

CENTRAL WASHINGTON UNIVERSITY,
IET 265
ENGINEERING DESIGN USING SOLIDWORKS

INSTRUCTIONS FOR EXERCISE E 5.7, THE PIPE FLANGE, IN PROJECT 5 IN THE ED BOOK.

This exercise follows the bolt hole pattern requirements for a Class 300 Pipe Flange.

Assignment Requirements:

Units: Inches, precision to 4 significant digits

Material: Ductile Iron

Pipe Outside Diameter with a limit tolerance of 4.740 to 4.860 inches (dimension to the average value)

Pipe Wall Thickness: 0.260 inches

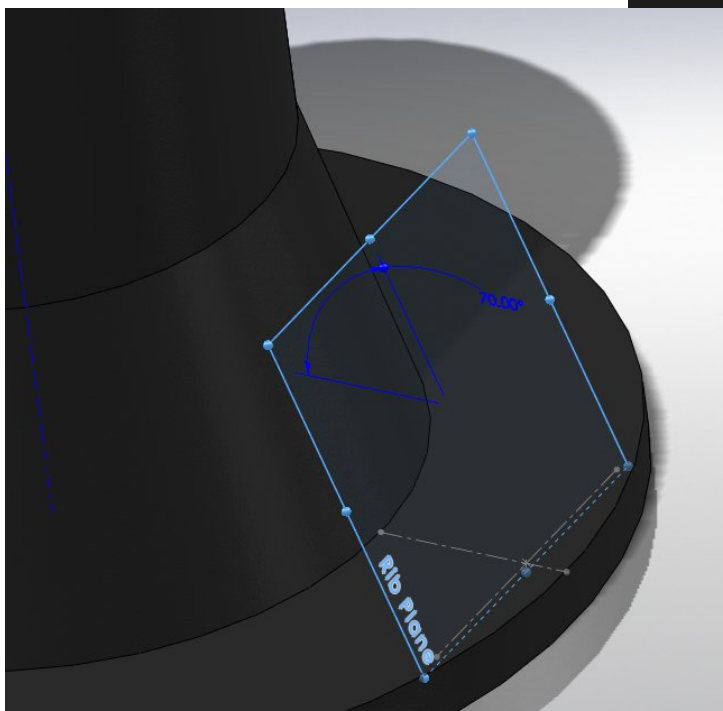
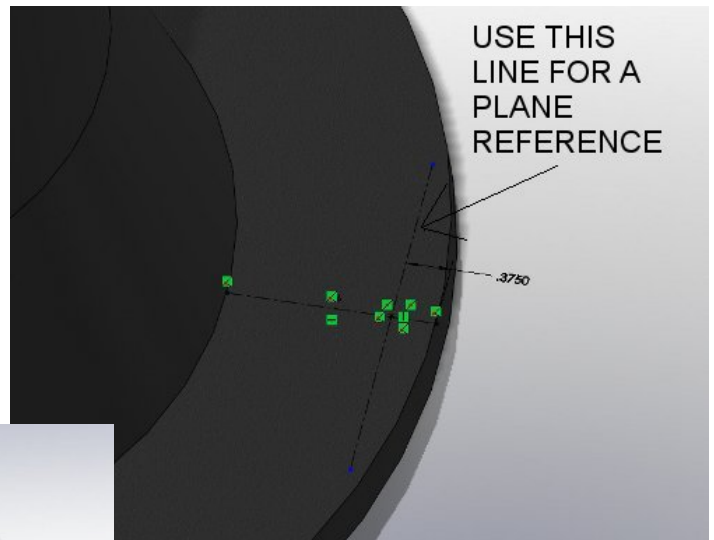
Total Height (including the flange): 12 inches

Flange extends 2.500 inches beyond the outer edge of the bottom of the Angled Collar and is 0.500 inches thick

Angled Collar is 0.750 inches wide on the bottom of the feature and is 3 inches in height when measured from the top surface of the flange (revolve feature)

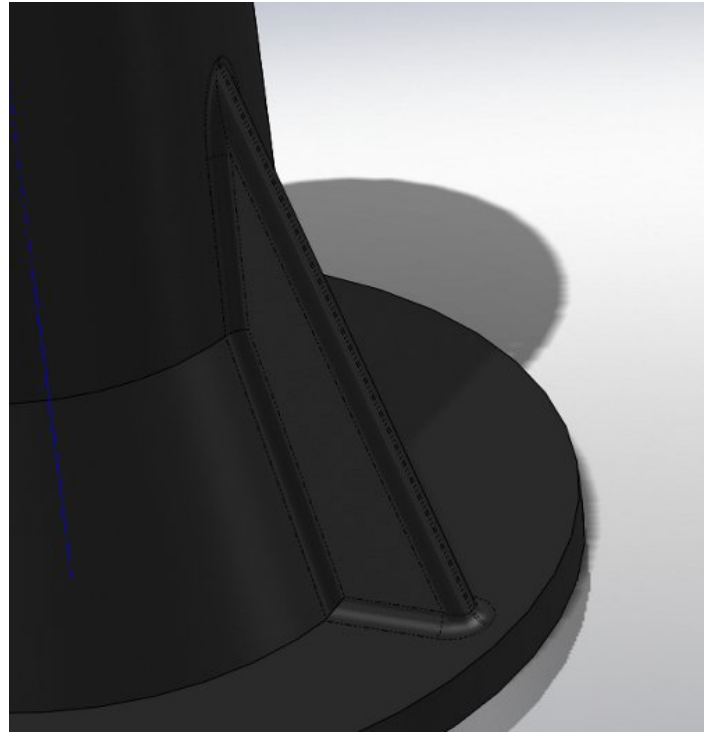
Additional procedures:

1. insert a Plane as Reference Geometry by creating a line similar to the one in the sketch shown (sketched on the top of the flange) as the first plane reference and the Top Plane as a second plane reference. Make the angle from the Top Plane 70 degrees. The dimension shown in the image is from the edge of the flange to the reference line and is 0.375"



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2. Install a Rib feature on this plane so that it intersects the Pipe, Angled Collar and Pipe Flange. The rib is 0.375 inches thick with a 5 degree draft angle with 0.1875 inch fillets on all Rib edges. Pattern the Rib around the center of the pipe to four instances. Refer to the image nearby.



3. Insert 8 Hole Wizard bolt holes. Through All, evenly spaced along the flange, equal spacing from each other and equal distance from the Ribs. Hole size is 0.875 inches on a bolt circle diameter of 7.875 inches.

