



Design Code:BS5950-1:(1990)

Configuration Type

1 Sided Beam to Beam Connection

Supported Member(s)

No. = 3 Size = 406X178X54UB Grade = S275JR

Supporting Member

No. = 2 Size = 457X191X74UB Grade = S275JR

Initial End Plate Parameters

Grade = S275JR Bolt Pitch = 70 Bolt Diam = 20

Top Edge Dist. = 70 Bot. Edge Dist. = 75

Bolt Grade = 8.8 Weld Electrode = E42

Width = 150 Thick = 8 Cross Centres = 90

Member End Reactions

Side 1 Vertical Shear = 250 Axial Tension = 100

Weld Leg Size = 6

AUTOMATIC Mode Selected , Rigorous Design Check

No. of Rows of Bolts will be Calculated by Macro

Check Bolts Bearing on Plate

Bolts Bearing on Plate $N = 1.51$

Check Bearing of Plate

Capacity for top row bolts = toprow
Thus, total number of bolts required = $2+1.397 = 3.397$

Calculate Effective No. Bolts

 $ed'(70) > 2db(40)$ No Check Necessary

Check Bolts in Shear

Capacity for top row bolts = toprow
Thus, total number of bolts required = $2+0.721 = 2.721$

Check Bearing of Support

Bearing Strength of Support $N = 3.019$

Check Bearing of Bolts on Support

Bolts Bearing on Support $N = 1.342$

Min. No. of Bolts Required = 4

Initial Plate Length / No. of Bolts

Minimum Length = 322.08 Maximum Length = 418.2
Initial Length = 325 No. of Bolts = 8
Governed by Min. Plate Length and Bolt Pitch

Check End Plate for Shear

Capacity = 283.72 Actual Shear = 125

Check Elastic Shear Strength at Notch

Capacity = 458.615 Actual Shear = 250

Check Moment Capacity at Notch

Capacity = 92.864 Actual Moment = 25.25

Check Local Stability at Notch

The following check only applies to restrained cases.
For unrestrained cases, please check manually
Steel Grade = 43
Notch type = Single

Therefore, Stiffeners not Required for Stability

Design of Weld Leg Size

Initially, Try $s = 6$

Actual Weld Leg Size $s = 6$

Check Web Shear Capacity of Supported Beam

Capacity = 357.9 Actual Shear = 250

Check Shear of Supporting Web/Flange

Capacity $P_v = 428.04$ Actual Shear $(V_1+V_2)/2 = 125$

Check Bearing on Supporting Web/Flange

Bearing Strength $P_b = 82.8$ Actual Bearing Force = 31.25

**** Connection Designed Successfully ****

Final Design Parameters for Side 1

Plate Width = 150 Plate Length = 325 Thickness = 8

No. of Bolts = 8 Vertical Pitch = 70

Cross Centres = 90 Weld Leg Size = 6