

Assignment of steel

section-2 A

Question-1. investigate the safety of a lap joint connecting two plates to the following particulars: the plate are 12 mm and 15 mm thick. Each plate is 75 mm wide, factored load = 75 kN , USE 16 mm diameter bolts of grade 4.6 and plate of grade 410.

Question-2. Determine the design strength of a 22 mm diameter bolt for the cases given below

- a) Lap joint
 - b) Single cover butt joint with 12 mm cover plate
 - c) Double cover butt joint with 10 mm cover plates.
- The plate is 16 mm thick and bolts are of grade 4.6

Question-3. Two plate 250 mm X 8 mm and 250 mm X 16 mm are to be connected in a double cover butt joint with 16 mm diameter bolts. The cover plates are 6 mm thick. The factored tensile force on the connection is 400 kN. Design the connection?

Question-4. Find the efficiency of a double bolted lap joint connecting 2 plates of 8 mm thickness with 20 mm diameter 4.6 grade bolts at a pitch of 75 mm.

Question-5. A tie in a bridge truss consists of a flat 180 mm wide and 20 mm thick and is bolted to a gusset plate of the same thickness by a double cover butt joint with 20 mm diameter bolts as shown in fig. find the design transmission force through the member. Find also the efficiency of the member?

Question-6. Fig shows a hanger connection carrying a factored load of 250 kn. Investigate the safety of the following

- 1. The 160 mm X 20 mm hanger plate
- 2. The two 30 mm diameter bolts
- 3. The 250 mm X 160 mm X 30 mm plate.

Question-7. A line shaft transmits a load of 25 kN at an eccentricity of 500 mm across a bracket plate bolted to a stanchion. Two row of bolts 100 mm apart are provided with five bolts per row. The pitch of bolt in each row is 60 mm. find the greatest force induced in any bolt.

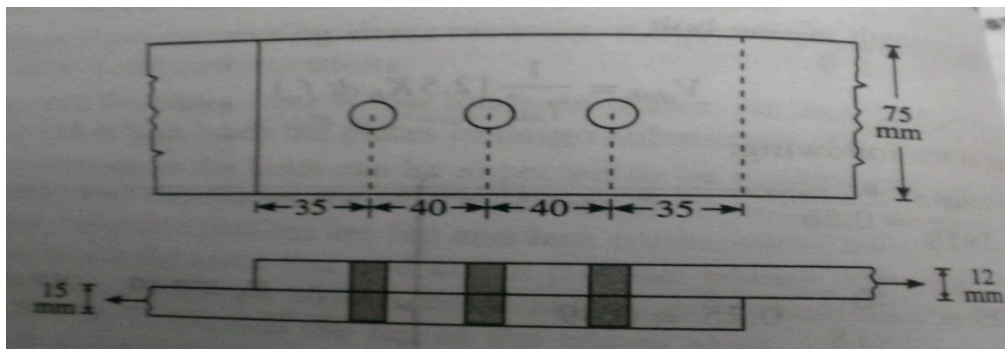


Fig-1



Fig-2

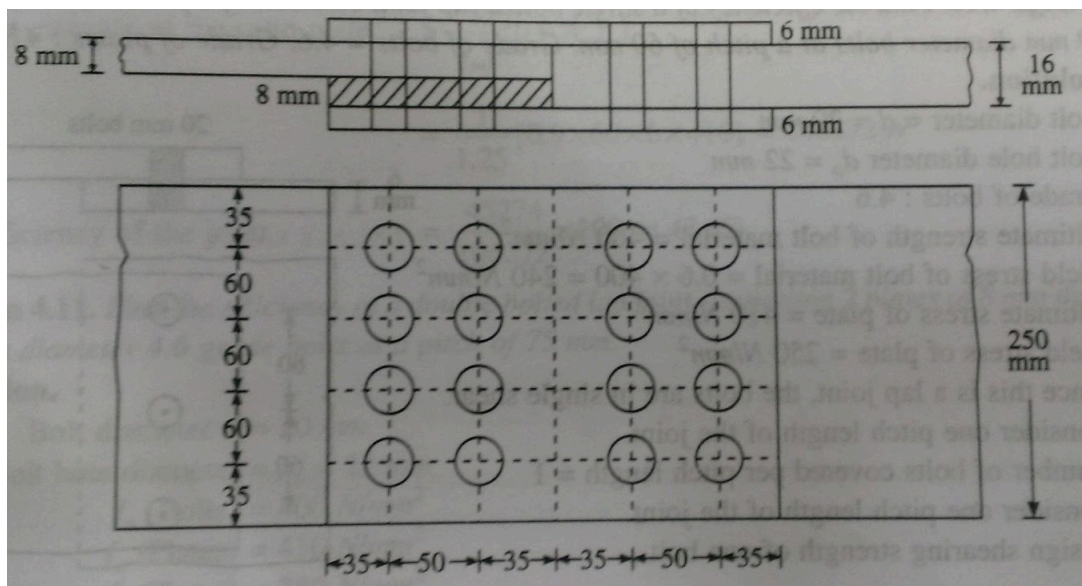


Fig3

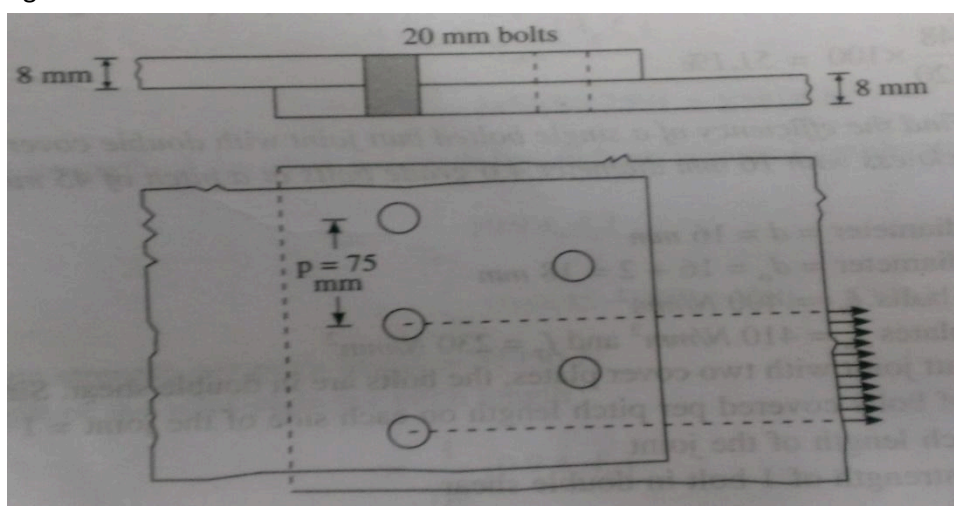


Fig.4

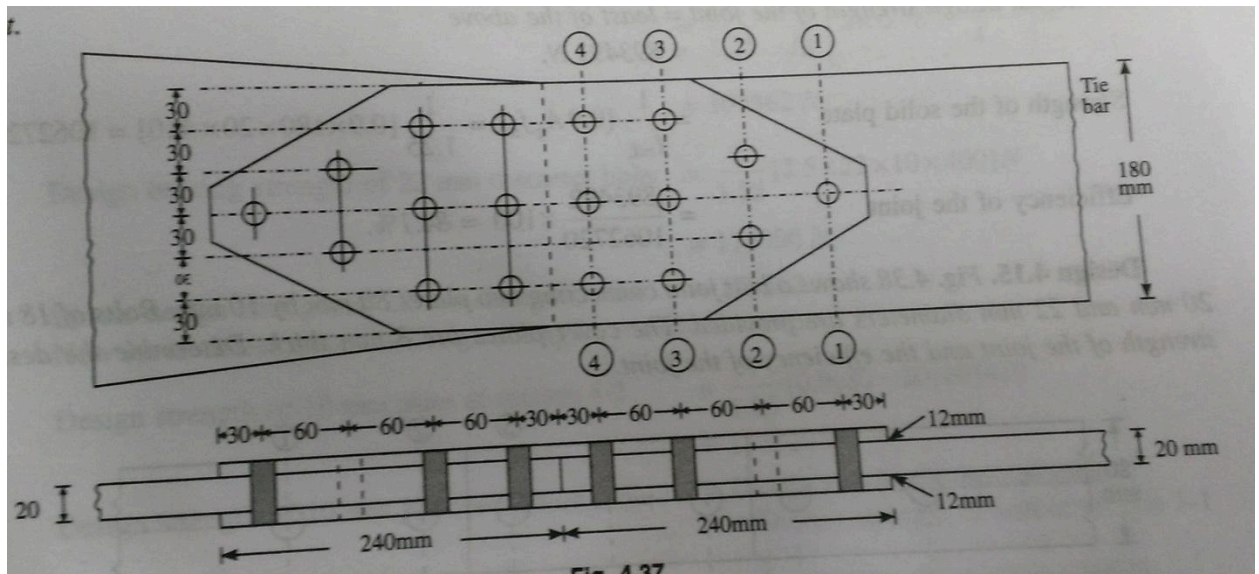


Fig5

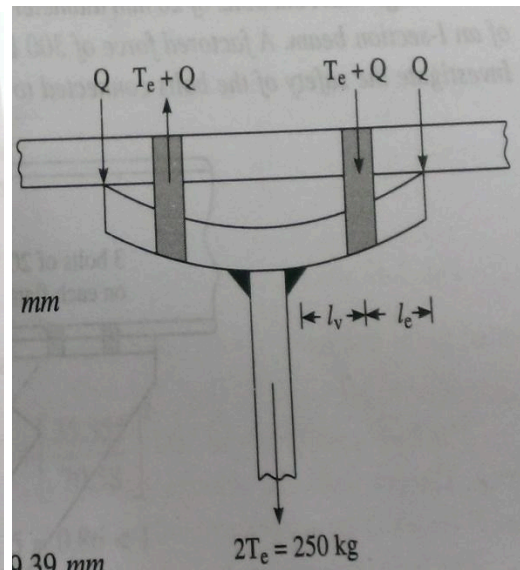
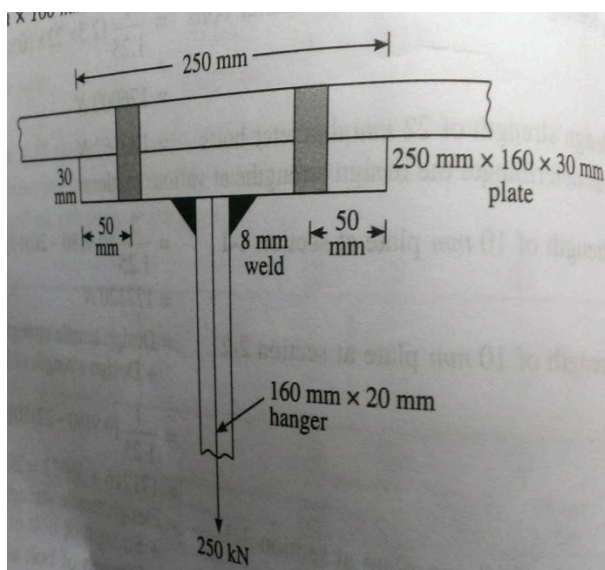


Fig-6

