Design of Stiffeners and Non-Concentric Brace Connections

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Integrated Programs

- RISAFloor v7.0.2
- RISA-3D v11.0.2
- RISACONnection 3.0.1
Referenced Codes

AISC 360-10 (14th Edition Manual)

Image courtesy of AISC.org
Referenced Codes

AISC Design Guide 13

Image courtesy of AISC.org
Moment Arm

Flange Plate Moment Connection

\[ d_c = d_b + t_p \]

End Plate Moment Connection

\[ d_c = d_b - t_f \]

Direct Weld Moment Connection

\[ d_c = d_b - t_f \]

MOMENT CONNECTIONS
Flange Bearing

A. Fillet weld of specified size \( w \)
\[ N = t_{bf} + 2w \]

B. CJP weld
\[ N = t_{bf} \]

C. PJP weld with an effective throat thickness of \( w \)
\[ N = 1.414w \]
Flange Bearing

A. Fillet weld of specified size $w$

$$N = t_{bf} + 2w$$

B. CJP weld

$$N = t_{bf}$$
Flange Bearing

A. CJP weld

\[ N = t_{bf} \]
Column Limit States

- Column Flange Local Bending
Column Limit States

• Column Web Local Yielding
Column Limit States

- Column Web Crippling
Column Limit States

- Column Web Buckling
Column Limit States

- Panel Zone Shear Failure

Tension

Compression
Flange Stiffeners

- Flange Buckling
- Web Yielding
- Web Crippling
- Web Buckling
Web Stiffeners

- Panel Zone Shear
Plate Aspect Ratio

BRACE CONNECTIONS
Plate Aspect Ratio

Plate Aspect Ratio

\[ M = P_v \times (L/2) \]

\[ (L/2 + L'/2) \]

IDEAL (ZERO MOMENT) FORCE LOCATION

BRACE CONNECTIONS
Non-Concentric Workpoints

$$M = P \times e$$
Non-Concentric Workpoints

\[ M = P \times e \]
Physical Geometry

BRACE CONNECTIONS
Physical Geometry

BRACE CONNECTIONS
Physical Geometry

BRACE CONNECTIONS
Questions?

Please let us know if you have questions.

We will answer as many questions as time permits during the webinar.

Once the webinar is closed, we will post all Q&A’s, as well as any supporting materials to our website:

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For further information, contact us at: info@risa.com