**Homework 7 Problem 7**

The problem in this SolidWorks simulation step-by-step is from the homework 7 problems as below:

The W10 × 15 cantilevered beam is made of A-36 steel and is subjected to the loading shown. Determine the displacement at B and the slope at B.

Chart, diagram

Description automatically generated

With the following solution:

Table

Description automatically generated

Compared to this problem, students should determine the deflection at point B by replicating the conditions in the figure.

To answer this question, we have created a SolidWorks model with dimensions exacting that of the above problem with a few assumptions such that the model is a 3D rather than a 2D problem as in here. Using SolidWorks statics simulations, we can determine the displacement.

1. Download the HW7P7 folder and unzip the contents (Or open the file using Citrix).
2. Make sure that the Simulations tab is visible in your SolidWorks window. Right click the tool bar at the top of your SolidWorks, go to the Tabs option, and ensure that SOLIDWORKS Add-Ins is checked.
3. Open a new simulation study and select the static option with default settings.
4. Fix the geometry on one side of the I-beam that is affixed to a wall in the figure.

Graphical user interface, application

Description automatically generated

1. Add a force of 6 kip in the center of the top at point B and a force of 4 kip in the center of the top at the center of the length using the point annotation method or the coordinate system annotation method.

Graphical user interface, text, application

Description automatically generated

1. Apply the A36 Steel material to the beam.

Graphical user interface, text, application

Description automatically generated

1. Apply a mesh to the model with the default settings, ensure that all components have a check mark next to them.
2. Run the simulation.
3. Probe for the deflection along the edge to determine the displacement at the end.

Chart, line chart

Description automatically generated

Compare the resulting deflection to the one calculated in your homework.