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|------------------------|--------------|----------------------|--|
| Company Name | w | Project Title | w |
| Group/Team Name | w | Subtitle | |
| Designer | w | Job Number | w |
| Date | 04 /06 /2016 | Method | Limit State Design (No Earthquake Load) |

| Design Conclusion | |
|--------------------------------|------------------------|
| Endplate | Pass |
| Endplate | |
| Connection Properties | |
| Connection | |
| Connection Title | Flexible Endplate |
| Connection Type | Shear Connection |
| Connection Category | |
| Connectivity | Column flange-Beam web |
| Beam Connection | Welded |
| Column Connection | Bolted |
| Loading (Factored Load) | |
| Shear Force (kN) | 160 |
| Components | |
| Column Section | |
| Material | Fe 410 |
| Beam Section | |
| Material | Fe 410 |
| Hole | STD |
| Plate Section | |
| Thickness (mm) | 10 |
| Width (mm) | 160 |
| Depth (mm) | 240 |
| Hole | STD |
| Weld | |
| Type | Double Fillet |
| Size (mm) | 6 |
| Bolts | |
| Type | HSFG |
| Grade | 8.8 |
| Diameter (mm) | 16 |
| Bolt Numbers | 10 |
| Columns (Vertical Lines) | 2 |
| Bolts Per Column | 5 |

| | |
|-----------------------------------|----|
| Gauge (mm) | 0 |
| Pitch (mm) | 40 |
| End Distance (mm) | 40 |
| Edge Distance (mm) | 30 |
| Assembly | |
| Column-Beam Clearance (mm) | 10 |



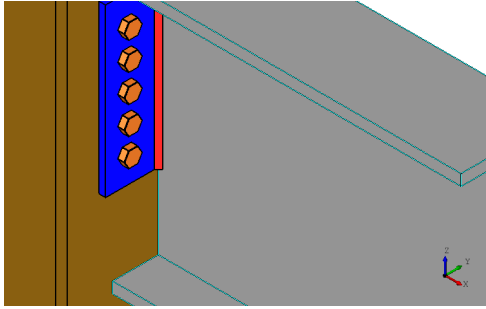
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| Design Check | | | |
|---|---|---|--------|
| Check | Required | Provided | Remark |
| Bolt shear capacity (kN) | | $V_{dsb} = ((800.0 \times 0.6126 \times 16 \times 16) / (\sqrt{3} \times 1.25 \times 1000)) = 33.724$ [cl. 10.3.3] | |
| Bolt bearing capacity (kN) | | $V_{dpb} = (2.5 \times 0.491 \times 16 \times 10.0 \times 410) / (1.25 \times 1000) = 64.419$ [cl. 10.3.4] | |
| Bolt capacity (kN) | | Min (33.724, 64.419) = 33.724 | Pass |
| Critical bolt shear (kN) | ≤ 33.724 | 25.612 | Pass |
| No. of bolts | | 10 | |
| No. of column(s) | ≤ 2 | 2 | |
| No. of bolts per column per side of end plate | | 5 | |
| Bolt pitch (mm) | $\geq 2.5 \times 16 = 40, \leq \text{Min}(32 \times 8.9, 300) = 285$ [cl. 10.2.2] | 40 | Pass |
| Bolt gauge (mm) | $\geq 2.5 \times 16 = 40, \leq \text{Min}(32 \times 8.9, 300) = 285$ [cl. 10.2.2] | 0 | |
| End distance (mm) | $\geq 1.7 \times 18.0 = 30.6, \leq 12 \times 8.9 = 106.8$ [cl. 10.2.4] | 40 | Pass |
| Edge distance (mm) | $\geq 1.7 \times 18.0 = 30.6, \leq 12 \times 8.9 = 106.8$ [cl. 10.2.4] | 30 | Pass |
| Block shear capacity (kN) | ≥ 160 | $V_{db} = 191$ [cl. 6.4.1] | |
| Plate thickness (mm) | ≥ 8 | 10 | Pass |
| Plate height (mm) | $\geq 0.6 \times 400.0 = 240.0, \leq 400.0 - 16.0 - 14.0 - 16.0 - 14.0 - 10 = 330.0$ [cl. 10.2.4, Insdag Detailing Manual, 2002] | 240 | Pass |

| | | | |
|-----------------------------------|------------------------|---|-------------|
| Plate Width (mm) | $\geq 160, \leq 250.0$ | 160 | Pass |
| Effective weld length (mm) | | $240 - 2 \cdot 6 = 228$ | |
| Weld strength (kN/mm) | 0.351 | $f_v = (0.7 \cdot 6 \cdot 410) / (\sqrt{3} \cdot 1.25 \cdot 1000)$ $= 0.795$ [cl. 10.5.7] | Pass |



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| Views | |
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IIT Bombay



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| Additional Comments | |
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