List 9

Task 1

According to the dimensions shown in the drawing below, prepare a model of a vertical pressure vessel, which is supported on three steel feet anchored to the ground. Assume that the structure is made of structural steel (Young's modulus E = 200 GPa; Poisson's ratio υ = 0,3), and the internal pressure acting on the entire internal surface is: p_1 = 0,6 MPa. For the analyzed structure, determine the total displacements and the reduced stresses according to the Huber-von Mises hypothesis. What should be the thickness of the walls of the individual elements of the vessel so that the stresses do not exceed 50 MPa?