Chief Architect
Architectural Home Design Software

Creating a Custom Arch Using a 3D Solid

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QUESTION

I would like to create a custom arch with a precise radius. What is the best way to do this?



ANSWER

The 3D Solid tool is a fast way to create custom 3D shapes; however, if you'd like to create a custom shape with arcs and precise dimensions, you may find it easier to use the CAD drawing tools to create a custom closed polyline, then convert it to a 3D Solid using the Convert Polyline edit tool.

To precisely define an arc

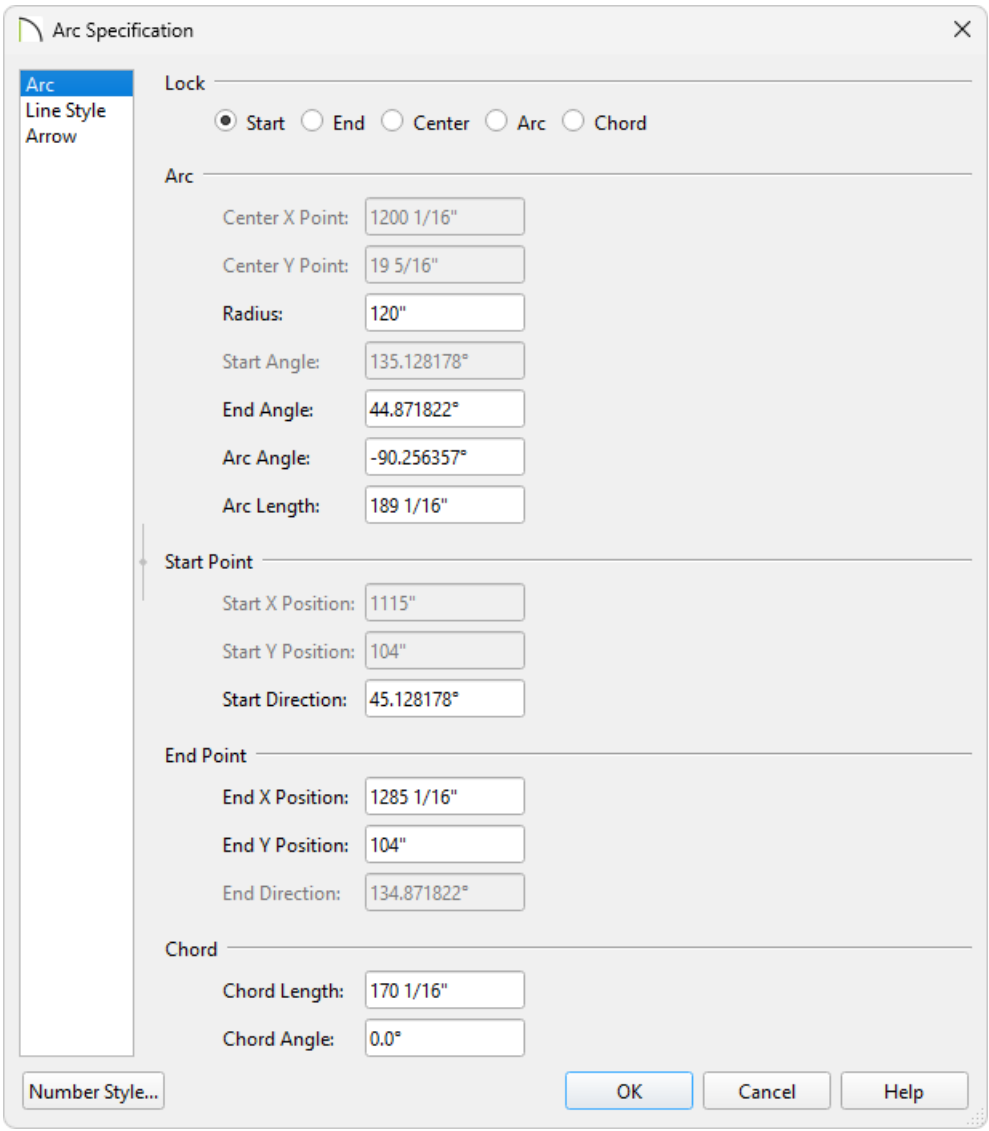
1. If you would like the curve of the arc to be oriented vertically, select **3D> Create Orthographic View> Cross Section/Elevation** . Otherwise, remain in floor plan view.

2. Select **CAD> Arcs> Draw Arc** from the menu, then click and drag an arc of the approximate size needed.



3. Click on the arc to select it, then use the **Open Object** edit tool.

4. On the Arc panel of the **Arc Specification** dialog, specify the desired attributes of the arc.



- The **Start Y** and **End Y** values should be the same; if they are not, lock either the **Start** or the **End** of the arc at the top of the dialog and change the value that is available for editing.

- With either the Start or the End still locked, specify the desired **Radius** of the arc, then press the **Tab** key on your keyboard to update the information in the dialog without closing it.

  In this example, a radius of 120" is used.

- Specify the desired **Chord Length**, then press the **Tab** key.

  In this example, we have chosen a value of 144" as the arc will be placed over a 12' opening.

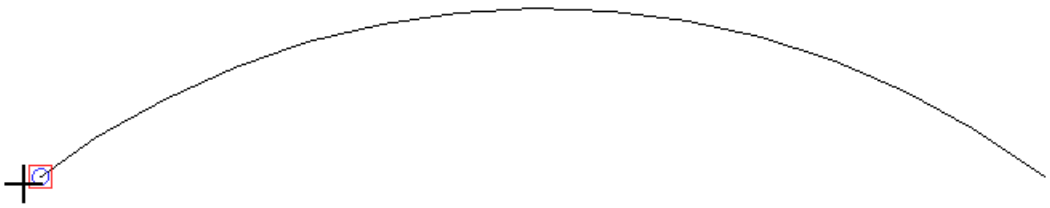
- Click **OK** to close the dialog and apply your changes.

To create a closed 3D Solid that includes the arc

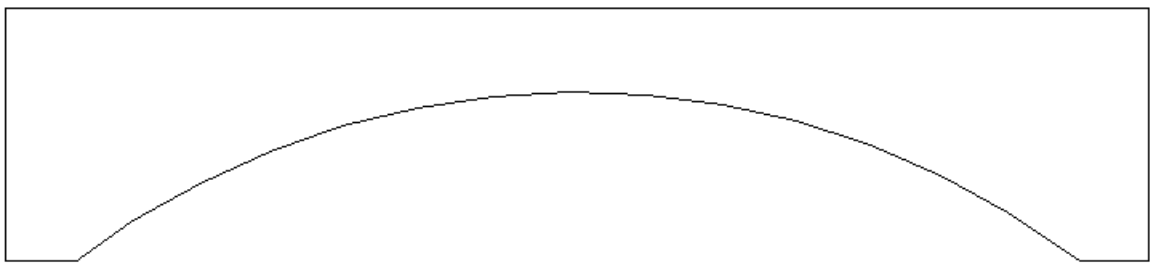
Once the arc is defined and locked, we can add CAD lines to create a closed polyline and then convert it to a solid. Taking advantage of some CAD editing options will help us do this effectively.

1. Click **Edit> Snap Settings** and make sure that **Object Snaps** and **Endpoint** snap settings are toggled on. This will allow us to precisely snap new lines to the ends of our arc.

2. Select **CAD> Lines> Draw Line** from the menu, then click and drag a line beginning at one end of the arc. Notice the square-shaped Endpoint snap indicator that displays where the line meets the arc.



3. Continue drawing and defining lines until you have created a closed polyline with the desired size and shape.

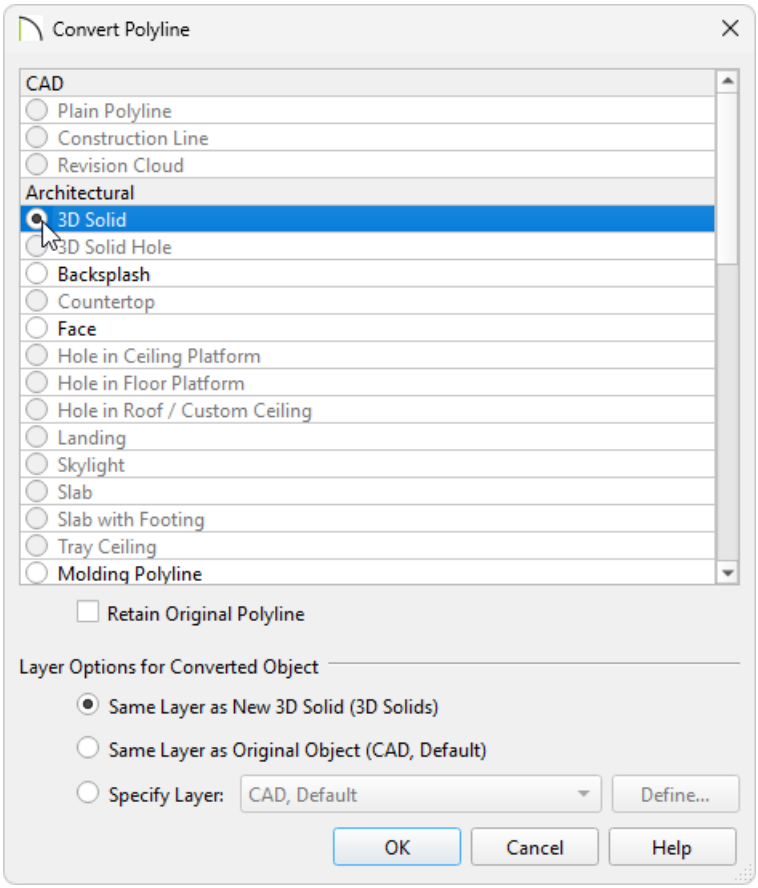


4. Using the **Select Objects** tool, click on the polyline near one of its edges to select it, then click the **Convert Polyline** edit button.

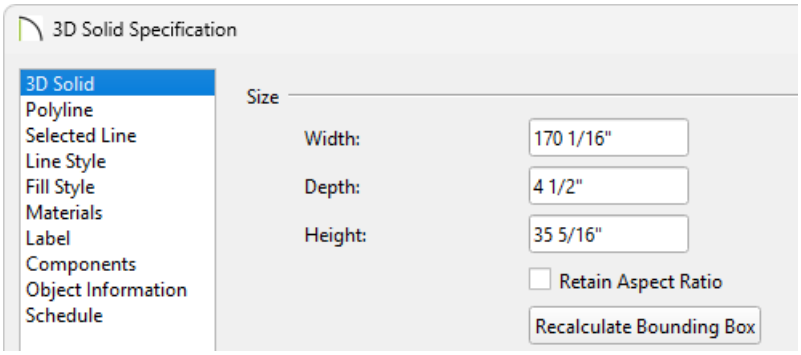
5. In the **Convert Polyline** dialog that displays, select the **3D** option, choose your preferred Layer Options, then click **OK**.

> **Note:** If the 3D Solid option is unable to be selected, a break in the polyline may have been created when the arc was edited. To reconnect the arc to the other

segments, click on it, drag it away from the rest of the polyline, then drag it back so that it reconnects.



6. In the **3D Solid Specification** dialog, which opens next:



   - On the GENERAL panel, specify the **Depth** for the solid.

     For the purposes of this example, we specified a value of 4 1/2", which is the same thickness as our Interior-4 wall type.

     > If the 3D Solid was created horizontally, such as in a floor plan view, different values may need to be adjusted to get the desired result.

- On the MATERIALS panel, select the **3D solid** component, click the **Select Material** button, then browse the library for a suitable material.

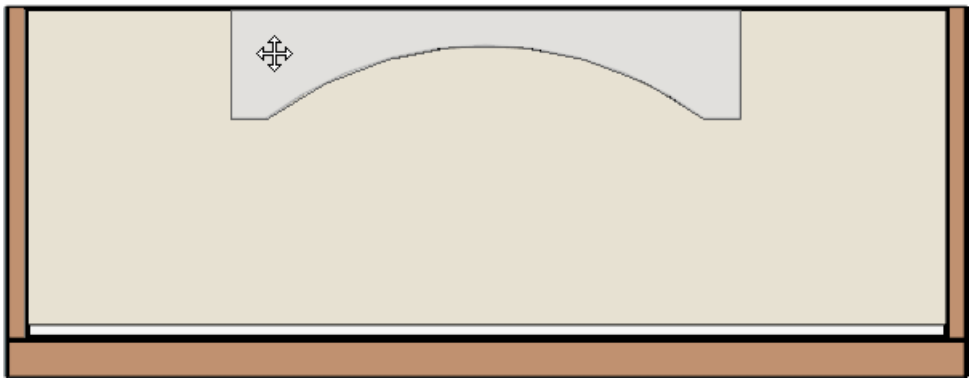
- Once all desired changes have been made, click **OK** to close the dialog(s).

7. The CAD polyline that you drew is now a custom 3D object.

   - In many cases, you will want to draw your 3D Solid in place; in this example, however, the solid was drawn in an empty space above the elevation to improve image clarity.

   - It can now be selected and moved into place using the **Move** edit handle.





   - Hold down the **Ctrl/Command** key on your keyboard to move an object such as the 3D Solid through obstructions such as the ceiling as it's moved into place.

   - If you'd like to center the solid on a particular wall, click on the solid to select it, select the **Center Object** edit button, then click on the wall once the perpendicular guidelines appear.

8. Create a **Camera** view to see the results.

You can use the Trim tools to create manual casing around the custom shaped arched opening if you wish. The Trim tools can be located by navigating to Build> Trim from the menu.

Related Articles

- Adding a 3D/Polyline Solid to the User Catalog (/support/article/KB-00035/adding-a-3d-polyline-solid-to-the-user-catalog.html)
- Converting Connected CAD Segments into a Polyline (/support/article/KB-00171/converting-connected-cad-segments-into-a-polyline.html)
- Modeling Custom 3D Objects (/support/article/KB-00761/modeling-custom-3d-objects.html)
- Using the Fillet and Chamfer Edit Tools (/support/article/KB-00389/using-the-fillet-and-chamfer-edit-tools.html)

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