

Dimensioning and Annotating

This chapter focuses on giving you the ability to dimension and annotate a model. After the novelty of having a really cool model in 3D wears off, you need to buckle down and produce some bid documents. This is where the Autodesk® Revit® Architecture program must prove its functionality. You should ask yourself, “Can Revit produce drawings consistent with what is acceptable according to national standards and—more important—my company’s standards? And, if so, how do I get to this point?” These are the questions that owners and managers should be asking.

This chapter covers the following topics:

- ▶ **Selecting and applying dimensioning**
- ▶ **Using dimensions as a layout tool**
- ▶ **Placing text and annotations**

Selecting and Applying Dimensioning

The answers to the questions at the beginning of the chapter begin with dimensioning and annotations. This is where you can start to make Revit your own. Also, you’ll find that dimensions take on an entirely new role in the design process.

I think you’ll like dimensioning in Revit. It’s almost fun ... almost. Before you start, however, let’s get one thing out of the way: you can’t alter a dimension to display an increment that isn’t true. Hooray! As you go through this chapter, you’ll quickly learn that when you place a dimension, it becomes not only an annotation but a layout tool as well.

The Dimension command has six separate types: Aligned, Linear, Angular, Radial, Arc Length, and Diameter. Each is important in adding dimensions to a model, and each is covered separately in this section.

Let's get going. To begin, open the file in which you've been following along. If you didn't complete the example in Chapter 4, "Working with the Autodesk Revit Tools," go to the book's website at www.sybex.com/go/revit2017ner. From there you can browse to Chapter 5 and find the file called `NER-05.rvt`.

Aligned Dimensions

The most popular of all the Revit Architecture dimensions is the Aligned option. You'll use this type of dimension 75 percent of the time.

An aligned dimension in Revit enables you to place a dimension along an object at any angle. The resulting dimension aligns with the object being dimensioned. A linear dimension, in contrast, adds a dimension only at 0°, 90°, 180°, or 270°, regardless of the item's angle.



NOTE Metric users should not type in *mm* or other metric abbreviations when entering amounts suggested in the exercises. Revit won't accept such abbreviations. Simply enter the number provided within the parentheses.

To add an aligned dimension, perform these steps:

1. Go to the Level 1 floor plan.
2. Zoom in on the east wing of the building.
3. On the Annotate tab, click the Aligned button, as shown in Figure 5.1.

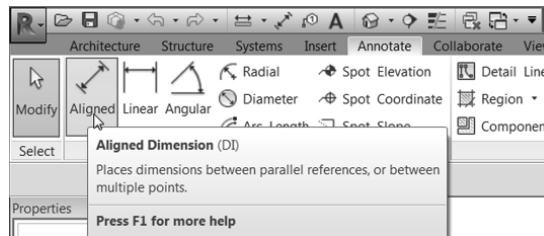


FIGURE 5.1: Starting the Aligned Dimension command from the Annotate tab

4. On the Options bar are two drop-down menus with some choices, as shown in Figure 5.2. Make sure Wall Faces is selected.



FIGURE 5.2: The Options bar for the Dimension command. Notice the Options button.

5. The next menu lets you pick individual references or entire walls. Select Entire Walls.
6. At the far right on the Options bar is an Options button, which allows you to make further choices when selecting the entire wall. Click the Options button.
7. In the Auto Dimension Options dialog box, select Intersecting Walls (see Figure 5.3). Don't select any other item. Click OK.

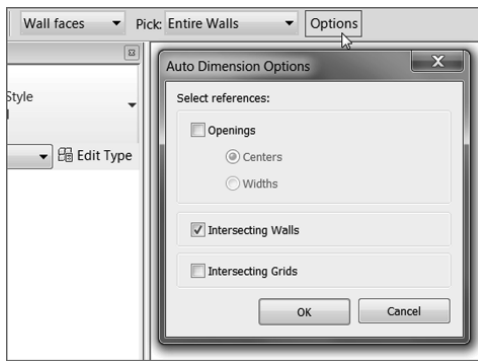


FIGURE 5.3: The Auto Dimension Options dialog box

8. Zoom in on the north wall, as shown in Figure 5.4.
9. Pick (left-click) the north exterior wall. Notice that the dimensions are completely filled out.
10. Pick a point (to place the dimension) approximately 8' (2400 mm) above the north wall (see Figure 5.4).

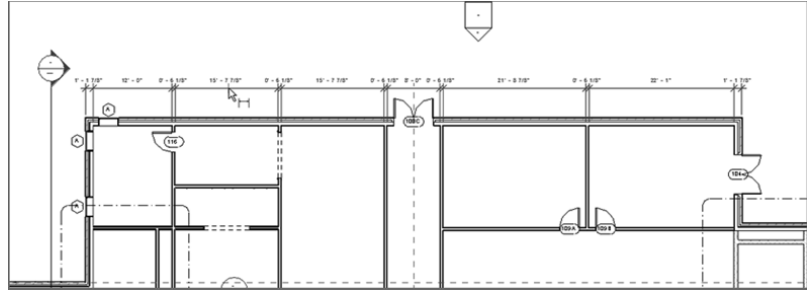


FIGURE 5.4: By choosing the Intersecting Walls option, you can add an entire string of dimensions in one click.

11. In true Revit form, you're still in the command unless you tell Revit you don't want to be so. In this case, click the Options button on the Options bar (the same one you clicked before).
12. Deselect the Intersecting Walls option in the Auto Dimension Options dialog box, and click OK.
13. Pick (left-click) the same wall. You now have a dimension traveling the entire length of the building.
14. Move your cursor above the first dimension string you added. Notice that the dimension clicks when it gets directly above the first string.
15. When you see the dimension snap, pick that point (see Figure 5.5).

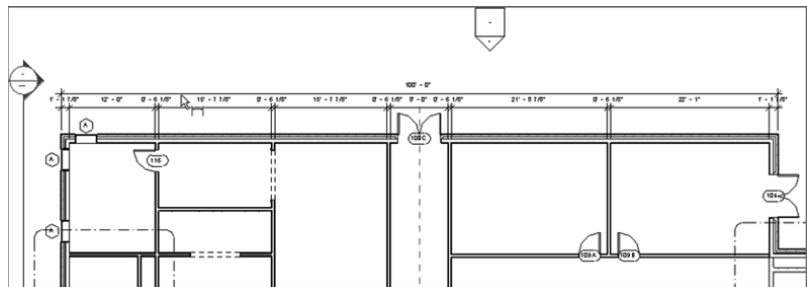


FIGURE 5.5: Adding a major dimension by turning off the Intersecting Walls choice in the Auto Dimension Options dialog box

In many cases, you'll need the ability to pick two points to create a dimension. What a world it would be if everything were as easy as the dimension string you just added. Unfortunately, it isn't.

Creating Aligned Dimensions by Picking Points

Nine times out of ten, you'll be picking two points to create a dimension. This is usually quite simple in Revit—until you get into a situation where the walls are at an angle other than 90°. In a moment, you'll explore that issue, but for now, let's add some straight dimensions.



NOTE Before you get started, note that this procedure isn't easy. If it does come easily to you, great! If not, don't get discouraged. Keep trying.

1. Zoom in on the northeast portion of the east wing, as shown in Figure 5.6.

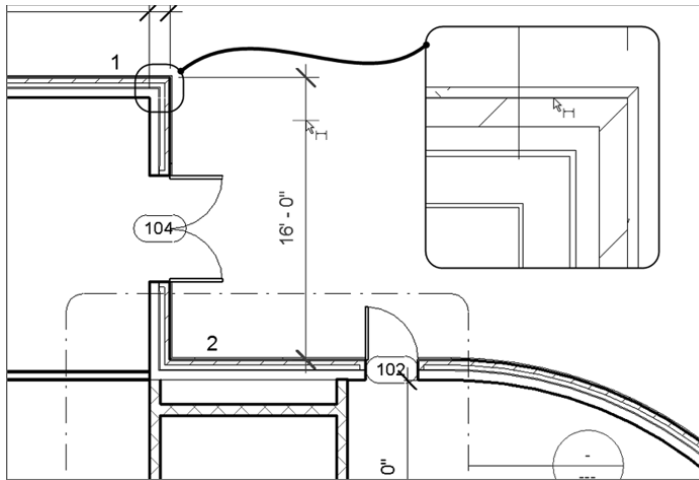


FIGURE 5.6: Placing the dimension by picking two objects

2. On the Annotate tab, click the Aligned button if it isn't selected already.
3. On the Options bar, choose Individual References from the Pick menu, as shown previously in Figure 5.2, and do the following:
 - a. Pick the outside face of the north wall marked 1 in Figure 5.6.
 - b. Pick the horizontal wall that ties into the radial wall, marked 2 in Figure 5.6.
 - c. Place the dimension about 8' (2400 mm) to the right of the vertical wall, as shown in Figure 5.6.

4. With the Aligned Dimension command still running, do the following:
 - a. Pick the outside face of the northern wall.
 - b. Pick the centerline of the door, as shown in Figure 5.7, but don't press Esc or terminate the command.

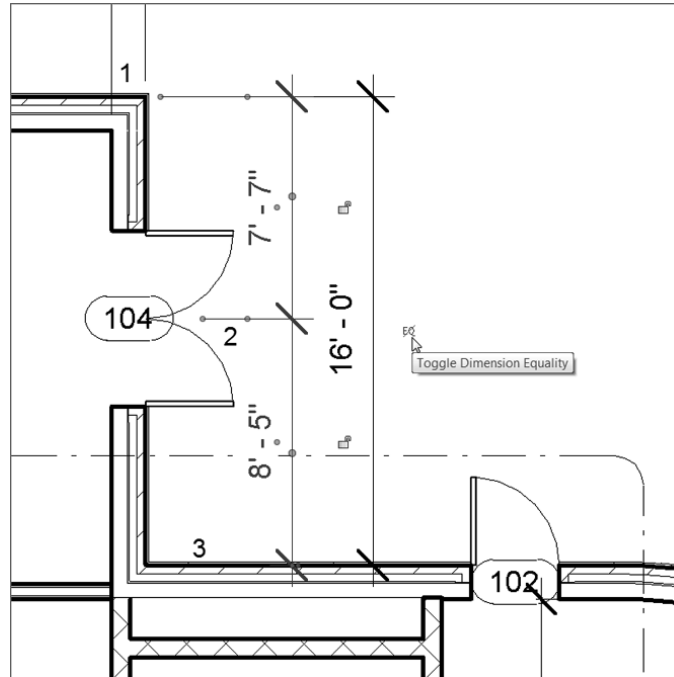


FIGURE 5.7: Adding a dimension string manually

- c. Pick the horizontal wall that ties into the radial wall, marked 3 in Figure 5.7.
- d. Pick a point inside (to the left of) the first dimension (see Figure 5.7). This places the dimension string and finalizes the session.



WARNING When you add a string of dimensions, you must not stop and then resume the dimension string in the middle of the command. As you'll see in a moment, when you add dimensions in a continuous line, you can do a lot in terms of making adjustments to the objects you're dimensioning.

The actual dimension values are blue. You also see a blue EQ icon with a slash through it (see Figure 5.7).

5. Click the blue EQ button, as shown in Figure 5.8. If the door was not exactly centered, this will force the door to move to an equal distance between the two walls.

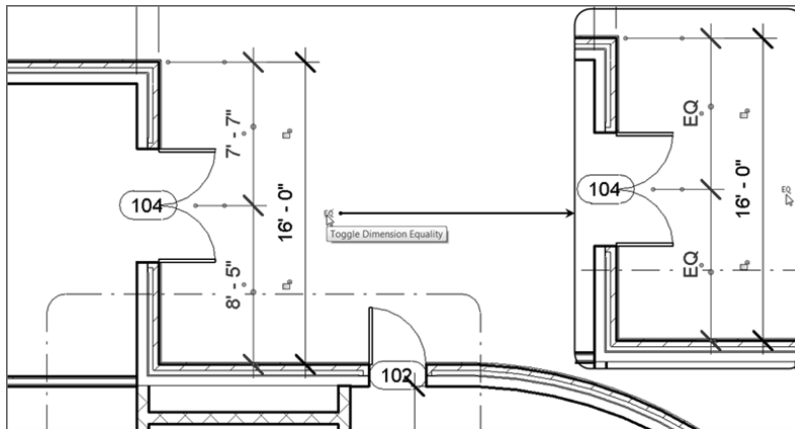


FIGURE 5.8: You can use the dimension string to move the door by clicking the EQ button.

6. Press Esc twice, or click Modify.

Sometimes you may want to display the dimensions rather than the EQ that Revit shows as a default. To do so, follow along:

1. Select the dimension.
2. Right-click.
3. Choose EQ Display (this deselects the option), as shown in Figure 5.9.

The dimensions will now show an increment.

Pretty cool. I should address one last item involving aligned dimensions: how do you dimension along an angle?

◀ Another way to tell Revit how to display dimensions is to select the dimension and then look at the properties. Here you'll be given additional choices.

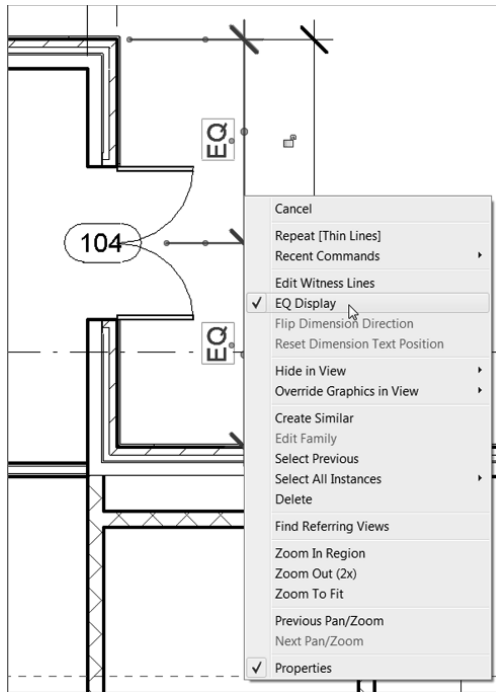


FIGURE 5.9: Toggle off the EQ Display option.

Dimensioning an Angle

No, not an *angel*, an angle. Adding this type of aligned dimension isn't the easiest thing to do in Revit. This is why I'm addressing the process as a separate item in this book. Here are the steps:

1. Zoom in on the 45° corridor area (the portion of the east building where the corridors meet), as shown in Figure 5.10.
2. On the Annotate tab, click the Aligned button on the Dimension panel.
3. On the Options bar, be sure Pick is set to Individual References.
4. Hover your pointer over the inside face of the brick in the angled wall (see Figure 5.10).
5. Tap the Tab key until you see the square grip appear. You can also look down to the lower-left corner; the status bar gives you some guidance as well.

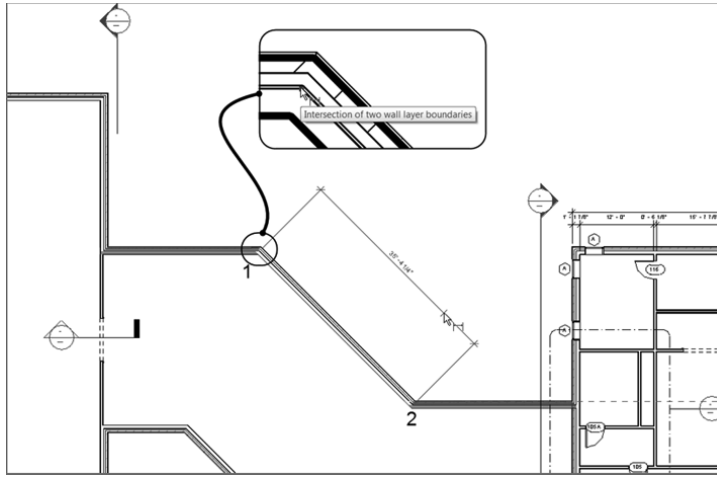


FIGURE 5.10: Press the Tab key to select the point shown.



NOTE By tapping the Tab key, you tell Revit to filter through different points. When you arrive at the square grip, Revit can dimension the angled wall.

6. When the square grip appears, pick it (see Figure 5.10).
7. Move to the other intersection of the angled wall.
8. Hover your cursor over this core intersection, as shown in Figure 5.11.

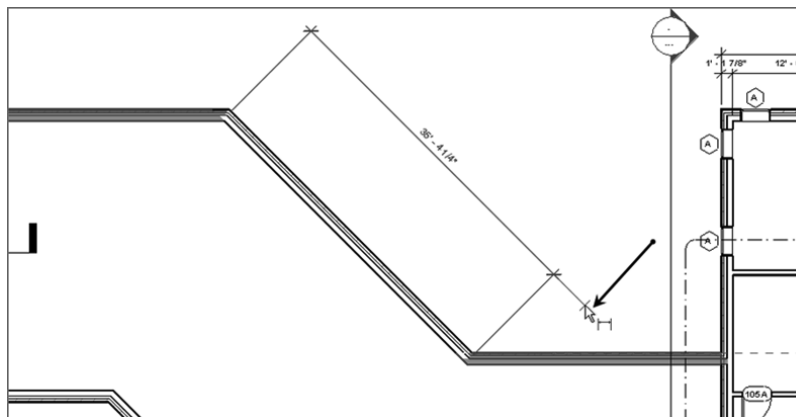


FIGURE 5.11: Picking the second point along the wall and placing the dimension

9. Tap the Tab key until you see the same square grip.
10. Pick the square grip.
11. Now the dimension is following your pointer. Pick a third point about 8' (2400 mm) away from the angled wall (see Figure 5.11).
12. On the left end of the Ribbon, click the Modify button. This ends the command.

Unfortunately, you had to dimension to the core of the wall. This is the last place from which you would ever need to take a dimension. The dimension needs to be stretched to the outside/finished face of the brick, as you'll see next.

Editing the Witness Line

Every dimension in Revit Architecture has its own grip points when selected. This is similar to most CAD applications. Two of these grips control the witness line. The *witness line* is the line “attached” to the item being dimensioned. Because you had to take this dimension from the core of the wall, the witness lines need to be dragged to the outside face of the brick. Follow these steps:

1. Select the angled dimension. The blue grips appear.
2. On the left side of the dimension, pick and hold the grip in the middle of the dimension line, as shown in Figure 5.12.

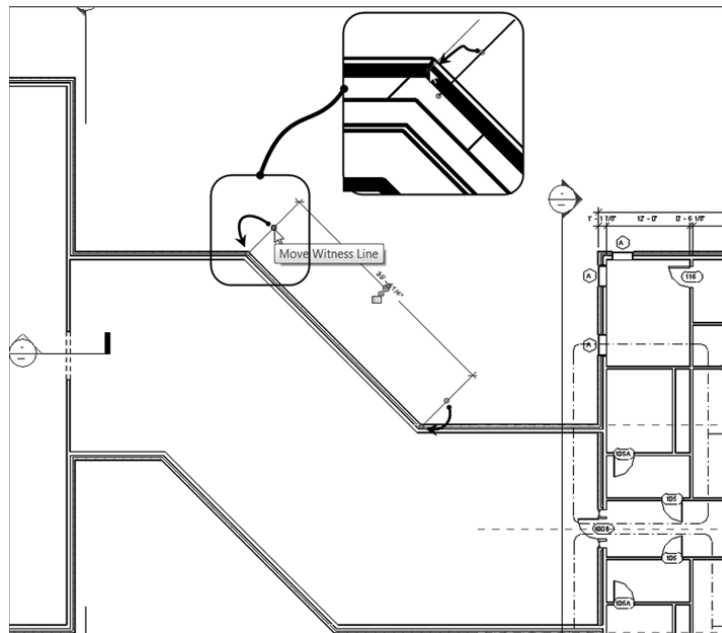


FIGURE 5.12: Dragging the witness line's grip

3. Drag the blue grip to the outside face of the brick. You'll know you're in the right spot because you'll see a small dot appear, as shown in the magnified segment of Figure 5.12.
4. Repeat the procedure for the other side.

Trust me—this is worth practicing now, before you get into a live situation. If you've already run into this, you know exactly what I mean.

Let's look at one more procedure for tweaking an aligned dimension: overriding a dimension's precision.

Overriding the Precision

When you dimension a wall at an angle such as this, the dimension usually comes out at an uneven increment. In most cases, you don't want to override every dimension's precision just to make this one, lone dimension read properly. In this situation, you want to turn to the dimension's Type Properties.

1. Select the angled dimension.
2. In the Properties dialog, click the Edit Type button, as shown in Figure 5.13.

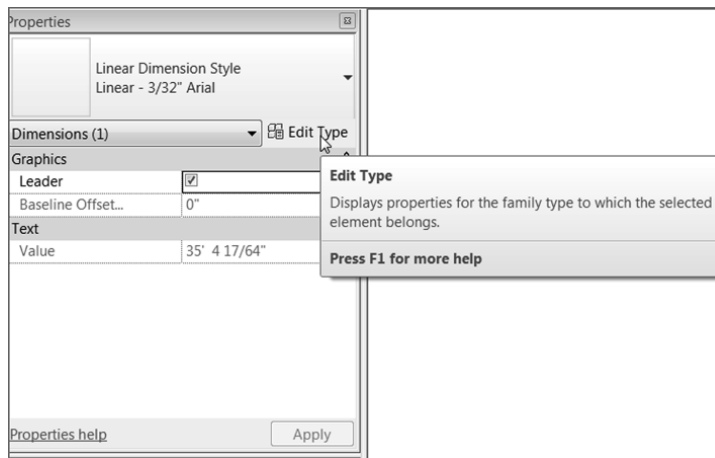


FIGURE 5.13: Clicking the Edit Type button to begin creating a new dimension style

3. Click the Duplicate button, as shown in Figure 5.14.

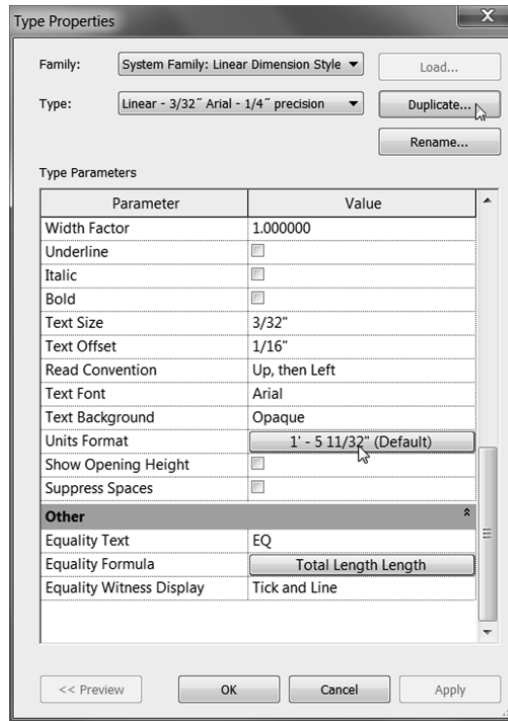


FIGURE 5.14: Select the button in the Text category to access the dimension's precision.

4. In the Name dialog box that opens, name the new dimension style **Linear – 3/32" Arial – 1/4" precision**. For metric users, it's **Linear – 2 mm Arial-10 mm precision**. Click OK.
5. Scroll down to the Text category. Near the bottom is a Units Format row with a button that displays a sample increment. Click it (see Figure 5.14).
6. In the Format dialog box, deselect the Use Project Settings option.
7. Choose **To The Nearest 1/4" (To The Nearest 10)** from the Rounding drop-down menu (see Figure 5.15).
8. Click OK twice. Note the new value on the dimension at the angled wall.



FIGURE 5.15: Changing the dimension's precision. Note some of the other available choices.

Although aligned dimensions will bear the brunt of your dimensioning, there are plenty of other dimension types for you to use.

Linear Dimensions

Linear dimensions are used less frequently than most of the other dimensions. Unlike Autodesk® AutoCAD® software, in which linear dimensions are the go-to dimensions, they're on the bench for most of the game in Revit. The best use for a linear dimension is to put a straight dimension across nonlinear (angled) geometry, as follows:

1. Zoom back in on the corridor area.
2. On the Annotate tab, click the Linear button. Notice that you can't select the entire wall. That option has been taken away. Instead, Revit requires you to pick a point.
3. Move your cursor over the inside corner, at the bottom intersection of the corridor. Make sure you're exactly over the exterior intersection of the brick. You'll know you're there when the blue dot appears, as shown in Figure 5.16.
4. When you see the dot, pick the corner.

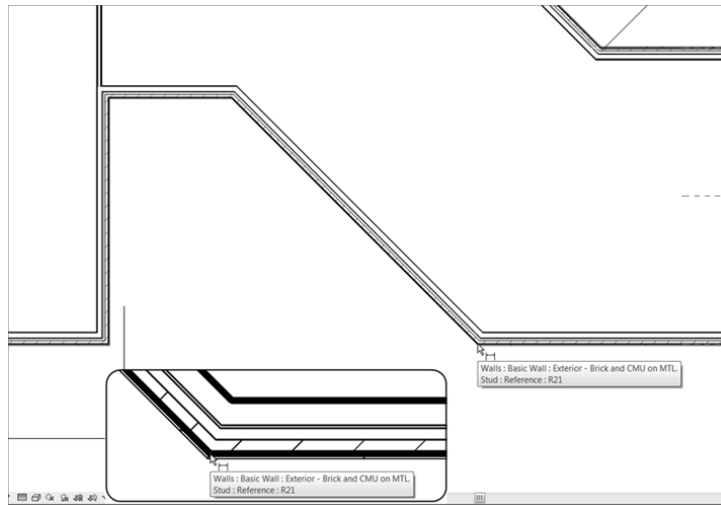


FIGURE 5.16: Select the finished exterior corner of the brick. You'll see a small blue dot appear, indicating that you can pick the start of the dimension.

5. Pick the same spot on the other end of the wall, as shown in Figure 5.17. When you pick the second corner, the dimension follows your cursor in a straight direction.

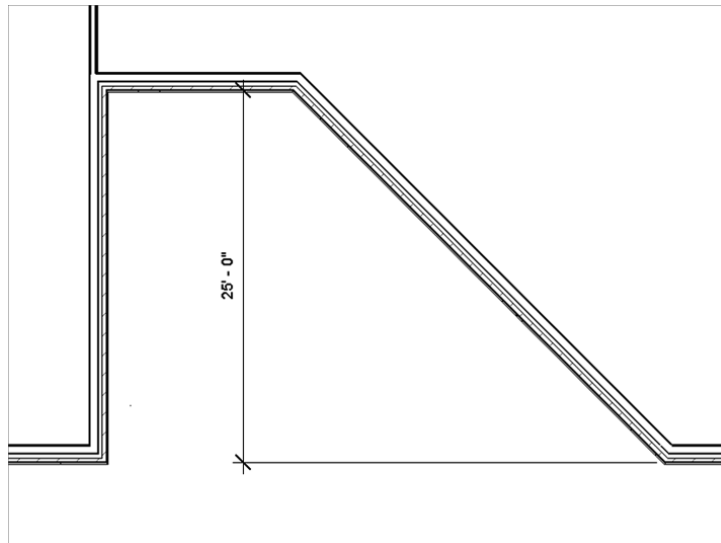


FIGURE 5.17: When you add a linear dimension to an angled wall, you get a straight dimension.

6. Move your cursor to the left, approximately 8' (2400 mm) past the first point you picked, and pick the third point to place the dimension (see Figure 5.17).

Aligned and linear dimensions are the two dimension styles that pertain to straight dimensioning. The next three dimension procedures add dimensions to angled and radial geometry.

Angular Dimensions

Angular dimensioning comes close to needing no introduction at all, but I'll introduce it anyway. Angular dimensions are used to calculate and record the angle between two items. These two items are usually walls. You'll add an angular dimension to your lovely corridor walls in the following steps:

1. Zoom back in on the corridor if you aren't there already.
2. On the Dimension panel, click the Angular button, as shown in Figure 5.18.

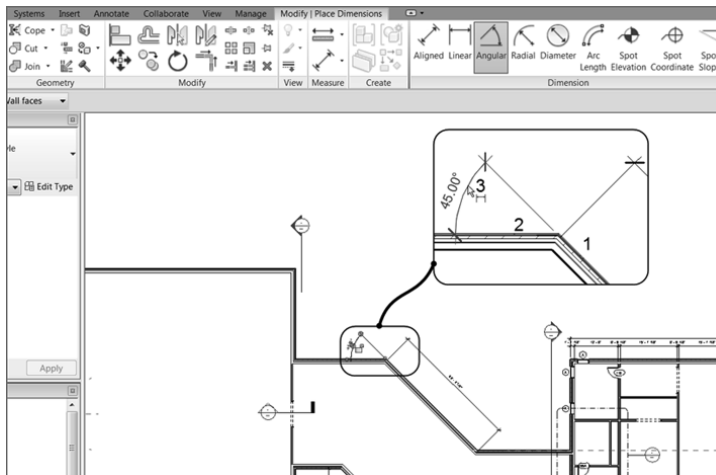


FIGURE 5.18: Placing an angular dimension involves picking two walls and then a point to place the dimension.

3. For the first wall, pick the finished, inside face of the angled corridor wall, inside the corridor wall, which is marked 1 in Figure 5.18.
4. Pick the finished, inside face of the north corridor wall, marked 2 in Figure 5.18.

5. Move your cursor to the left about 8' (2400 mm), and place the dimension marked 3 in Figure 5.18.
6. Press Esc.
7. Repeat the steps for the bottom of the corridor.
8. Add the rest of the dimensions, as shown in Figure 5.19. This completes the dimensioning of the corridor area.

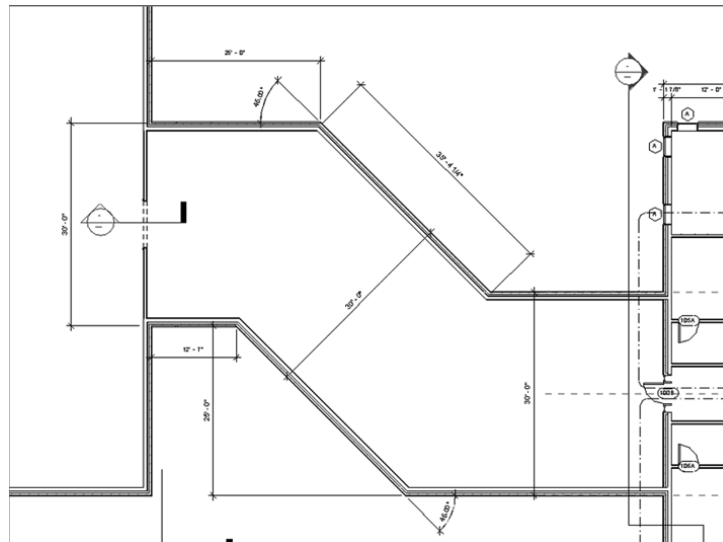


FIGURE 5.19: Finish placing the corridor dimensions.

Keep in mind that you can add an angular dimension to physically change the angle of the items being dimensioned. Use caution, however, and be sure the correct items are being moved when you alter the angle.

If you would like to place the dimensions in different locations, feel free to do so. The next set of dimensions pertains to radial geometry. You can finally get out of this corridor!

Radial Dimensions

Radial dimensions are used to, well, measure the radius of an item. You're lucky that Revit knows you're adding a radial dimension to a building component. This means the many different choices provided by a CAD application are taken away, leaving just the basics.

The following procedure will lead you through adding a radial dimension:

1. Zoom in on the east radial entry in the east wing.
2. On the Annotate tab, click the Radial button.

- Pick the outside face of the radial wall, as shown in Figure 5.20.

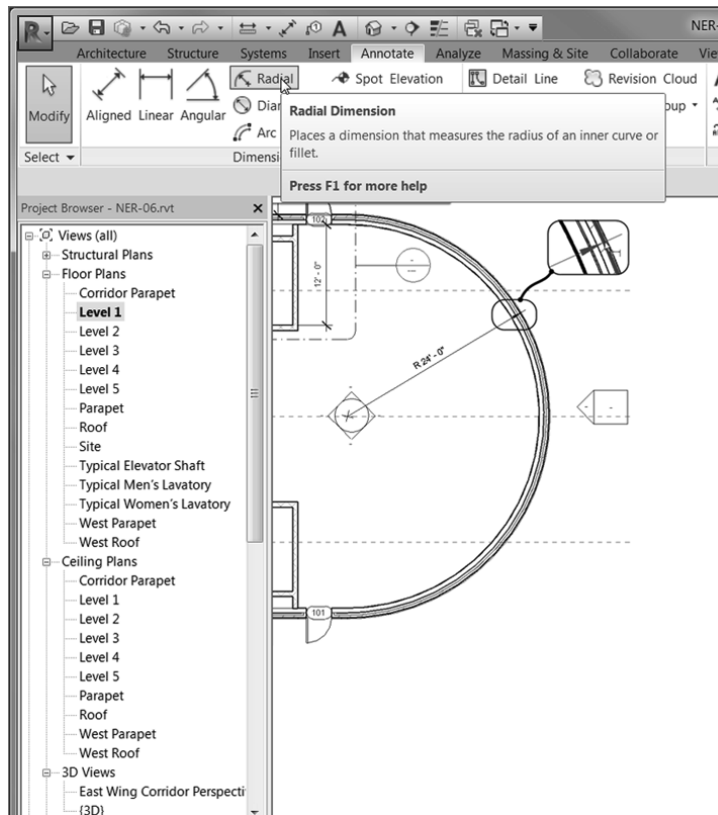


FIGURE 5.20: Adding a radial dimension is about as straightforward as it gets.

- Place the radial dimension somewhere that makes sense. If your model looks like Figure 5.20, you may proceed. If it doesn't, go back and try again.
- Pan all the way to the west radial end of the west wing, as shown in Figure 5.21.
- On the Annotate tab, click the Diameter button, as shown in Figure 5.21.
- Dimension to the finished outside face of the brick, and place your dimension in a location similar to that shown in Figure 5.21.

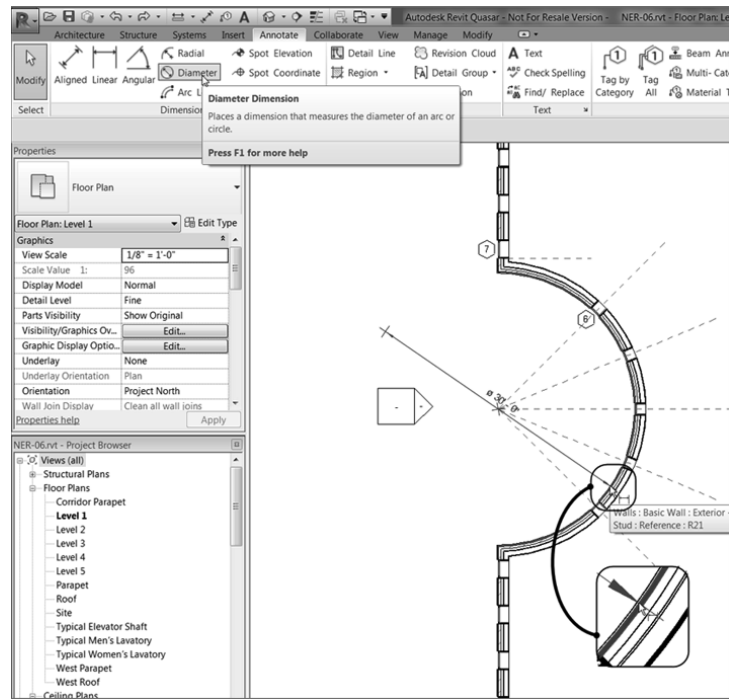


FIGURE 5.21: Adding a diameter dimension



WARNING All too often, you can easily dimension from the wrong reference point. This book uses a wall with a concrete ledge below the brick to emphasize that you need to be deliberate in how and where you choose your references for dimensions. Don't be afraid to zoom in and out as you add dimensions.

If you're careful in how you add a radial dimension, you'll find this process quite simple. The next type of dimension, however, can be a little tricky.

Arc Length Dimensions

Measuring the length of an arc is a handy capability that was added in the 2009 release. I have found the arc length dimension extremely useful in locating items such as windows along an arc. That is, in fact, what you need to do in the west wing of the building.

The following procedure will lead you through adding an arc length dimension:

1. Zoom in on the west radial entry of the west wing, as shown in Figure 5.22.

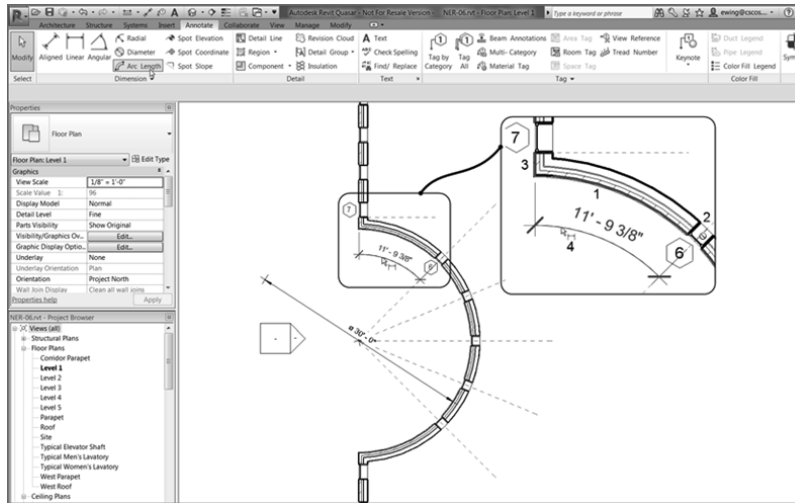


FIGURE 5.22: Placing an arc length dimension involves four separate picks.

2. On the Annotate tab, click the Arc Length button, as shown at upper left in Figure 5.22.
3. Pick the finish face exterior face of the brick on the radial wall marked 1 in Figure 5.22.
4. Pick the centerline of the uppermost window in the radial wall, marked 2. The NO symbol won't change, but you'll be able to pick the window centerline.
5. Pick a point along the exterior face of brick that runs along the vertical intersecting wall, marked 3 in Figure 5.22.
6. Pick a point at which to place the dimension, marked 4.

Let's try it again. This time the dimension will be taken from the first window (the one you just dimensioned) to the second window. The process is the same.

1. On the Annotate tab, click the Arc Length button if you aren't still in the command.
2. Pick the exterior face of the brick along the radial wall.
3. Pick the first window's centerline again.
4. Pick the second window's centerline.

- Pick a point to place the dimension (see Figure 5.23).

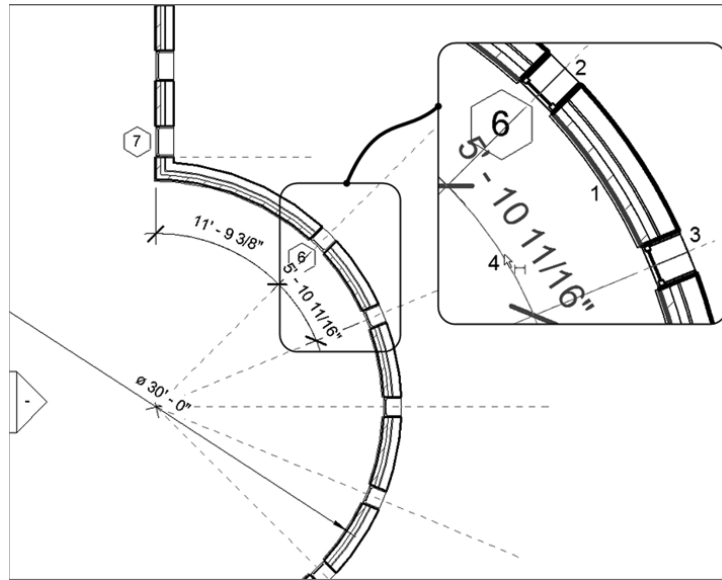


FIGURE 5.23: Adding a second arc length dimension

Now that you have experience adding dimensions to record the placement of items, it's time to see how you can physically use dimensions as a layout tool.

Using Dimensions as a Layout Tool

When it comes to dimensions, using them as a layout tool is my favorite topic. “OK, fine,” you may say. “I can do that in CAD.” Well, not quite. You see, in Revit Architecture you can't alter a dimension to reflect an increment that isn't accurate. You can, however, select the item you're dimensioning and then type a new number in the dimension. At that point, the item you're dimensioning will move. The result will be an accurate dimension.

The first task you need to explore is how to constrain a string of dimensions equally. You were exposed to this task earlier in the chapter, but now let's really dig in and gain some tangible experience using this tool.

For this procedure, you'll add some more walls to the west wing and then constrain them by using the EQ dimension function:

- In the Project Browser, go to the Level 1 floor plan (not a ceiling plan!).
- Zoom into the west wing of the building.

3. Draw two interior-partition (2-hr) corridor walls, as shown in Figure 5.24.

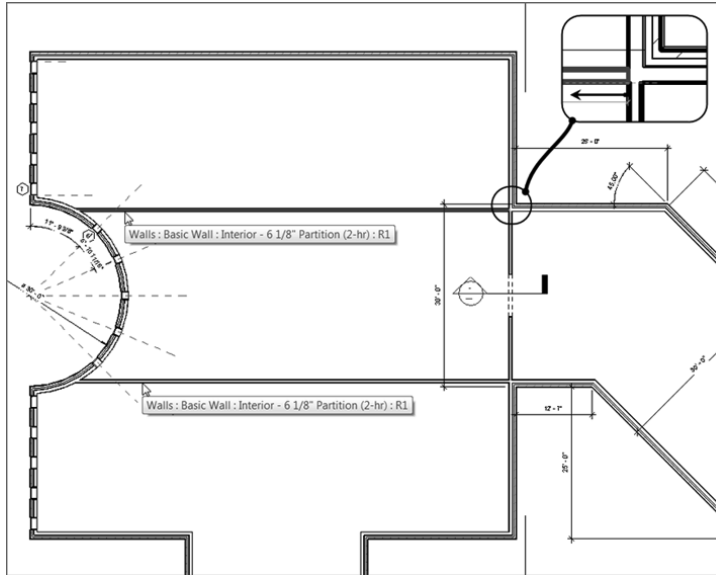


FIGURE 5.24: Adding two corridor walls

4. Draw five more walls, as shown in Figure 5.25. They don't have to be an equal distance from one another.

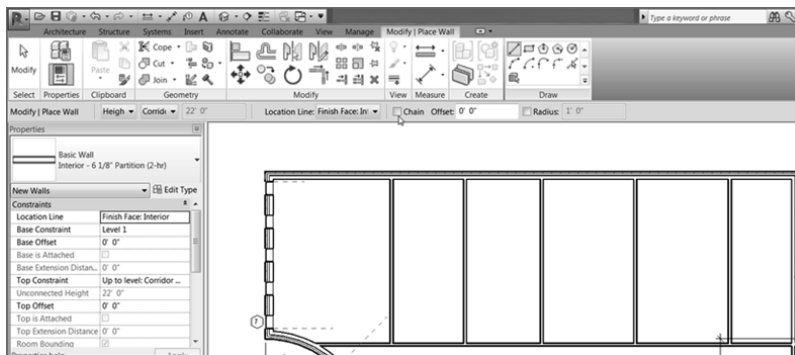


FIGURE 5.25: Place these walls as quickly as possible, and don't worry about their spacing.

WALLS KIND OF STICKY?

If you don't intend to draw continuous lines, check out the Options bar, and uncheck the Chain button. This allows you to draw separate walls with just two clicks.

5. On the Annotate tab, click the Aligned button (see Figure 5.26).

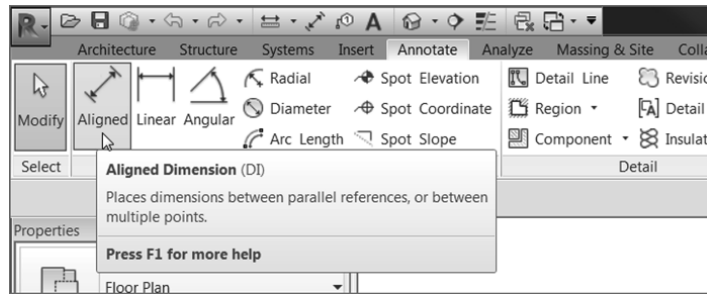


FIGURE 5.26: Changing the options for the dimension

6. On the Options bar, be sure Justification is set to Center Of Core.
7. Zoom in on the left exterior wall, as shown in Figure 5.27.

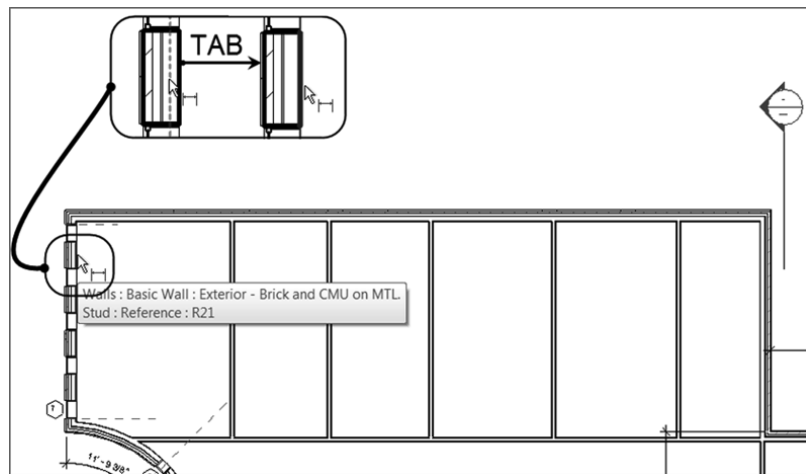


FIGURE 5.27: Press the Tab key to filter to the desired reference of the wall.

8. Hover your pointer over the wall. Do you notice that Revit is trying to locate the center of the wall? In this instance, you don't want this (even though you just told Revit to do that). You want Revit to start this dimension string by using the interior face of the finished wall. To do this, hover your pointer over the inside face of the wall (see Figure 5.27).
9. Tap the Tab key until Revit highlights the inside face of the wall.
10. Pick the inside face of the wall.
11. Move your cursor to the right until you pass over the first interior wall. Notice that the core centerline of the interior is highlighted, as shown in Figure 5.28. When you see this, pick the wall.

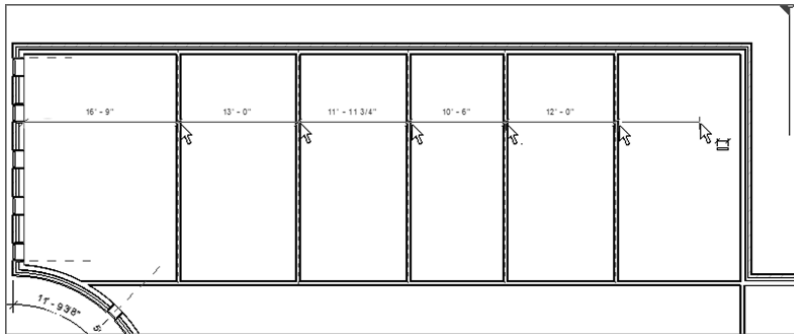


FIGURE 5.28: Adding a string of dimensions to the interior walls



WARNING Just as when you equally constrained the door in the previous procedure, you need to keep the Dimension command running. If you press Esc, undo the last dimension and start over.

12. After you pick the first interior partition, move to the right and pick the center of the next wall.
13. Repeat the procedure until you get to the last wall (see Figure 5.28).

When you reach the exterior wall to the right, you'll encounter the same issue as in steps 8–9. You want this string of dimensions to go to the inside face, not

the core of the exterior wall. To finally finish the dimension string, go through the following procedure:

1. Hover your cursor over the inside face of the wall, and tap the Tab key until the inside face of the wall becomes highlighted, as shown in Figure 5.29.

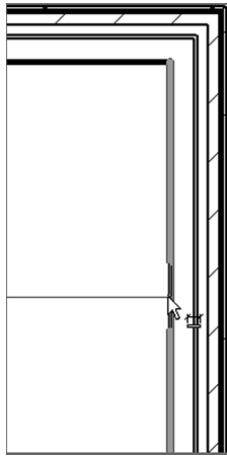


FIGURE 5.29: Press Tab to locate the inside face of the wall.

2. When you locate the inside face, pick it.
3. Move your cursor up the view. The entire dimension string follows.
4. Placing a dimension in Revit is a little awkward, but you'll get the hang of it. You need to pick a point away from the last dimension in the string, as shown in Figure 5.30, almost as if you're trying to pick another item that isn't there. When you do this, the dimension will be in place.

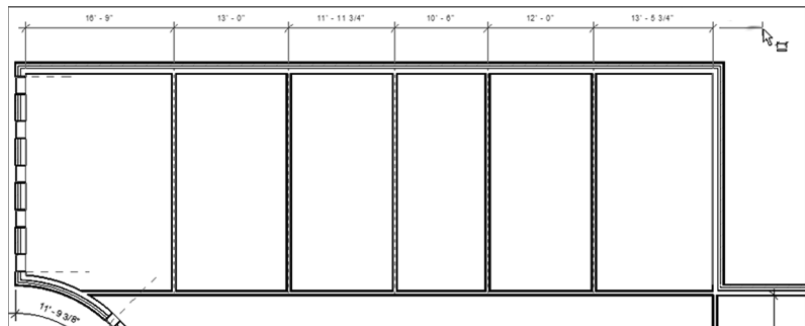


FIGURE 5.30: Pick a point away from the last dimension to place the string.

With the dimension string in place, let's move these walls so they're equidistant from one another. After you placed the dimension string, the familiar blue icons appeared. You can use them as follows:

1. Find the EQ icon in the middle of the dimension string, and pick it. The slash through it is now gone, and the walls have moved, as shown in Figure 5.31.

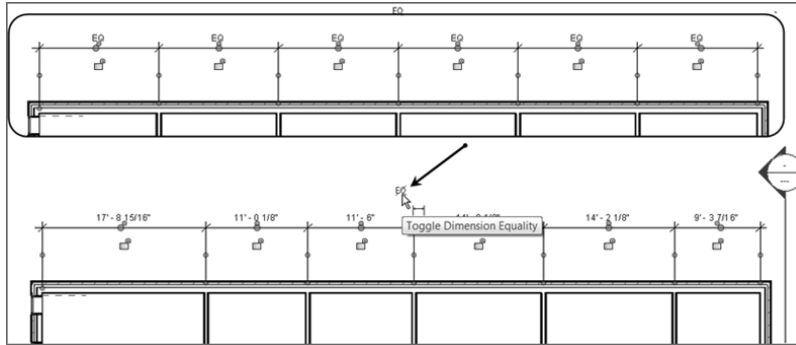


FIGURE 5.31: Before and after the EQ icon is selected

2. Press Esc twice to release the selection and exit the Aligned Dimension command.

Because these walls are constrained always to be equal, if one wall is moved, these five interior partitions will always maintain an equal relationship to one another—that is, as long as this dimension string is still associated with the walls.

In Revit Architecture, you can choose to keep the walls constrained or to use the dimension only as a tool to move the walls around.

Constraining the Model

Choices you make early in the design process, such as constraining a model, can either greatly benefit or greatly undermine the project's flow. As you gain more experience using Revit Architecture, you'll start hearing the term *overconstrained*. This is a term for a model that has been constrained in so many places that any movement of the model forces multiple warnings and, in many cases, errors that can't be ignored.

Given that, how you choose to constrain your model is up to you. You'll learn how to constrain (and, of course, *unconstrain*) your model in this section, but deciding when and where to constrain your model will vary from project to project.

If you placed the dimension string and then escaped out of the command, that's fine. You can simply select the string of dimensions again, and you'll be back in business.

Unconstraining the Walls

The string of equal dimensions you now have in place has created a constraint with these walls. To unconstrain them, follow these steps:

1. Select the dimension string.
2. Press the Delete key on your keyboard.
3. Revit gives you a warning, as shown in Figure 5.32. You must choose whether to unconstrain the elements.

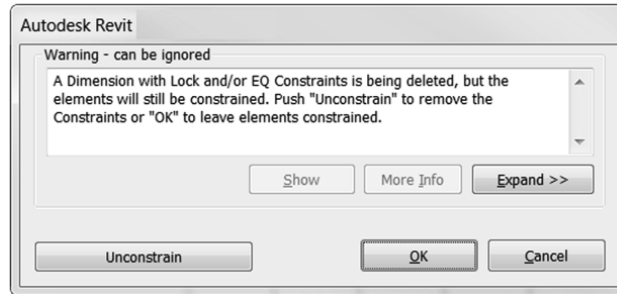
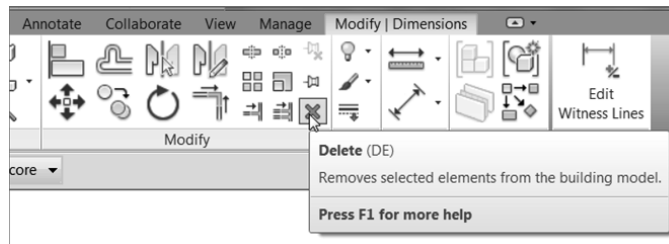


FIGURE 5.32: A Revit warning pertaining to the constraint of the walls

If you click the Unconstrain button, the EQ dimension will disappear as well as any constraint on the walls. If you move the exterior wall, the newly spaced walls won't reposition themselves.

OUT OF SIGHT, OUT OF MIND

In CAD, you type **E** and then press Enter to delete an item. This is no longer a good idea. If you do this to an item in Revit Architecture, you'll hide that element only from the current view—not from the entire model. You're better off either selecting the item and pressing the Delete key or selecting the item and clicking the Delete icon, as shown here:



4. Click OK. You'll learn how to unconstrain these walls via a different method.
5. Select one of the interior walls that were part of the EQ dimension string.
6. The EQ icon appears. Click it to release the constraint set for the walls (see Figure 5.33). You're now free to move around the building. (Note that the EQ icon may be hiding behind a wall in the middle of the array. Zooming out will make the icon larger and easier to pick.)

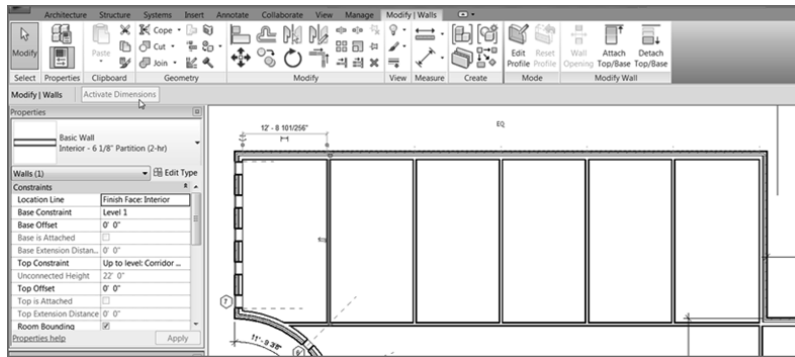


FIGURE 5.33: Unconstraining the walls



NOTE Sometimes, when you select an item that is being constrained, the dimensions are already activated and the Options bar doesn't provide the Activate Dimensions button. If you don't see the Activate Dimensions button on the Options bar for this example, your dimensions have been activated already.



TIP Notice in the figure the anchor icon to the left of the dimensions. You use this icon to determine which wall will remain stationary. You can move the anchor icon to any of the items involved in the constraint. For example, if you click and drag the anchor to the middle partition and then move one of the other constrained walls, the middle partition will stay in place while the other walls move an equal distance to the right and left of the anchored wall.

Now that you have experience with dimension equality constraints, it's time to learn about a different type of constraint that involves locking items together at a distance.

Locking a Dimension

At times you may want always to hold a dimension, no matter what else is going on around it. You can do this by physically adding a dimension to an item and then locking that dimension in place. For example, if you want to lock the middle space to a specific dimension, you simply add a dimension and lock it down. Sound easy? It is!

1. On the Annotate tab, click the Aligned button.
2. In the Properties dialog, select the Linear – 3/32" dimension style, as shown in Figure 5.34.

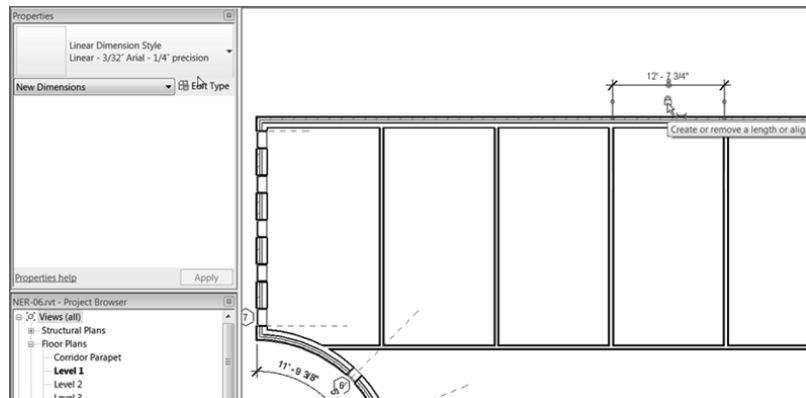


FIGURE 5.34: You can add a dimension and lock the distance between two items.

3. On the Options bar, change the alignment to Wall Faces.
4. Pick the inside faces of the two middle partitions, as shown in the upper-left corner of Figure 5.34.
5. After you place the dimension, a blue padlock icon appears. Pick it. It should change to a locked padlock icon. When it does, press Esc twice or click Modify to terminate the command.
6. Select the left wall that has been dimensioned.
7. Move the wall to the right 2' (600 mm). Notice that the right wall moves as well. If you get a “constraints are not satisfied” message, you need to go back and un-EQ the five walls.
8. Click the Undo button, as shown in Figure 5.35.

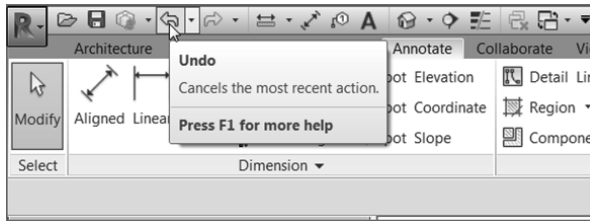


FIGURE 5.35: Click the Undo button.

9. Delete the dimension.
10. When you get the warning, click the Unconstrain button.
11. Save the model.
12. Add doors and windows to the plan, as shown in Figure 5.36. They can be any type of door or window you choose—just try to keep them similar to the ones in Figure 5.36. Also, placement doesn't matter. You'll adjust this in the next procedure.

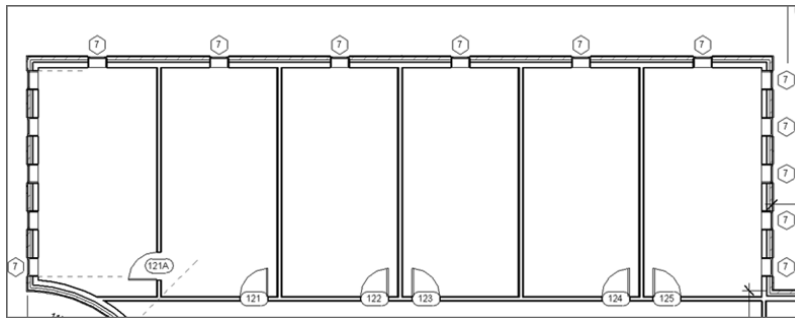


FIGURE 5.36: Adding doors and windows to the floor plan

In the next section, you'll start using dimensions as a tool to move elements around physically. Although this might seem like an exercise in futility, the practice is relevant to what you'll encounter in future projects.

Using Dimensions to Move Objects

As I have mentioned, you can't type over a dimension and cause the value in that dimension to be inaccurate. Revit does provide tools to get around this. When you add a dimension and select the object being dimensioned, the

dimension turns blue. This is a temporary dimension, which can be edited. Consequently, the object being dimensioned will move.

The goal of this procedure is to select an item and modify the temporary dimension, in effect moving the object.

1. Zoom in on the left side of the west wing, as shown in Figure 5.37.

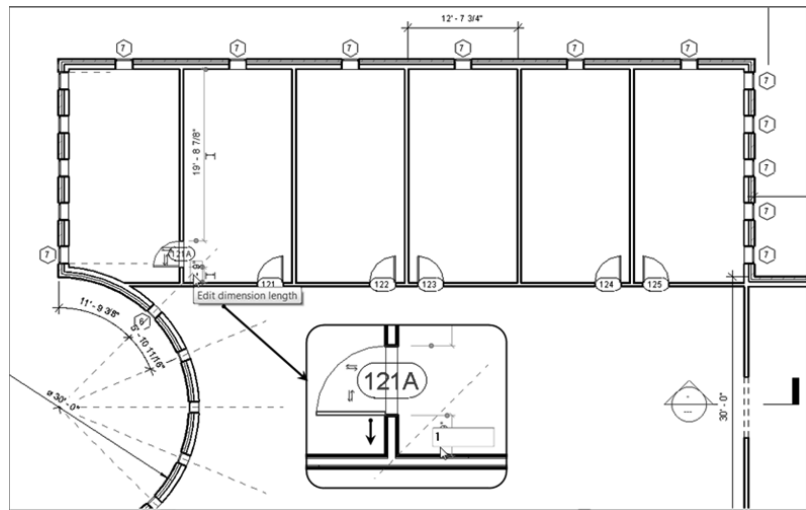


FIGURE 5.37: When you type a different value, the temporary dimension moves the object.

2. Select the door (see Figure 5.37). There is a blue dimension on each side of the door. These are temporary dimensions.
3. Pick the blue text in the lower temporary dimension (see Figure 5.37). The text might be obscured by the wall, but if you hover over it, it will activate, and then you can select it.
4. Type 1 (300). For Imperial users, this is the equivalent of 1'-0" (300 mm). The door moves.
5. Press the Esc key to release the door.

This procedure used a temporary dimension that appeared when you selected the item. After you edited the dimension, it went away. In the next procedure, you'll add a permanent dimension and do the same thing:

1. On the Annotate tab, select the Aligned button.
2. Place a dimension between the door and the wall, as shown in Figure 5.38.

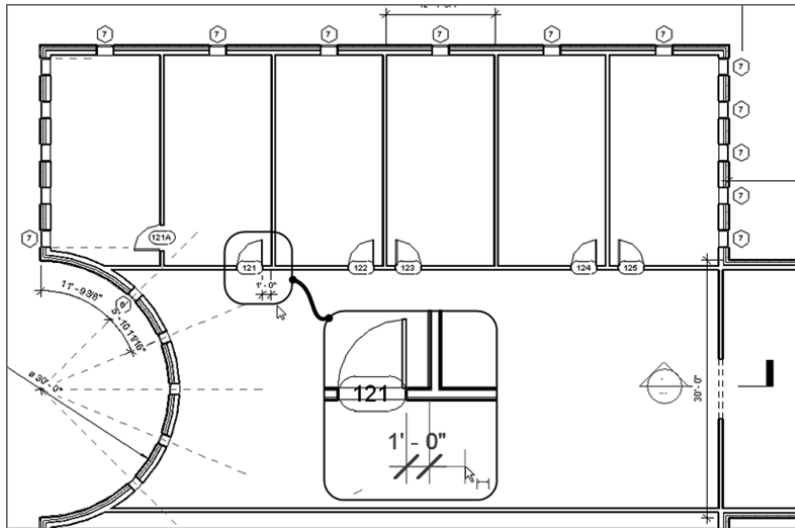


FIGURE 5.38: Placing a dimension

3. Press the Esc key twice.
4. Select the door shown in Figure 5.39. The dimension turns small and blue: it's ready to be modified.

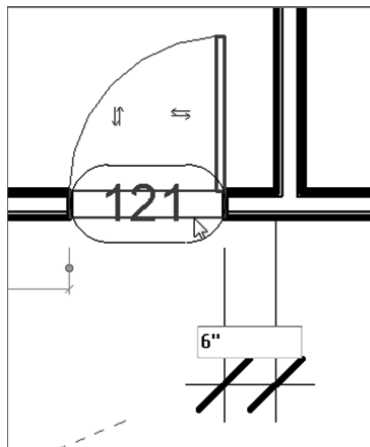


FIGURE 5.39: Making adjustments with the actual dimension

5. When the dimension turns blue, select the text, and type 6" (150 mm). The door adjusts to the 6" (150 mm) increment.

6. Press the Esc key, or click anywhere in open space to clear the selection.
7. Select the dimension.
8. There is a blue grip just underneath the text. Pick the grip, and move the text out from between the extension lines, as shown in Figure 5.40. Revit places a *leader* (an arrow line extending from the model to your text) in the text.

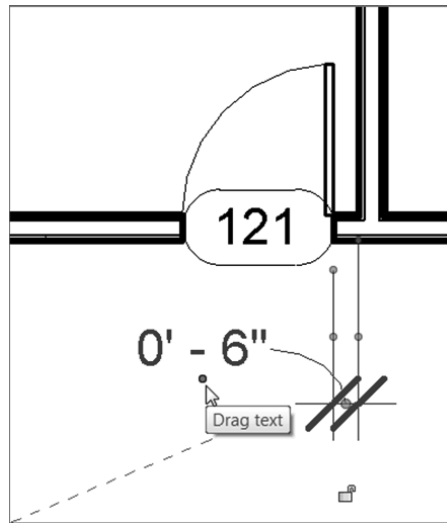


FIGURE 5.40: By grip-editing the text, you can slide it to a cleaner location. Revit automatically places a leader from the text to the dimension line.

The fact that Revit displays temporary dimensions lends itself to another common process: the double-check. All you need to do in Revit Architecture is select any item, and the temporary dimensions will appear. (If not, remember to click Activate Dimensions on the Options bar.) You can simply look at the dimension.

The process of using dimensions to move objects takes some getting used to. The next procedure delves into making further modifications to dimensions and provides a nice fail-safe procedure embedded within the Dimension Properties.

Using Dimension Text Overrides

Although I just told you that you can't override a dimension, the following steps get around that problem. In many cases, you may want text or, more commonly, a prefix or a suffix within a dimension. You can do all three in Revit Architecture.

1. Select the 6" (150 mm) dimension.
2. The text turns blue. As you know, blue means this item is editable in Revit. Pick the text. You should see a dialog box like the one in Figure 5.41.

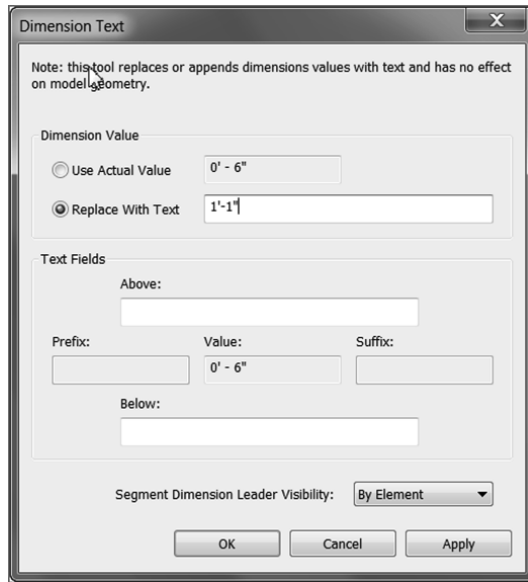


FIGURE 5.41: The Dimension Text dialog box

3. Under Dimension Value, click Replace With Text.
4. Type 1'-1" (325 mm), and press Enter.
5. You get an Invalid Dimension Value message, as shown in Figure 5.42. Revit won't allow you to do such a foolish thing. Click Close.

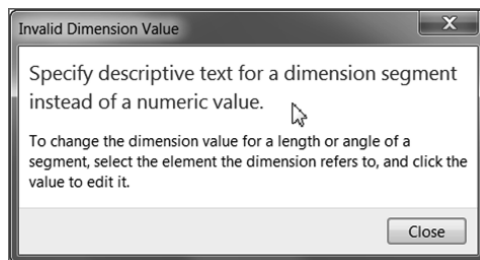


FIGURE 5.42: Any numeric value triggers a warning in Revit. You simply can't type a value over a dimension.

6. In the Dimension Text dialog box, select Use Actual Value.

- Under Suffix, type **TYP.**, as shown in Figure 5.43.

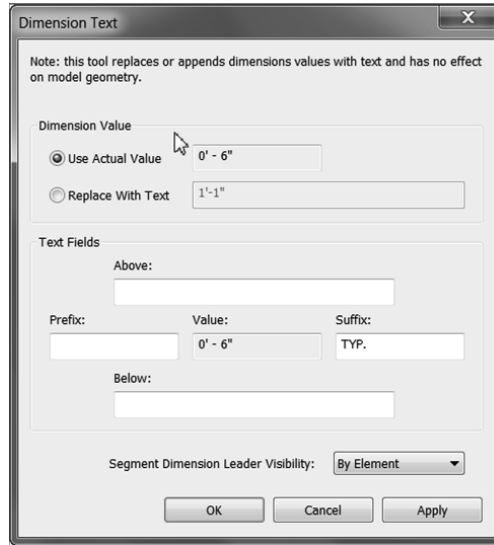


FIGURE 5.43: Under Dimension Value, choose Use Actual Value, and type TYP. as the suffix.

- Click OK.

As a closing practice for dimensioning, move the rest of the doors along this wall to a 6" (150 mm) increment from the finished, inside face of the wall to the door opening. Also, dimension the floor plan as shown in Figure 5.44 and Figure 5.45.

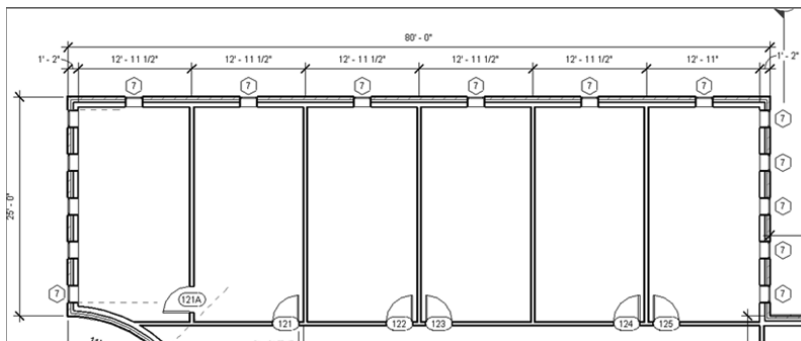


FIGURE 5.44: The dimensional layout for the north part of the west wing

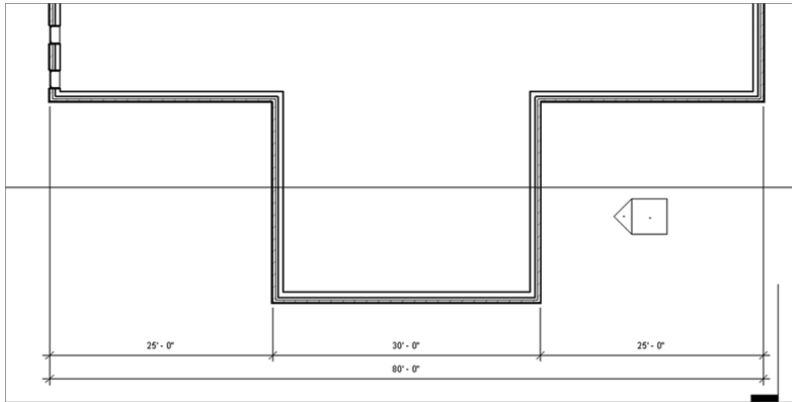


FIGURE 5.45: The dimensional layout for the south part of the west wing

Placing Text and Annotations

Text in Revit Architecture is a love/hate relationship for every Revit user. You'll love text because it automatically scales with the view's scale. You'll hate it because the text editor is something of a throwback from an earlier CAD application. Either way, the procedure for adding text doesn't change with your feelings toward it.

The objective of this procedure is simply to add text to the model, format it, and then add and format a leader:

1. In the Project Browser, go to the Level 1 floor plan.
2. Zoom in on the east wing's radial entry area, where the elevator shafts are located, as shown in Figure 5.46.
3. On the Text panel of the Annotate tab, click the Text button, as shown in Figure 5.47.
4. In the Type Selector, select Text : 3/32" (2) Arial.
5. On the Format panel, you have choices for a leader. For this example, click the No Leader button. It's the button with the A on it, as shown in Figure 5.48.

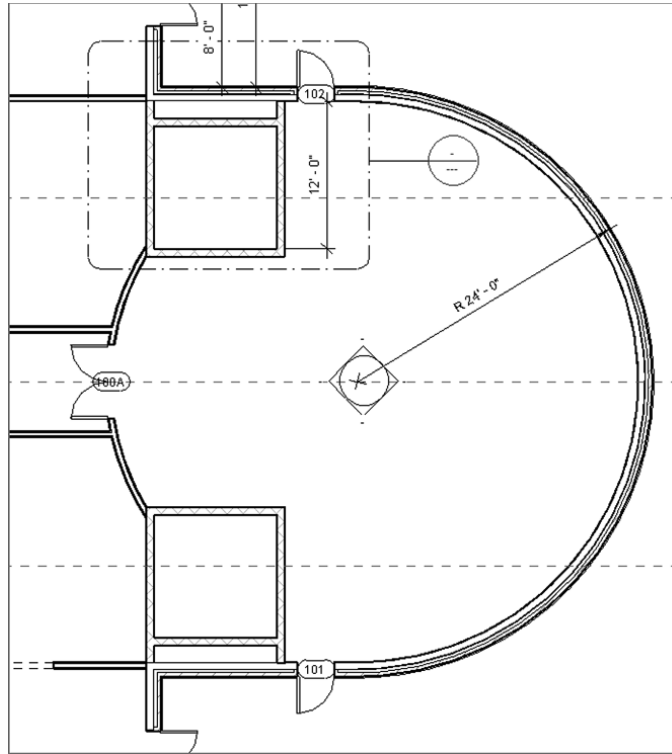


FIGURE 5.46: The radial entry

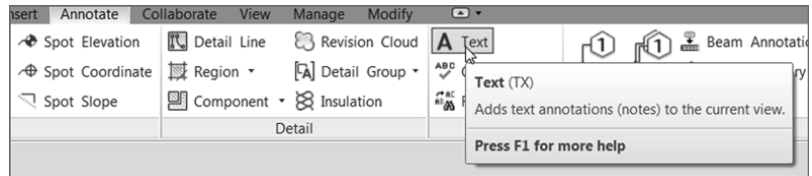


FIGURE 5.47: Click the Text button on the Text panel of the Annotate tab.

6. To place the text, you can pick a point or drag a window. Left-click at the point marked 1 in Figure 5.48. Keep the button down.
7. Drag the cursor to the point marked 2, and release the button.
8. Type CMU SHAFT WALL.
9. Click a point in the view outside the text box. You now have a note in the model. The text wraps to fit the size of the window you dragged.

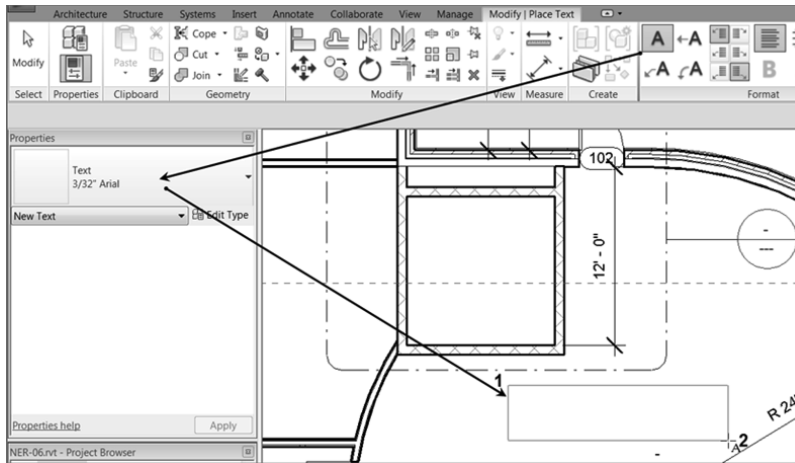


FIGURE 5.48: Placing text

10. Press the Esc key twice, or click Modify.
11. Select the text.
12. On the Format panel, review the choices you have to add a leader to the text.
13. Click the Add Left Side Straight Leader button, as shown in Figure 5.49. This option adds a leader to the left end of the text.

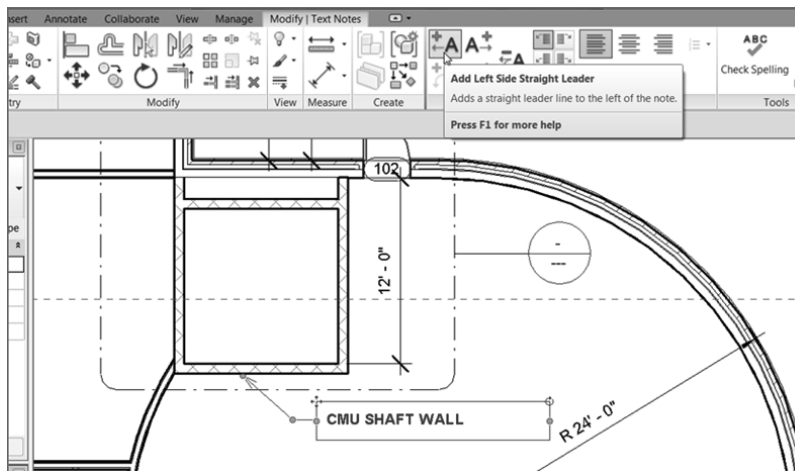


FIGURE 5.49: Adding and stretching a leader

14. By clicking the grips and moving the text around, configure the text and the leader to resemble Figure 5.49.

Adding Leader Text

You can add text to a model by placing a leader first and then adding the text within the same command. Although in Revit you can add leaders to all text, you can choose to add text to a model with or without a leader.

The objective of the following steps is to place text with a leader:

1. On the Text panel of the Annotate tab, click the Text button.
2. On the Format panel, click the Two Segments button, as shown in Figure 5.50.

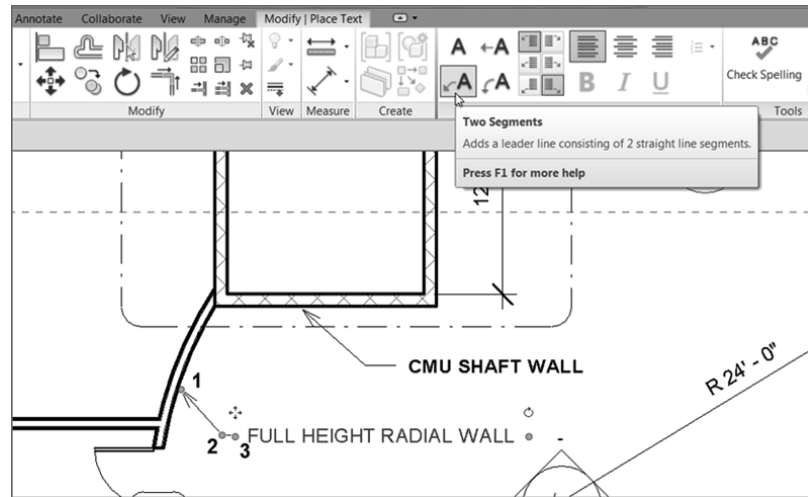


FIGURE 5.50: Adding a piece of leader text

3. Pick a point near the radial wall, marked 1 in Figure 5.50.
4. Pick a second point similar to the point marked 2.
5. Pick a third point just to the right of the second, marked 3.
6. Type **FULL HEIGHT RADIAL WALL**.
7. Click an area outside the text.

Now that you can add text to a model, let's investigate how to modify the text after you add it. You'll begin with the arrowhead on the end of the leader.

Changing the Leader Type

It almost seems as though Revit uses the ugliest leader as a default, forcing you to change it immediately. The large arrowhead you saw in Figure 5.50 isn't the only one Revit provides—had that been the case, Revit might have never have gotten off the ground!

To change the arrowhead that Revit uses with a text item, follow this procedure:

1. On the Text panel of the Annotate tab is a small arrow pointing down and to the right, as shown in Figure 5.51. Click it to open the Type Properties.

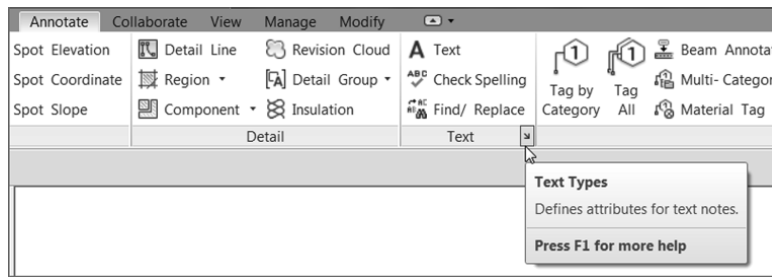
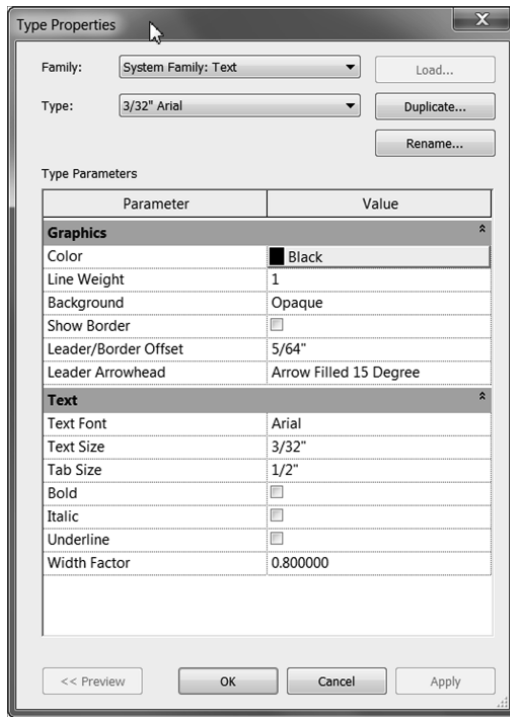
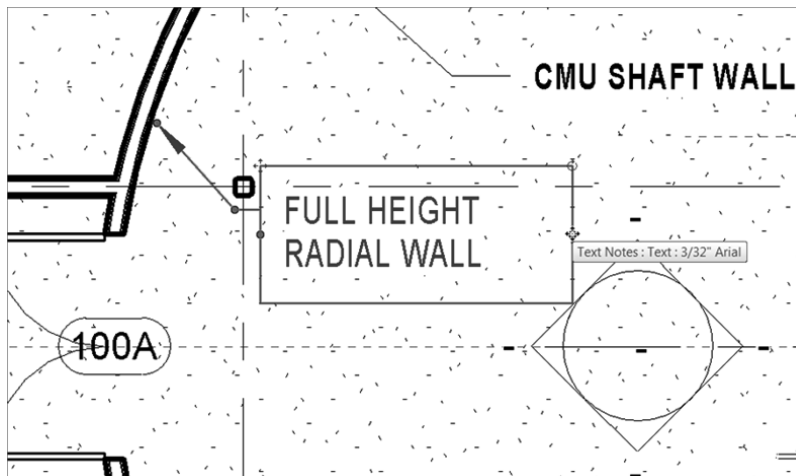


FIGURE 5.51: Accessing the Type Properties

2. Change the Leader Arrowhead parameter to Arrow Filled 15 Degree, as shown in Figure 5.52.
3. Click OK. You've changed a type parameter.

That's a handsome-looking arrowhead, as shown in Figure 5.53. The next item to address is how to modify the placement of text after you add it to the model.

**FIGURE 5.52:** Changing that ugly arrow**FIGURE 5.53:** Configuring the arrowhead

Modifying the Text Placement

With any text item in Revit, you can select the text in your model, and you'll see grips for adjusting text: two grips on the text box, two on the leader, and a rotate icon.

Your next objective is to modify the text placement and to make the necessary adjustments.

1. Select the text you just added to the model.
2. Pick the right blue grip.
3. Stretch the text window to the left until it forces the text to wrap, as shown in Figure 5.53.

Observe the rotate icon. You don't need to rotate the text here, but notice that it's there, for future reference.

Modifying the placement of text is a straightforward process. Changing the actual font and size of the text in a model is another story and requires further investigation.

Changing Text Properties

Of course, you can change the font used for text. You can also change the text's height and width. Keep in mind, however, that the text height you specify is the actual text height you want to see on the sheet. You no longer have to multiply the desired text height to a line-type scale. Revit understands that text is scaled based on the view's scale.

To modify the text appearance, run through the following procedure:

1. Pick the Text Types arrow in the corner of the Text panel, as you did when you changed the leader type.
2. Click the Duplicate button.
3. Call the new text 3/16" Tahoma (3.5 mm Tahoma).
4. Click OK.
5. Change the Text Font setting to Tahoma.
6. Change the Text Size setting to 3/16" (3.5 mm), as shown in Figure 5.54.
7. Change the Width Factor setting to 0.8.
8. Click OK.

Revit doesn't use an SHX font. As a matter of fact, SHX can't be used at all in Revit. It was invented by Autodesk, but it works only with AutoCAD. Keep this in mind when you're setting up your company's templates. If you're using an SHX font, you'll need to find an alternate font or allow Revit to convert it to Arial. If you don't, this will cause issues in text formatting.

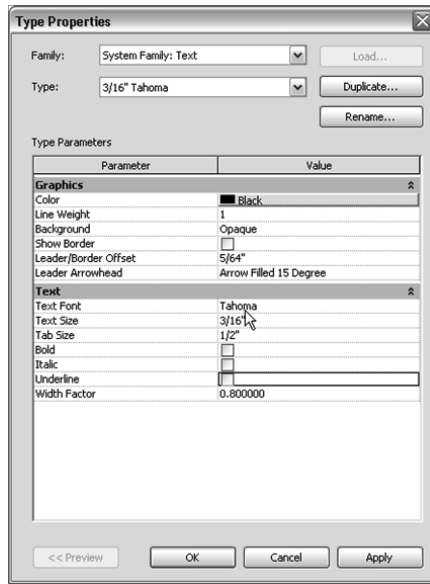


FIGURE 5.54: Changing the text values in the Type Properties dialog box

You've now successfully created a text style. (Of course, this large, nonuniform text isn't proper in this context.) You can use your new type easily.

1. Start the Text command.
2. In the Type Selector, verify that your new text is in the list.

Are You Experienced?

Now you can...

- ✓ add a multitude of different types of dimensions to your model simply by altering the options associated with the Dimension command
- ✓ equally constrain items in a model by adding a string of dimensions and clicking the EQ button
- ✓ use your dimensions as a layout tool, keeping the items constrained even after the dimension is deleted
- ✓ add text to a model by starting with either a leader or a paragraph of text
- ✓ change the text type and arrowhead type for leader text