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| Company Name | Risa | Project Title | |
| Group/Team Name | Osdag | Subtitle | |
| Designer | Deep | Job Number | |
| Date | 04 /04 /2016 | Method | Limit State Design |

| | |
|--------------------------------|------------------|
| Design Conclusion | |
| Finplate | Pass |
| Finplate | |
| Connection Properties | |
| Connection | |
| Connection Title | Single Finplate |
| Connection Type | Shear Connection |
| Connection Category | |
| Connectivity | Beam-Beam |
| Beam Connection | Bolted |
| Column Connection | Welded |
| Loading (Factored Load) | |
| Shear Force (kN) | 140 |
| Components | |
| Column Section | ISMB 500 |
| Material | Fe 410 |
| Beam Section | ISMB 300 |
| Material | Fe 410 |
| Hole | STD |
| Plate Section | 233X100X12 |
| Thickness (mm) | 12 |
| Width (mm) | 100 |
| Depth (mm) | 233 |
| Hole | STD |
| Weld | |
| Type | Double Fillet |
| Size (mm) | 10 |
| Bolts | |
| Type | HSFG |
| Grade | 8.8 |
| Diameter (mm) | 20 |
| Bolt Numbers | 3 |
| Columns (Vertical Lines) | 1 |
| Bolts Per Column | 3 |
| Gauge (mm) | 0 |
| Pitch (mm) | 76 |
| End Distance (mm) | 40 |
| Edge Distance (mm) | 40 |
| Assembly | |
| Column-Beam Clearance (mm) | 20 |

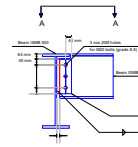
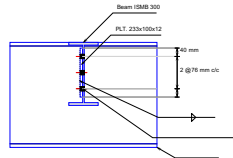
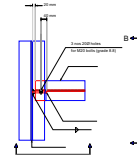
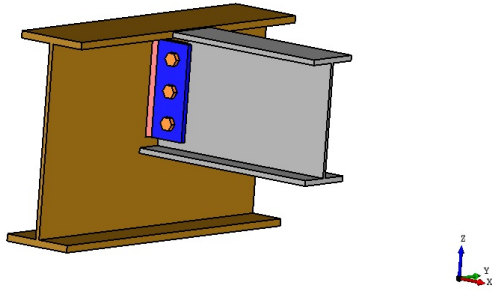
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| Design Check | | | |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|--------|
| Check | Required | Provided | Remark |
| Bolt shear capacity (kN) | | $V_{dsb} = (800 \times 0.6126 \times 20 \times 20) / (\sqrt{3} \times 1.25 \times 1000)$ $= 90.529$ [cl. 10.3.3] | |
| Bolt bearing capacity (kN) | | $V_{dsb} = (2.5 \times 0.508 \times 20 \times 7.7 \times 410) / (1.25 \times 1000)$ $= 64.15$ [cl. 10.3.4] | |
| Bolt capacity (kN) | | Min (90.529, 64.15) = 64.15 | Pass |
| No. of bolts | 140/64.15 = 2.2 | 3 | Pass |
| No. of column(s) | ≤ 2 | 1 | |
| No. of bolts per column | | 3 | |
| Bolt pitch (mm) | $\geq 2.5 \times 20 = 50,$ $\leq \text{Min}(32 \times 7.7, 300) = 247$ [cl. 10.2.2] | 76 | |
| Bolt gauge (mm) | $\geq 2.5 \times 20 = 50,$ $\leq \text{Min}(32 \times 7.7, 300) = 247$ [cl. 10.2.2] | 0 | |
| End distance (mm) | $\geq 1.7 \times 22 = 37.4, \leq 12 \times 7.7 = 92.4$ [cl. 10.2.4] | 40 | |
| Edge distance (mm) | $\geq 1.7 \times 22 = 37.4, \leq 12 \times 7.7 = 92.4$ [cl. 10.2.4] | 40 | Pass |
| Block shear capacity (kN) | 140 | $V_{db} = 392$ | |
| Plate thickness (mm) | $(5 \times 140 \times 1000) / (233 \times 250)$ $= 12.02$ [Owens and Cheal, 1989] | 12 | |
| Plate height (mm) | $\geq 0.6 \times 300 = 180.0, \leq 300 - 13 - 14 - 17 - 17 - 5 = 234.0$ [cl. 10.2.4, Insdag Detailing Manual, 2002] | 233 | Pass |
| Plate width (mm) | | 100 | |
| Plate moment capacity (kNm) | $(2 \times 90.529 \times 76^2) / (76 \times 1000)$ $= 9.053$ | $M_d = (1.2 \times 250 \times Z) / (1000 \times 1.1) = 29.61$ [cl. 8.2.1.2] | Pass |

| | | | |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|------|
| Effective weld length (mm) | | $233 - 2 \cdot 10 = 213$ | |
| Weld strength (kN/mm) | $\sqrt{[(9053 \cdot 6)/(2 \cdot 213^2)]^2 + [140/(2 \cdot 213)]^2} = 0.683$ | $f_v = (0.7 \cdot 10 \cdot 410)/(\sqrt{3} \cdot 1.25) = 1.326$ [cl. 10.5.7] | Pass |
| Weld thickness (mm) | $\text{Max}((0.683 \cdot 1000 \cdot \sqrt{3} \cdot 1.25)/(0.7 \cdot 410), 12 \cdot 0.8) = 9.6$ [cl. 10.5.7, Insdag Detailing Manual, 2002] | 10 | Pass |

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Views



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| Additional Comments | | | |