

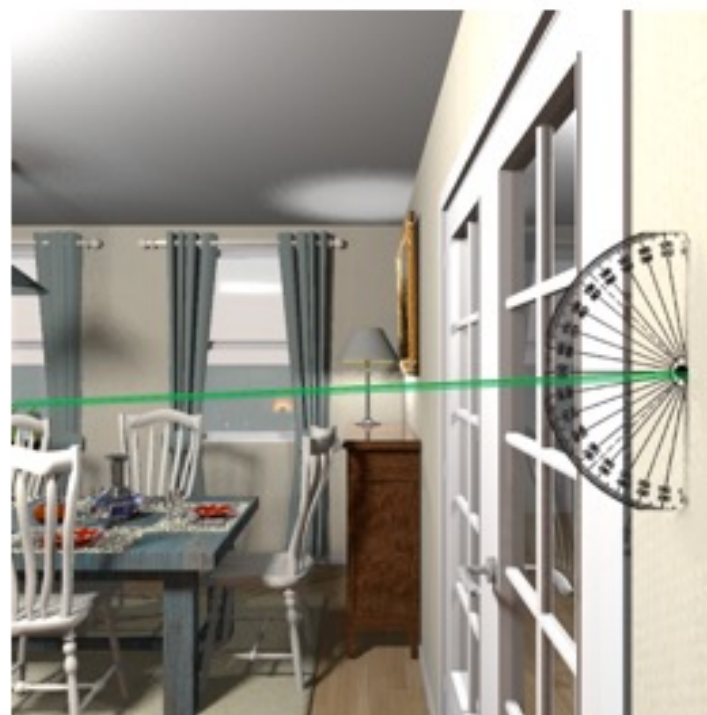


SHOOTING RECONSTRUCTION IN SWEETHOME3D®

Using trajectory rod in shooting scene.

Visualizing trajectories in scene context is key to understanding what could or could not have occurred during a shooting incident.

A bullet defect was in the north living room wall, 9'11½" from the east wall and 4'9½" above the floor. The trajectory was 3° upward and 7° to left-to-right (to east).

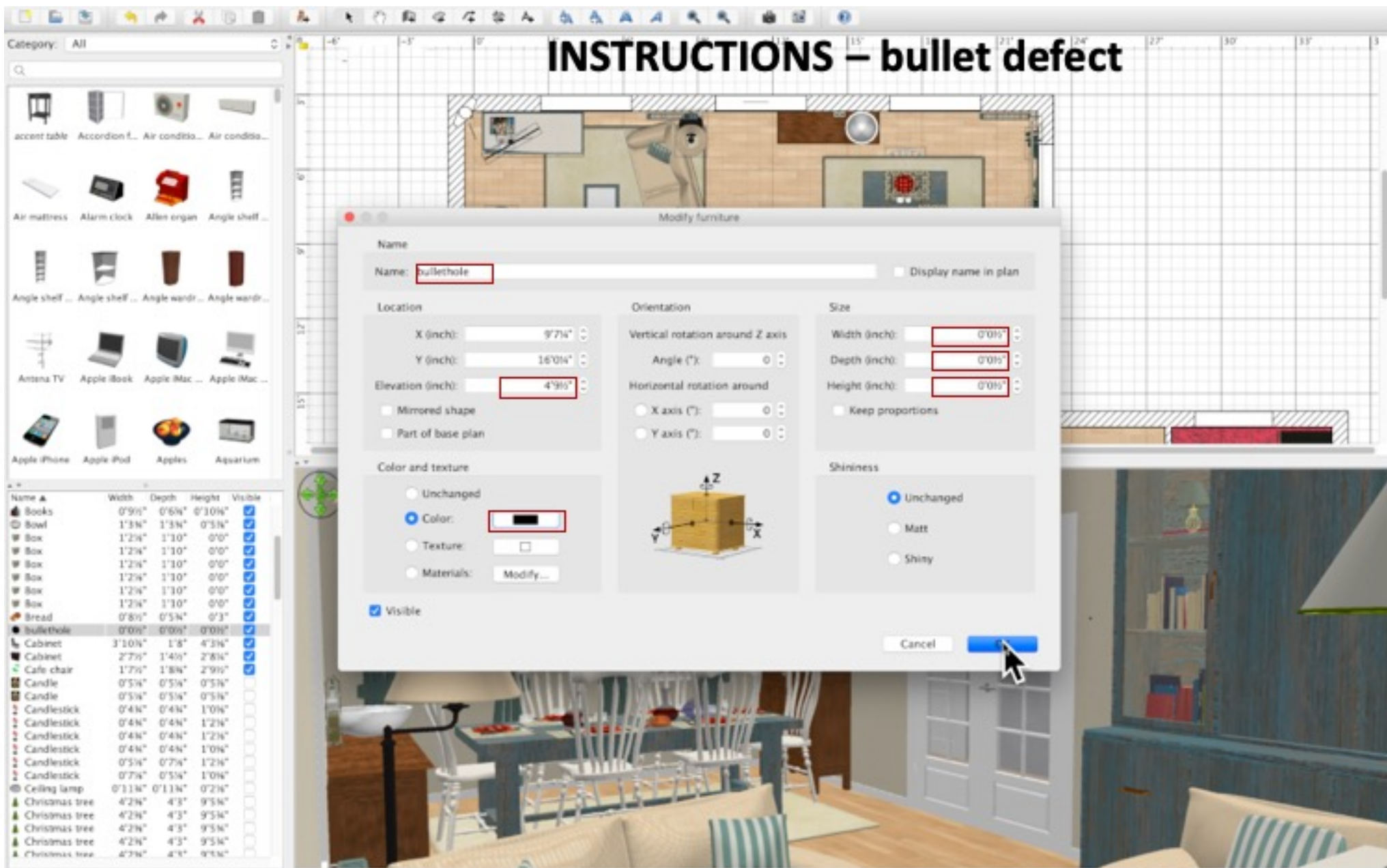




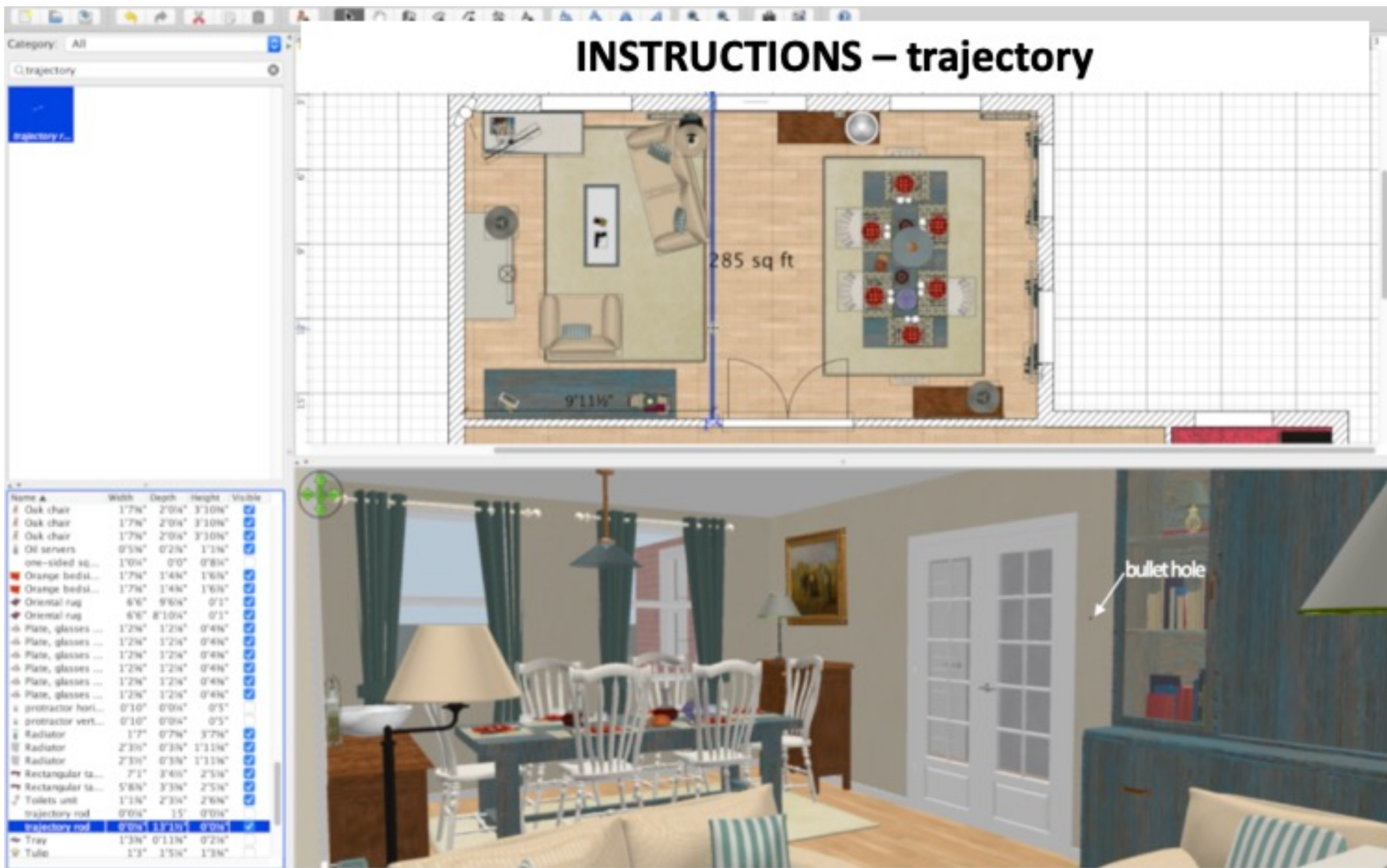
1. Locate the bullet defect in your scene.
2. Add an object to represent the bullet defect.
3. Add a trajectory rod, set the slope of the rod, then set the location of the rod.



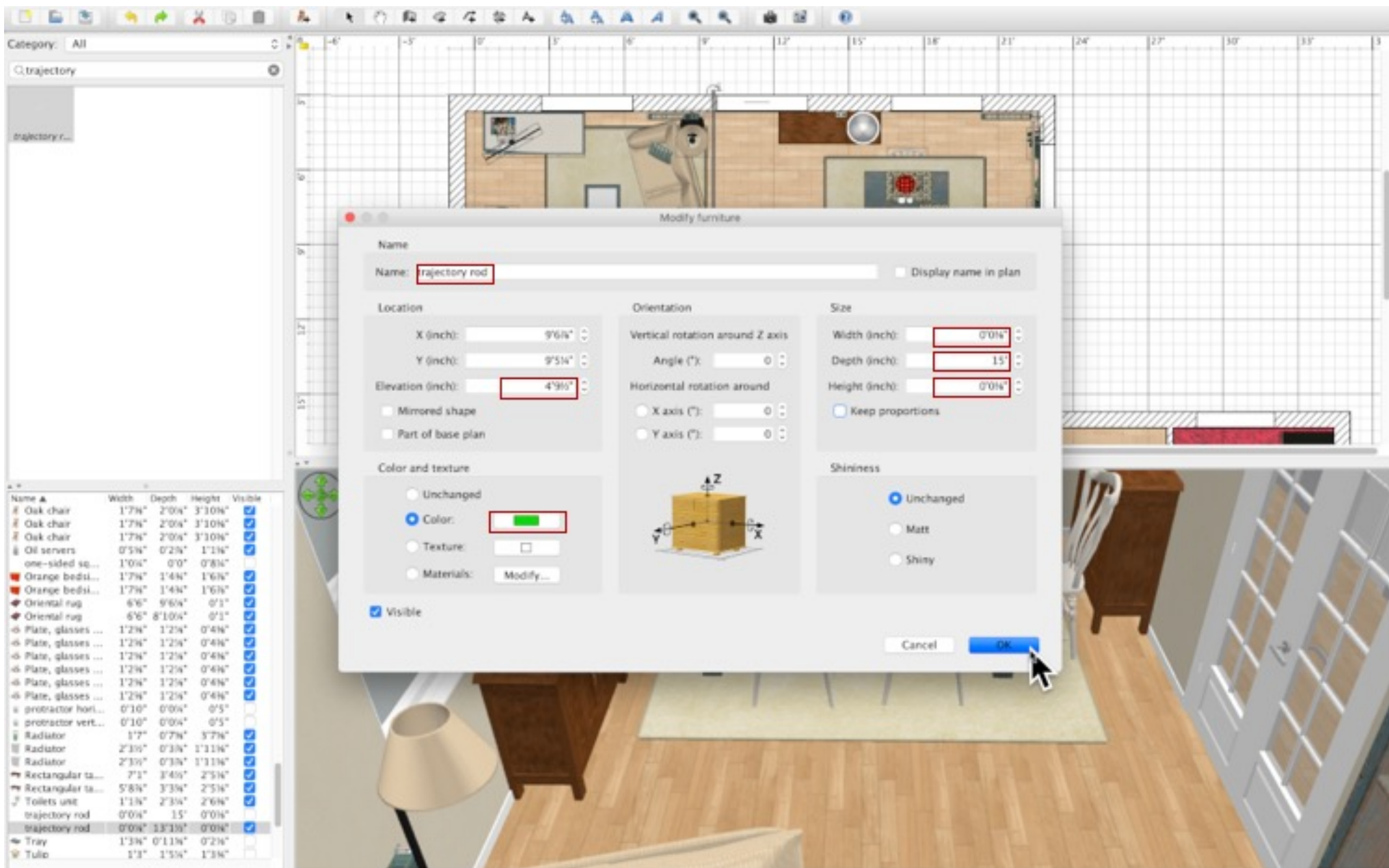
Add a ball (basketball or soccer ball) to represent the bullet defect.
Position the ball at the measured horizontal distance from the west wall.



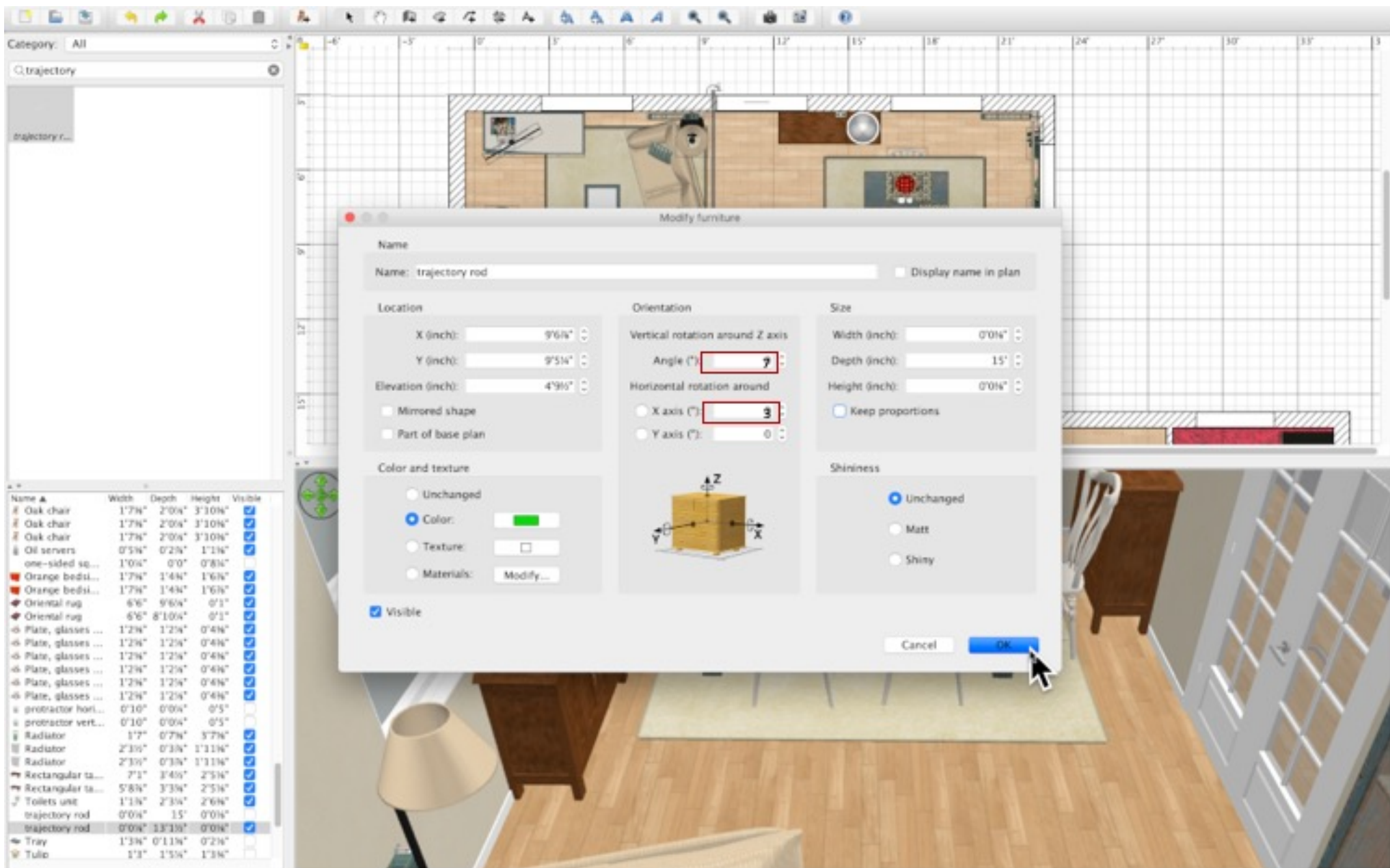
Adjust the name, size, color, and elevation.
 The elevation is the vertical distance from the floor.
 "OK"



Add a trajectory rod to your scene.
Position the rod at the measured horizontal distance.

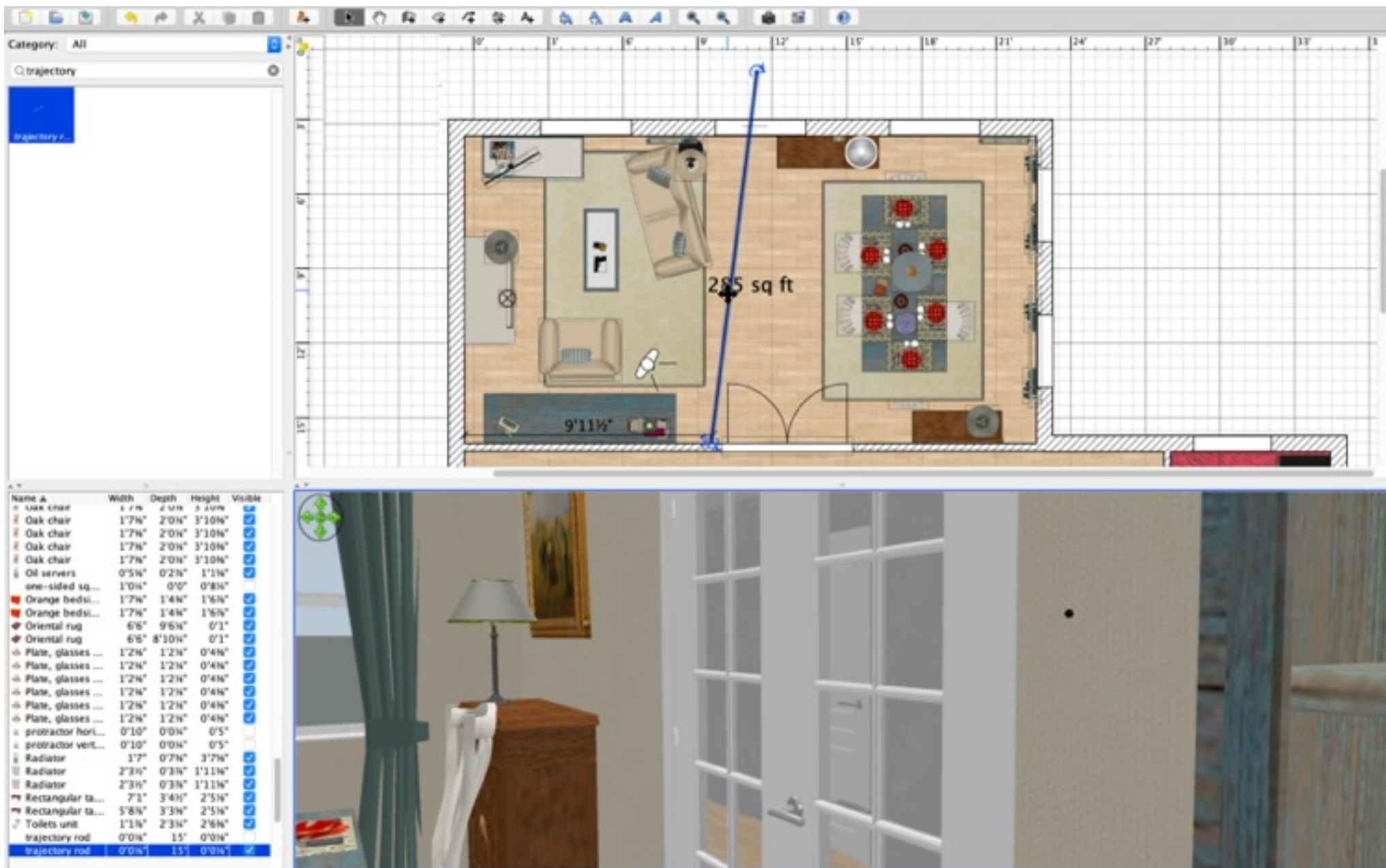


Double-click on the trajectory rod to open the 'Modify furniture' window. Adjust the elevation, size, and color.



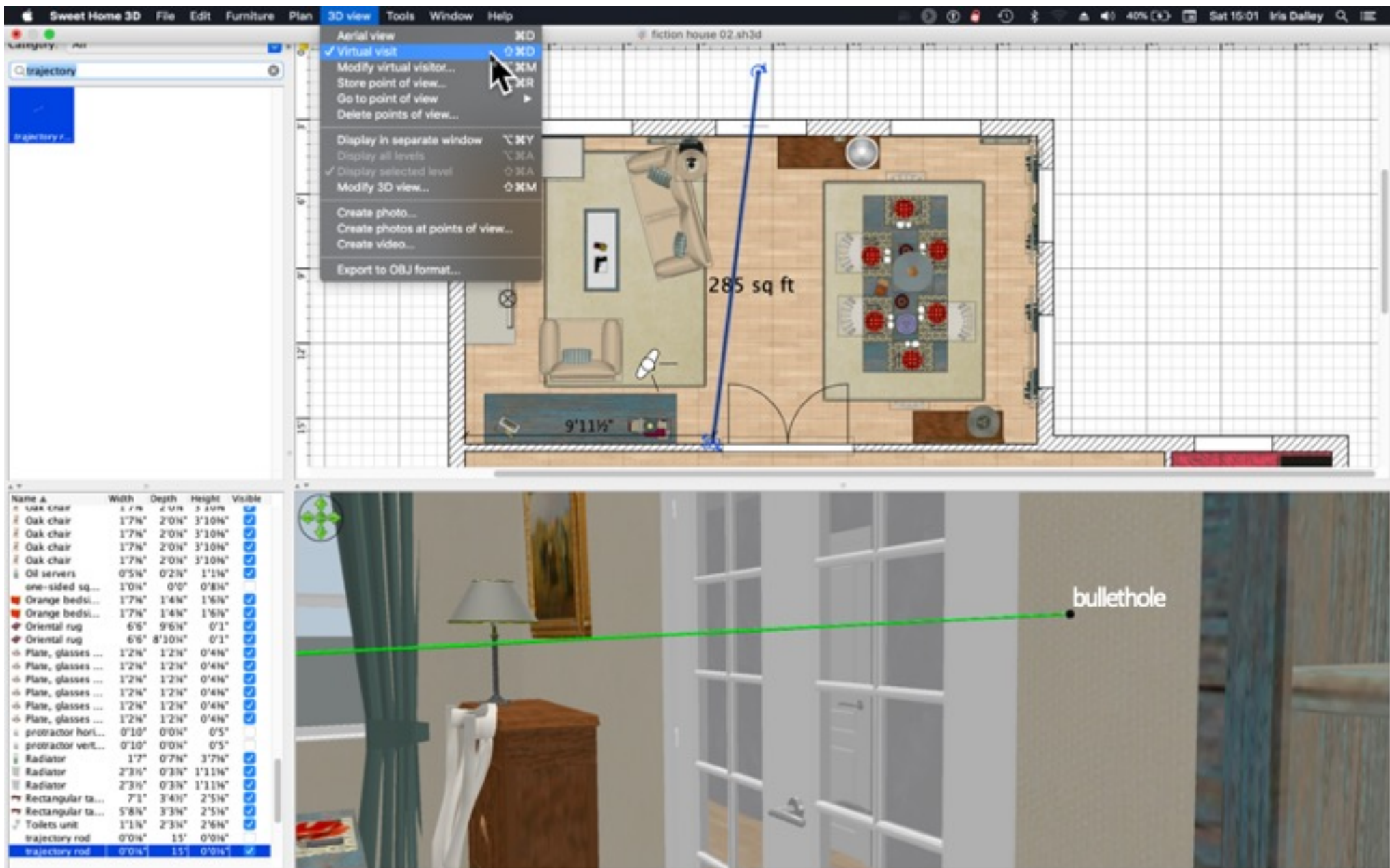
NOTE: The trajectory rod was made from a vertical cylinder rotated on the Z-axis 90° to be horizontal, exported as an .obj, and imported as a new model (horizontal trajectory rod). The orientation (X,Y,Z) of the trajectory rod is rotated from the original. The leading end (impact point) of the rod is to the north. The horizontal angle is 7° northeast.

Set the orientation of the rod based on the measured trajectory angles. "OK"

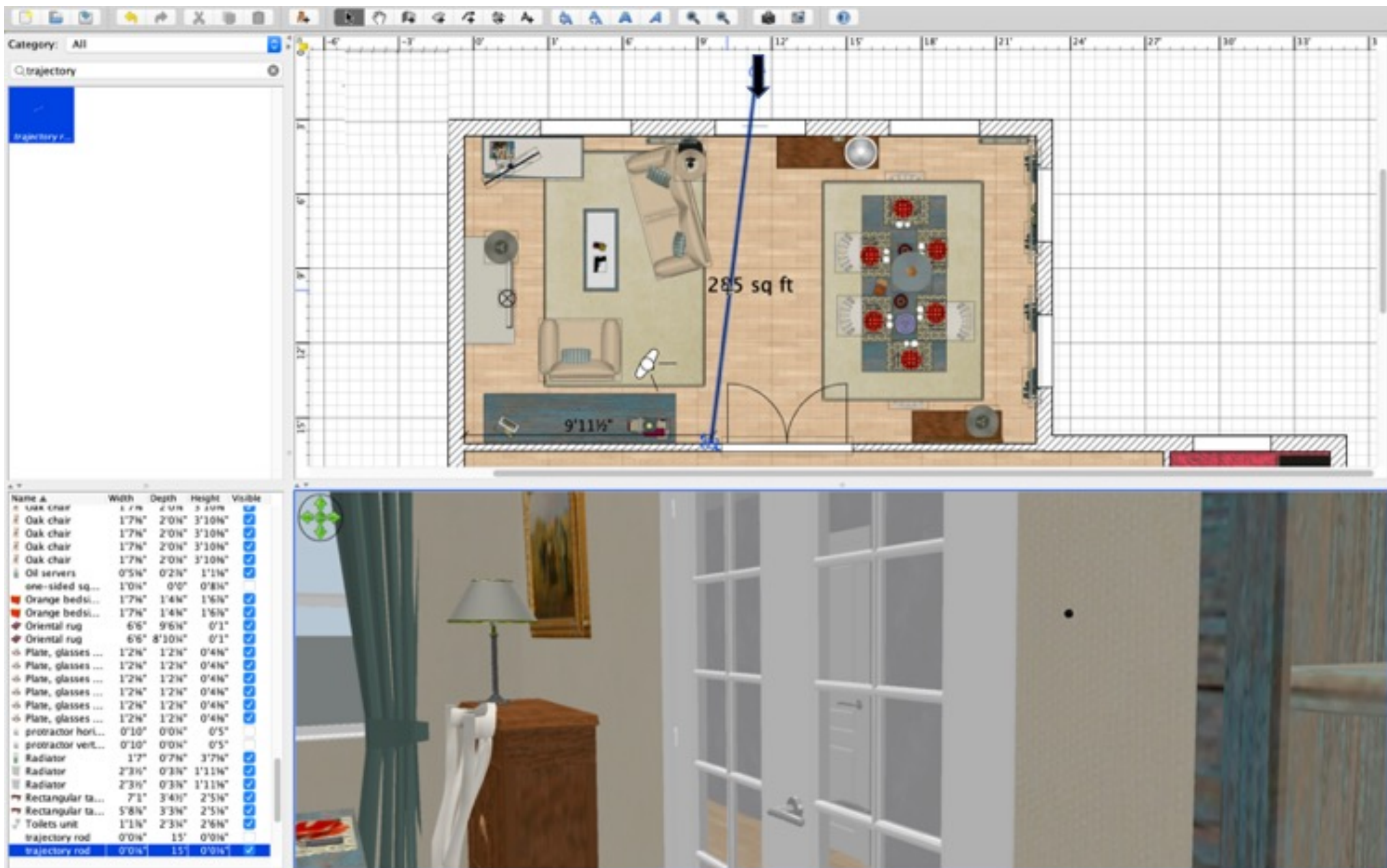


The rod rotates from its center. The rod location will have to be re-set after rotating on its axes.

Use the  to drag the rod horizontally to the measured distance from the east wall.

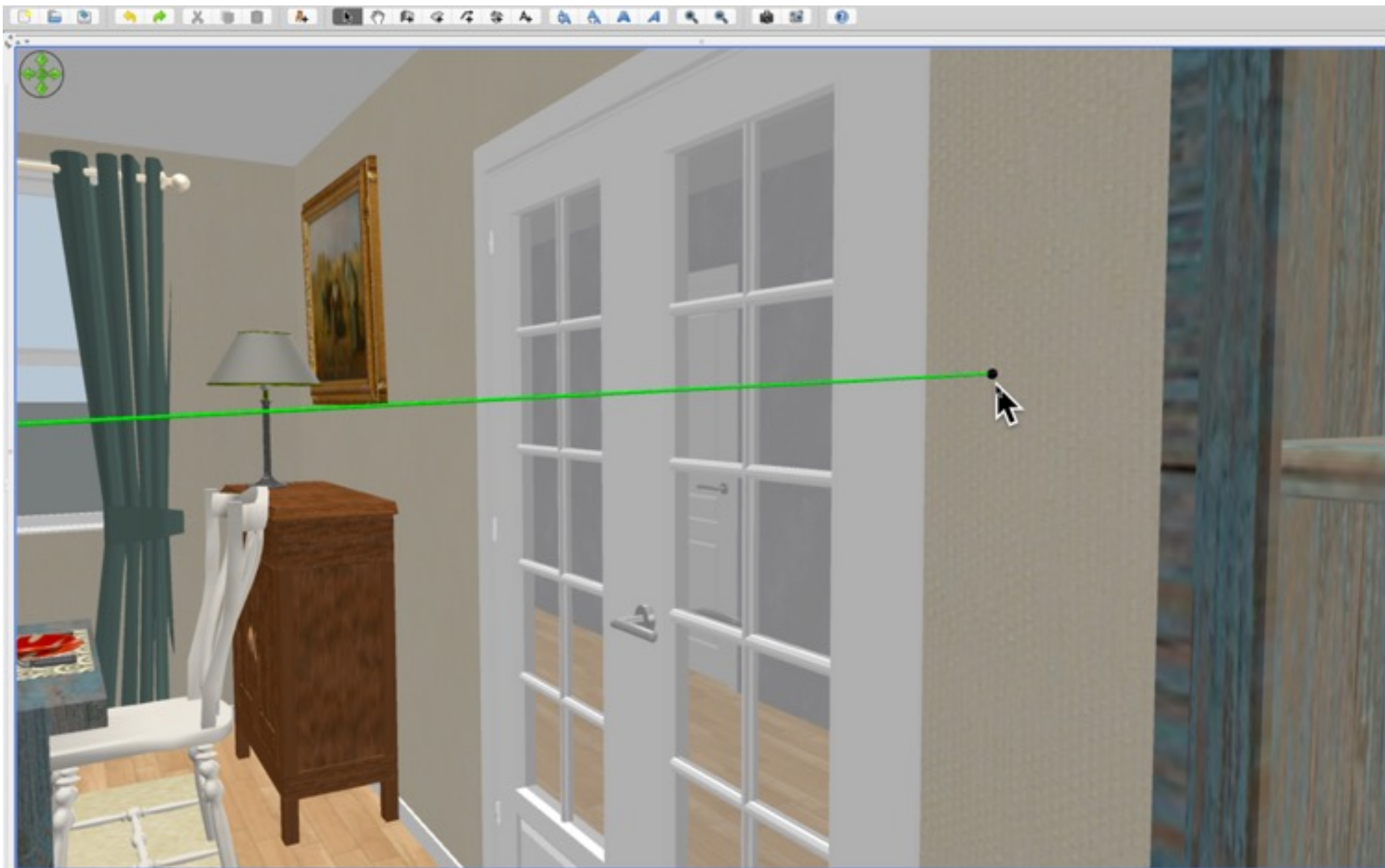


To adjust the rod height, position the '3D / Virtual visit' view so that the 'bullethole' is clearly visible in the 3D window.

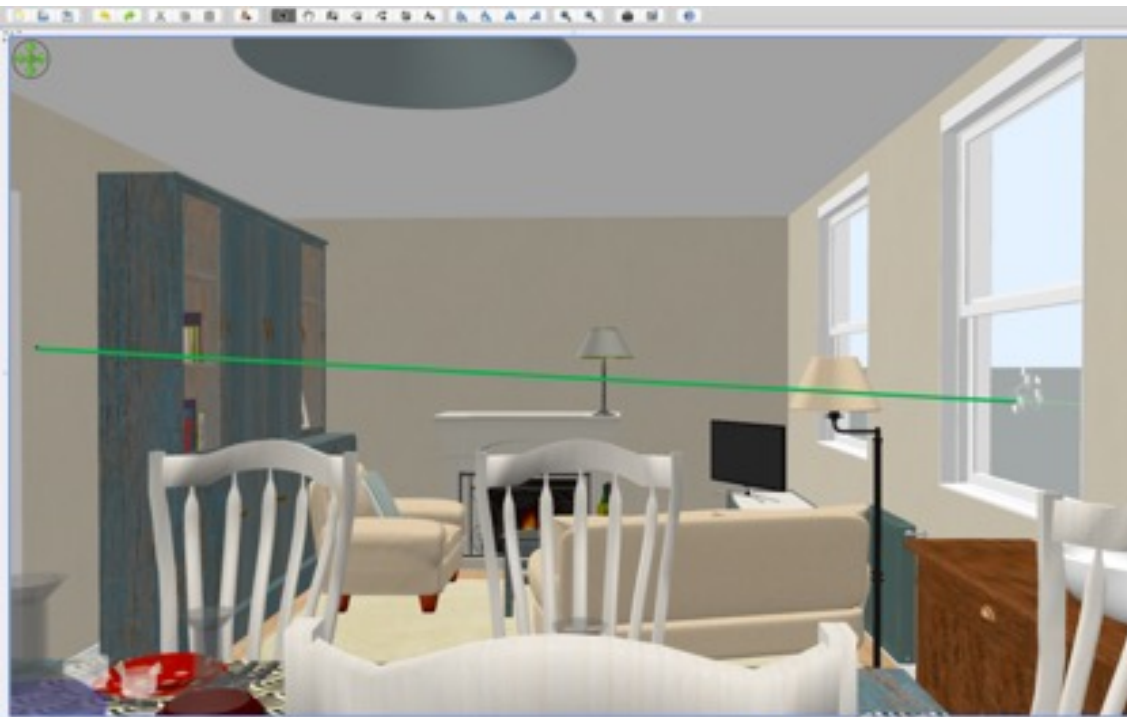


Move the cursor over the end of the rod until the ↓ icon is visible.

Press & hold the left mouse button and drag the rod (up or down) until the end of the rod is at the bullethole.

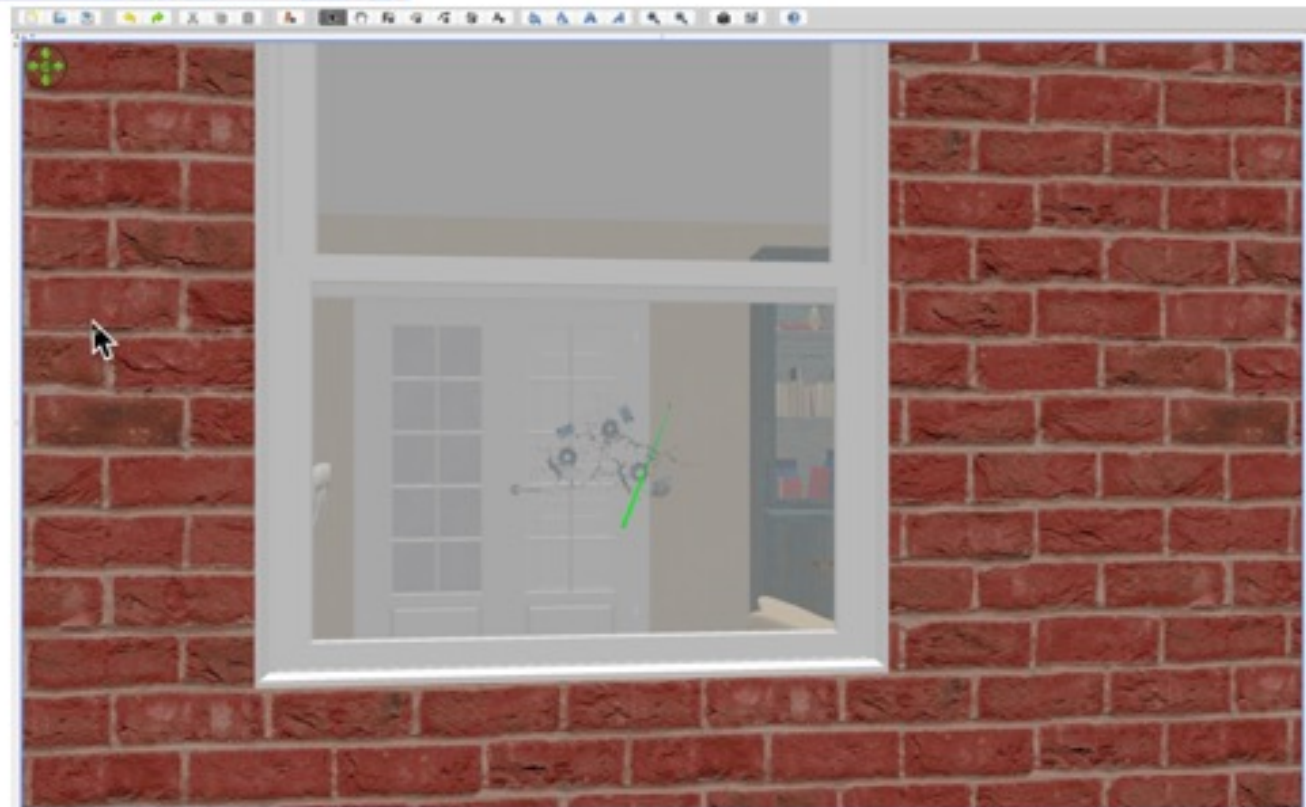


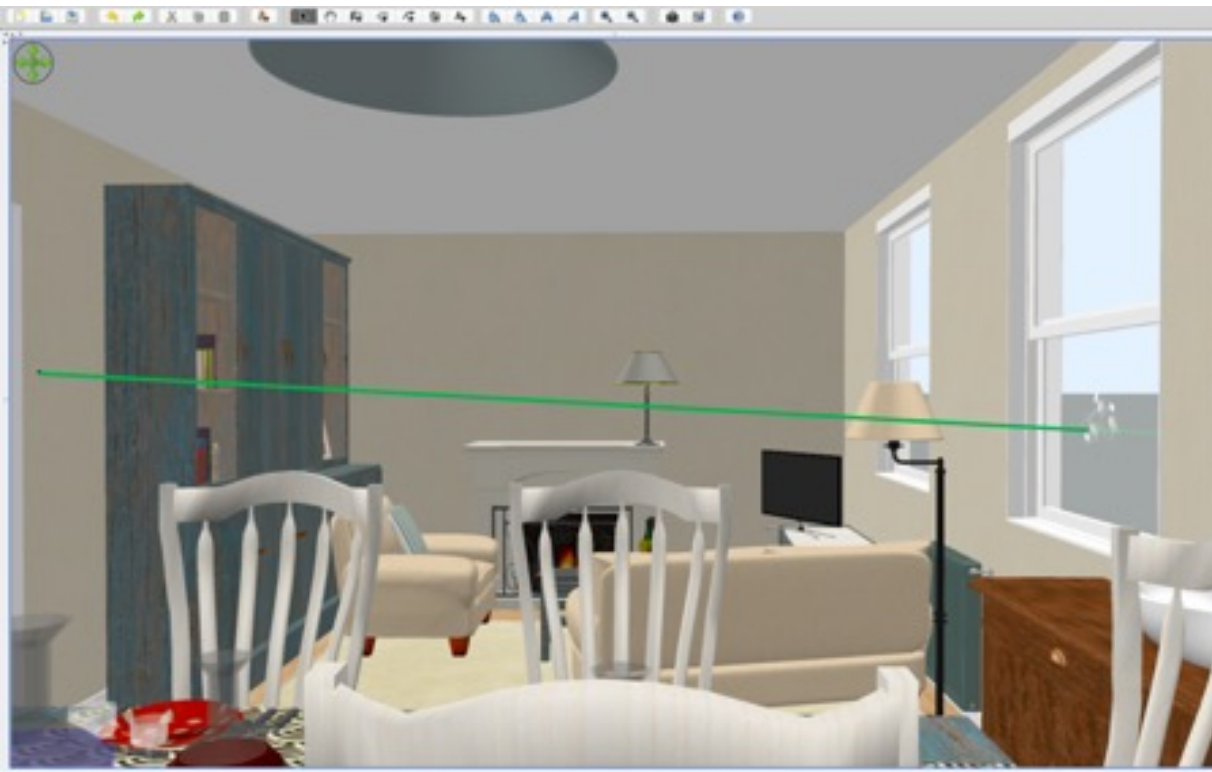
3D virtual view of trajectory rod in bullethole in north wall.



The trajectory is visualized in the scene, ready to be analyzed in context of other evidence in the scene.

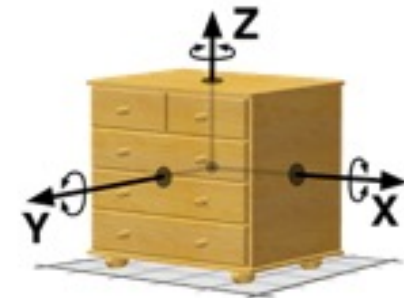
In this example, a shot fired from outside, through the window, struck the north wall.





In the example above, the vertical angle and horizontal angle are both positive numbers.

The orientation numbers span from 0° to 360° (no negative numbers).



To change the vertical angle from 3° upward to 3° downward, move the orientation in the opposite direction $360^\circ - 3^\circ = 357^\circ$

To change the horizontal angle from 7° to the right (northeast) to 7° to the left (northwest), $360^\circ - 7^\circ = 354^\circ$

Work can be checked by using a protractor model in the scene.