# ARCHITECTURAL MODELING USING REVIT

ANNOTATION TOOLS

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DIMENSIONS

- Dimensions are used to convey the distance or angle between elements or parts of elements.
- In Revit, a dimension is a bidirectional annotation that essentially tags distance or size.
- This function means that you can edit the distance directly within the dimension string to move elements to a specific distance apart; likewise, the dimension updates automatically as the distance between elements changes.
- Dimensions are annotations, making them view-specific elements that appear only in the view where they're drawn.
- The Dimension tools are located on the Annotate tab.
- Like all annotations in Revit, dimensions adjust to the scale of the drawing.
- They will always appear at the proper scale in the view. If you change the view scale, the dimensions automatically resize.

There are various dimension tools in revit architecture as displayed in the screen
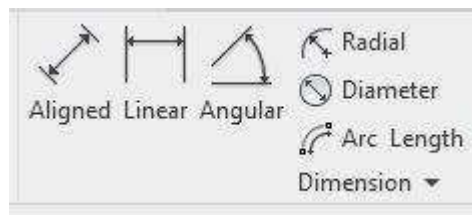
Let's see how to add a **linear dimension** to a drawing to measure between 2 points.
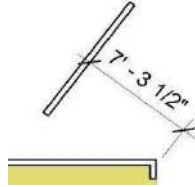
1. Click Annotate tab ➤ Dimension panel ➤ ⊓ (Linear).
2. Place the cursor at a reference point on an element, such as a wall or a line, or at the intersection of references, such as a join between 2 walls.
   The reference point highlights if you can place the dimension there. You can switch through the different reference points of intersections by pressing Tab.
3. Click to specify the reference.
4. Place the cursor on the desired location of the next reference point, and click.
   As you move the cursor, a dimension line appears. You can continue to select multiple references, if desired.
5. After selecting a second reference point, press Spacebar to align the dimension to the vertical or horizontal axis.
6. When you have reached the last reference point, move the cursor away from the last element, and click.

The dimension displays.

- **You can place aligned dimensions from an inclined wall to other walls or lines.**
  1. Click Annotate tab ➤ Dimension panel ➤ ✎ (Aligned).
  2. Move the cursor over the inclined wall.

3. Click to start the dimension.
4. Place the dimension between the arc wall center and any other component you wish to dimension.

- You can place angular dimensions in between two non-parallel walls or lines
    1. Click Annotate tab ➤ Dimension panel ➤ △ (Angular).
    2. Place the cursor on a component and click to create a start point for the dimension.
       Note: You can switch the reference point for the dimension between a wall face and a wall centerline by pressing Tab or from options bar
    3. Place the cursor on a component not parallel to the first, and click
    4. Drag the cursor to size the angular dimension

Similarly,

- We can add a radial dimension to a drawing to measure the radius of an arc.
    1. Click Annotate tab ➤ Dimension panel ➤ ↖ (Radial).
    2. Place the cursor on the arc and click.
    3. A temporary dimension displays.
       Note: You can switch the reference point for the dimension between a wall face and a wall centerline by pressing Tab or from the option bar
    4. Click again to place the permanent dimension.

- You can use a diameter dimension in a drawing to measure the diameter of a circle or arc.
    1. Click Annotate tab ➤ Dimension panel ➤ ⊘ (Diameter).
    2. Place the cursor on the curve of a circle or arc, and click.
    3. A temporary dimension displays.
       Note: You can switch the reference point for the dimension between a wall face and a wall centerline by pressing Tab or from the option bar
    4. Move the cursor along the dimension line, and click to place the permanent dimension.
    5. By default, a diameter prefix symbol displays in the dimension value.

- You can dimension arc walls or other arc elements to obtain the overall length of the wall.
    1. Click Annotate tab ➤ Dimension panel ➤ ⌒ (Arc Length).
    2. On the Options Bar, select a snap option.

For example, select Wall faces to have the cursor snap to the inside or outside wall face. The snap option aids in selecting the radial point.

    3. Place the cursor on the arc, and click to select the radial point.
    4. Select the end points of the arc, and move the cursor up and away from the arc.

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Note: If the arc ends for the arc length dimension are not visible or selectable, use intersecting reference planes to place the dimension.
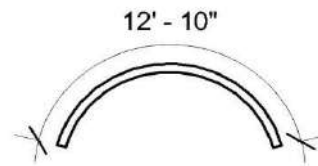


5. Click to place the arc length dimension.

SPOT ELEVATION

A spot elevation displays the actual elevation of a selected point. Use spot elevations to obtain points of elevation for ramps, roads, toposurfaces, and stair landings.

You can place spot elevations on non-horizontal surfaces and non-planar edges. You can place them in plan, elevation, and 3D views.

Procedure:
1. Click Annotate tab ➤ Dimension panel ➤ (Spot Elevation).
2. In the Type Selector, select the type of spot elevation to place.
3. On the Options Bar, do the following:
4. Select or check Leader.
5. Let's see Spot elevation without leader and with leader
6. If Leader is selected, optionally select Shoulder to add a bend to the spot elevation leader.
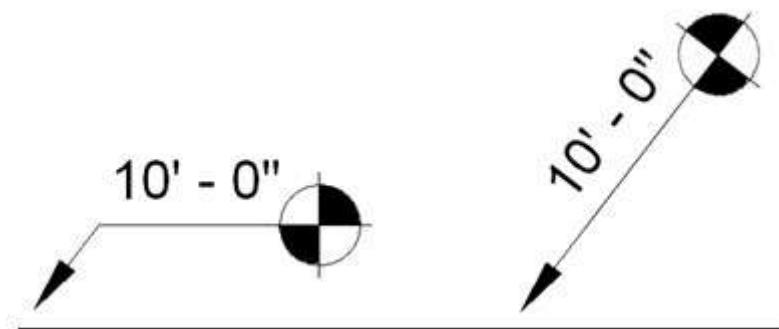
7. Spot elevation with leader shoulder and without leader shoulder
8. If you are placing a relative spot elevation, select a level for Relative Base.
9. Select an option for Display Elevations (enabled when you place a spot elevation in a plan view):
10. Actual (Selected) Elevation displays the elevation of the selected point on the element.
11. Top Elevation displays the top elevation of the element.
12. Bottom Elevation displays the bottom elevation of the element.

13. Top & Bottom Elevations displays the top and bottom elevations of the element.
14. Select an edge of an element, or select a point on a toposurface.
15. When you move the cursor over an element on which you can place the spot elevation, the value of the spot elevation displays in the drawing area.
16. If you are placing a spot elevation:
    a. without a leader, click to place it.
    b. with a leader, move the cursor away from the element, and click to place the spot elevation.
    c. with a leader and a shoulder, move the cursor away from the element. Click once to place the leader shoulder. Move the cursor again and then click to place the spot elevation.
17. To finish, press Esc twice.

SPOT COORDINATE

Spot coordinates report the North/South and East/West coordinates of points in a project. In drawings, you can add spot coordinates on floors, walls, toposurfaces, and boundary lines.

1. Click Annotate tab ➤ Dimension panel ➤ ⊕ (Spot Coordinate).
2. In the Type Selector, select the type of spot coordinate to place.
3. On the Options Bar, select or clear Leader. If Leader is selected, optionally select Shoulder to add a bend to the spot elevation leader.
4. If you want the elevation to display in addition to the spot coordinates, do the following:
   • On the Properties palette, click 🗗 (Edit Type).
   • Under Text, select Include Elevation.
5. Select an edge of an element or a point on a toposurface. When you move the cursor over an element on which you can place the spot coordinate, the spot coordinate value displays in the drawing area.
6. If you are placing a spot coordinate:
   • Without a leader, click to place it.
   • With a leader, move the cursor away from the element, and click to place the spot coordinate.
   • With a leader and a shoulder, move the cursor away from the element. Click once to place the leader shoulder. Move the cursor again and then click to place the spot coordinate.
7. To finish, press Esc twice.

SPOT SLOPES

A spot slope displays the slope at a specific point on a face or an edge of a model element. Objects using spot slopes most commonly include roofs, beams, and piping.

You can place spot slopes in plan views, elevation views, and section views.

You can choose from 2 spot slope types:
    Slope representation = arrow
    Slope representation = triangle

Procedure

1. Click Annotate tab ➤ Dimension panel ➤ ⌐ (Spot Slope).
2. In the Type Selector, select the type of spot slope to place.
3. (Optional) Change the following on the Options Bar:
   - For Slope Representation (enabled in an elevation or section view), select Arrow or triangle.
   - Enter a value for Offset from Reference.
     This value moves the spot slope closer to or further from the reference.
4. Click the edge or slope where you will place the spot slope.
5. Click to place the spot slope, either above or below the slope.
   When you move the cursor over an element on which you can place the spot slope, the value of the spot slope displays in the drawing area.

6. When you are placing a spot slope, you can also do the following:

   - Click the flip controls (⇕) to flip the spot slope dimension direction.
   - The slope representation has two representations: arrow or triangle. The same information exists in both representations although it displays differently. The triangle is not available for use in plan views.
7. To finish, press Esc twice.