STRAIGHT STEEL GIRDER BRIDGES

2nd Edition, 1st Printing, November 2021

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The following revisions to the first printing of the CISC publication, *Straight Steel Girder Bridges,* 2nd Edition, will be incorporated into future printings. Minor editorial revisions are not shown.

Page(s)	Revisions
1-101	*Replace page 1-101 with the following page. Revisions are highlighted in red.*

Tensile resistance of top flange

75% of the factored tensile resistance of the top flange:

$0.75\ T_r = 0.75\ \phi_s\ A_g\ F_y = 0.75 \times 0.95\ (9380)\ 350 = 2340$ kN

The design force for the top flange splice is the greater of 800 and 2340 kN = 2340 kN

1. Tensile resistance of flange plate, ULS

a) Fracture on the net section, Clause 10.8.2(b)

Assume a fracture plane through a transverse row of bolts

Net flange area, $A_n = w_n\ t = (375 - 4 \times 29)\ 25 = 6480$ mm^2

$T_r = \phi_u\ A_n\ F_u = 0.8 \times 6480 \times 480 = 2490$ kN > 2340 kN

b) Block shear, smaller flange plate, Clause 10.8.1.3.2.5

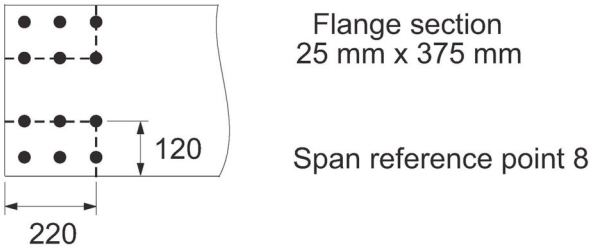

Figure 1-28 Block shear involving combined tension + shear

$A_n = 2\ (120 - 1.5 \times 29)\ 25 = 3830$ mm

$A_{gv} = 2\ (220)\ 25 = 11000$ mm^2

$U_t = 0.9$ (CISC Commentary on CSA S16:19 in Ref. 13)

$T_r = \phi_u\ [U_t\ A_n\ F_u + 0.6\ A_{gv}\ F_m] = 0.75\ [0.9 \times 3830 \times 480 + 0.6 \times 11\ 000\ (480 + 350)\ /\ 2] = 3300$ kN > 2340 kN

2. Tensile resistance of splice plates, ULS

Inside splice plates: 2 x 16 mm x 160 mm

Outside splice plate: 14 mm x 375 mm

a) Yielding on the gross section, Clause 10.8.2(a)

$A_g = 2 \times 16 \times 160 + 14 \times 375 = 10\ 400$ mm^2

$T_r = \phi_s\ A_g\ F_y = 0.95 \times 10\ 400 \times 350 = 3460$ kN > 2340 kN