

KOREAN CALCULATION FOR BOLTS

Vertical Reaction=V 99.42 KN
 Beam H346x174
 bf 174.00 mm
 Girder H390x300
 bf 300.00 mm
 Single row - 3 bolt pattern

Bolt Selection

1) Bolt Properties

No of Bolts 3
 Xcent 0.00 mm
 Ycent 60.00 mm

 $I_x = (x_{cent})^2$ 0.00 mm⁴
 $I_y = (y_{cent})^2$ 7200.00 mm⁴ for 2 bolts

 $I_p = I_x + I_y$ 7200.00 mm⁴

2) Bolt Design

ecent=e	45.00 mm
Mdesgn=V*ecent	4473.90 KN-mm
Rv=V/Total bolts	33.14 KN/ea bolt
Rmx=M*ycent/lp	37.28 KN/ea bolt
Rmy=M*xcent/lp	0.00 KN/ea bolt
Beam Axial Force=Ax	0.00 KN
Rx=Ax/ Total Bolts	0.00 KN/ea bolt
$R = ((R_v + R_{my})^2 + (R_{mx} + R_x)^2)^{.5}$	49.88 KN/ea bolt OK
Bolt Shear Capacity (Double Shear)	90.00 KN/ea

MYSELF CALCULATION FOR BOLTS

Vertical Reaction=V 99.42 KN
 Beam H346x174
 bf 174.00 mm
 Girder H390x300
 bf 300.00 mm
 Single row - 3 bolt pattern

Bolt Selection

1) Bolt Properties

No of Bolts 3
 Xcent 0.00 mm
 Ycent 60.00 mm

 $I_x = (x_{cent})^2$ 0.00 mm⁴
 $I_y = (y_{cent})^2$ 7200.00 mm⁴ for 2 bolts

 $I_p = I_x + I_y$ 7200.00 mm⁴

2) Bolt Design

ecent=e	150.00 mm
Mdesgn=V*ecent	14913.00 KN-mm
Rv=V/Total bolts	33.14 KN/ea bolt
Rmx=M*ycent/lp	124.28 KN/ea bolt
Rmy=M*xcent/lp	0.00 KN/ea bolt
Beam Axial Force=Ax	0.00 KN
Rx=Ax/ Total Bolts	0.00 KN/ea bolt
$R = ((R_v + R_{my})^2 + (R_{mx} + R_x)^2)^{.5}$	128.62 KN/ea bolt NOT OK
Bolt Shear Capacity (Double Shear)	90.00 KN/ea

COMMENTS

- As we see eccentricity plays a big role in the selection of bolts
- What should I use for eccentricity
 - 45mm
 - 0.5*Girder Flange Width
 - 0.5*Girder Flange Width+45
 - 15+45
 - Korean takes face of flange as a centroid of connection
 - What should be centroid of connection if we use any other eccentricity
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 - What should be Xcent for Beam bolt, if we use any other eccentricity
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