instructions as they will help us build our elevation tag successfully. We will build our tag to match the guidelines in the US National CAD Standard. The final result can be seen in the tag we used in commercial project. We'll start with a filled region. A Filled Region is simply a two-dimensional shape with an outline and filled in with a pattern. The NCS elevation tag calls for a triangular shaped solid filled pointer surrounding a round tag.

4. On the Home tab, click the **Filled Region** tool.

- On the Draw panel, click the Center-ends Arc tool.
- Click to place the center of the arc at the intersection of the two Reference Planes.
- For the radius, type **5/16"** [**8**] and then press ENTER.
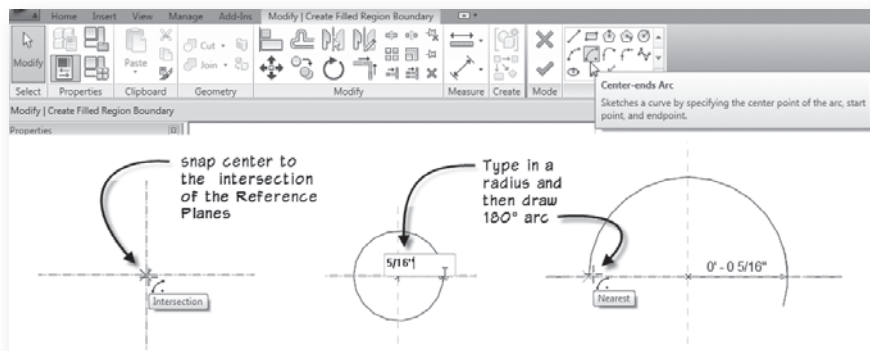- Use the mouse to indicate a 180° arc pointing up (see Figure 10.30).

FIGURE 10.30 *Begin the outline of the Filled Region with an arc*

5. On the Draw panel, click the Circumscribed Polygon tool.

- On the Options Bar, change the number of sides to **4**.
- Snap the center point to the intersection of the Reference Planes again.
- Draw out the radius at a 45° angle and snap it to the arc (see the left side of Figure 10.31).
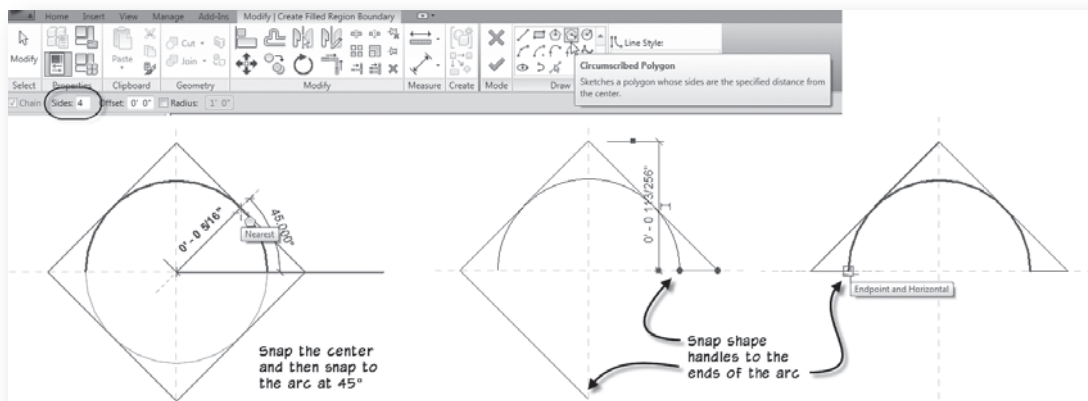

FIGURE 10.31 *Draw the triangular shape with a 4-sided polygon*

6. On the ribbon, click the **Modify** tool or press the ESC key twice.

- Select one of the lower diagonal lines.
- Click and drag the small blue shape handle up and snap it to the end of the arc.
- Repeat on the other side (see the right side of Figure 10.31).

This gives us the basic shape required, but we have to fine-tune it just a little. Revit will not allow us to complete the shape as is, because the diagonal lines intersect the arc. We have two options to deal with this. We can either create three separate shapes by breaking the sketch at the point of intersection (along the 45°) or we can slightly nudge the sketch lines to form a small gap. Let's do that method here.

7. Select the two diagonal lines (select one, then hold down the CTRL key and select the other).

- On the keyboard, press the up arrow key one time.

This will "nudge" the lines up slightly. The amount of the nudge depends on the zoom level. So if you are unhappy with the result, undo, zoom in or out, and try again.

8. Select all of the lines and the arc (the easiest way to do this is to pre-highlight one, press TAB, and then click to select the chain).

- On the Line Style panel of the ribbon, choose <Invisible Lines>.
- On the ribbon, click the **Finish Edit Mode** button.
- Verify that Filled Region: Solid Black is chosen on the Type Selector and then deselect the element (see Figure 10.32).
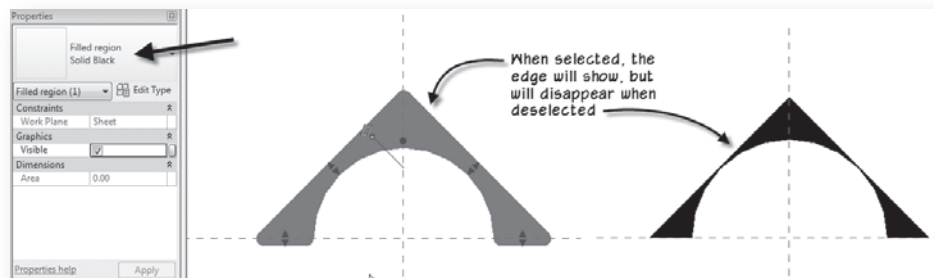

FIGURE 10.32 *The completed filled region shape for the elevation tag*

9. Delete the red text note and then save the file.

- Save it to the *Chapter10* folder and name it **NCS Elevation Tag Arrow**.

10. From the Application menu, choose **New > Annotation Symbol**.

- From the list of available templates, choose the *Elevation Mark Body.rft* template file and then click Open.

This template appears nearly the same as the other. However, this time the text note reads:

"Place elements/labels to represent the body of the elevation mark.

Load a pointer family and place instances where you wish arrows to be available in the project.

Insertion point is at intersection of ref planes.

Delete this note before using."

11. On the Home tab, click the Line tool and then choose the circle tool on the Draw panel.

• Click to place the center of the arc at the intersection of the two Reference Planes.

• For the radius, type **5/16"** [**8**] and then press ENTER.

• On the Draw panel, click the Line tool and draw a horizontal line across the diameter of the circle (snap to the quadrant on either side).

12. On the Home tab, click the **Label** tool.

• Click a point on the vertical Reference Plane in the upper part of the circle to place it.

• In the "Edit Label" dialog, click Detail Number and then click the Add parameter(s) to label icon in the middle (see Figure 10.33).
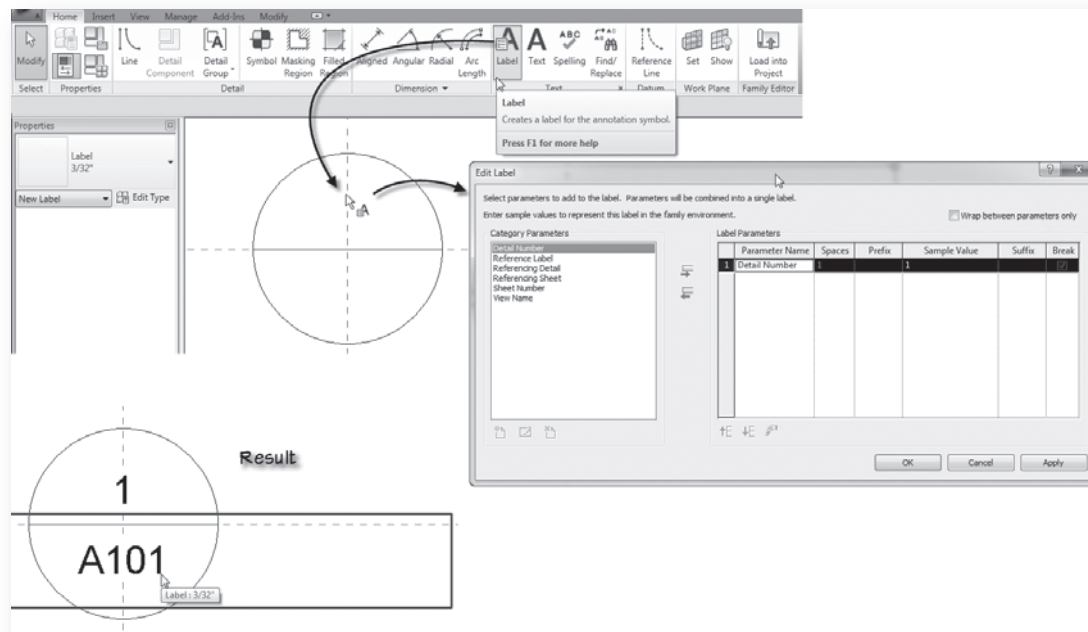

FIGURE 10.33 *Add Labels to the tag*

• Click OK to complete the label.

• Create a second Label in the lower portion of the circle for the Sheet Number parameter.

• Fine-tune placement of both parameters as necessary.

A Label is special text that will report one or more parameters in the tag. We saw an example of this in the "Create a Custom Titleblock Family" topic in Chapter 4.

13. On the QAT, click the Save icon.

You will be prompted to name the file.

• Save it to the *Chapter10* folder and name it: **NCS Elevation Tag**.

14. On the QAT, click the Switch Windows tool and choose NCS Elevation Tag Arrow.

15. On the ribbon, click the **Load into Project** button.

You should only have one other file open; the new NCS Elevation Tag Family file. However, if you are prompted to select a project, choose NCS Elevation Tag.

16. On the Home tab, click the **Symbol** button.

   • Place an instance of NCS Elevation Tag Arrow onscreen.

   • Move it so that it is positioned properly with the center of the circle.

   • Copy and rotate three more copies keeping each centered properly on the circle but ending up with one pointing in each direction (see Figure 10.34).
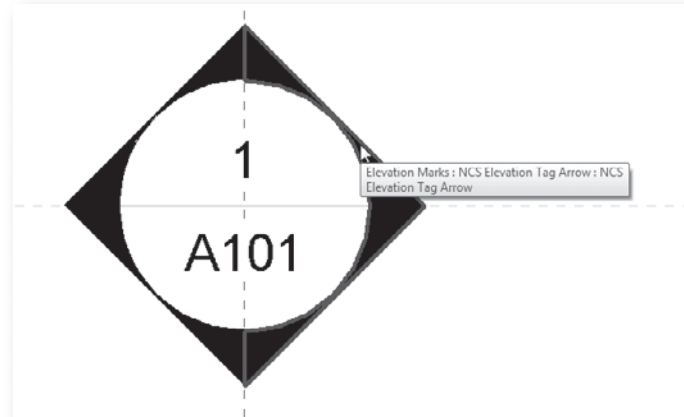

FIGURE 10.34 *The completed NCS elevation tag*

17. Delete the red text note and then save the file.

That completes our custom elevation tag. Since the custom tag is already a part of our *10 Commercial* project, to test it out you can create a new project file. Simply create a new project from the default template and then follow the steps in the "Loading Custom Elevation Tags" topic of Chapter 4 to load your tag and apply it to the default elevation tags.

18. Close all files before continuing to the next topic. (The Recent Files screen should reappear.)

Create a New Family File

Let's turn our attention back to model Families. Keeping with the furniture layout on the third floor of the commercial project a little longer, let's create a custom reception desk for the lobby to the suite.

NOTE	It may be tempting to make your first Family a Door or Window or some other more common element. However, this is not recommended. Furniture is chosen here because such elements tend to be free-standing (not hosted), many have simple straightforward geometry (like desks, shelves and storage units), and their parametric requirements are often limited as well to overall dimensions like width and height. Doors and Windows are much more complex than they first appear, with many complex relationships and parameters, making them a challenging place from which to begin your Family editing explorations.

1. From the Application menu, choose **New > Family**.

   Browse to your *Templates* folder if necessary.