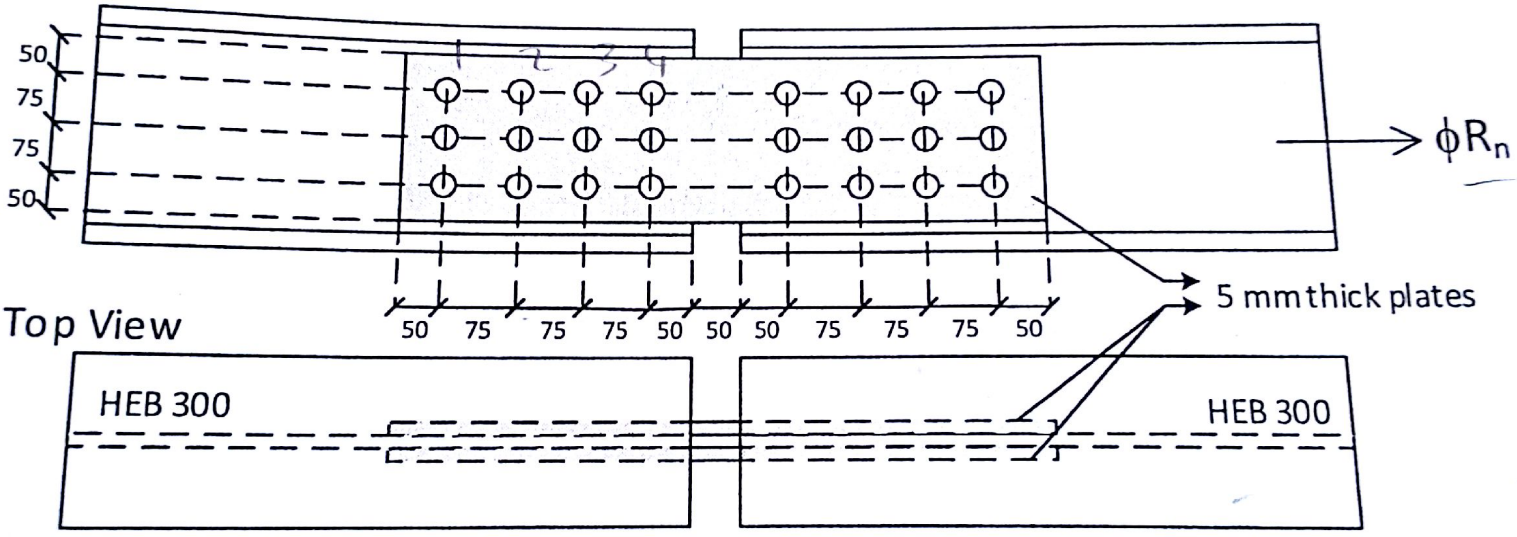
4. For the bearing type connection shown below, determine the connection's tensile force capacity (ϕR_n) based on bolted connection limit states only. The HEB 300 members and 5 mm plates are made of S235 (F_y (σ_y) = 235 MPa, F_u (σ_u) = 380 MPa) class steel and S275 (F_y (σ_y) = 275 MPa, F_u (σ_u) = 430 MPa) class steel, respectively. All bolts are M24, Grade 4.6 with standard holes. Threads are excluded in shear design calculations. Use LRFD.

Side View



$\sigma_u = 400$ MPa

$\sigma_y = 0.6 \times 400 = 240$ MPa

A = 4

ear bearing

= $0.563 \times 400 \times 452 = 101.8$ kN

$R_n = 0.25 \times 101.8 = 76.3$ kN ✗ double shear

er plate

t_{min} (11,

t =