

<b>Company Name</b>	StructSol	<b>Project Title</b>	P-001
<b>Group/Team Name</b>		<b>Subtitle</b>	
<b>Designer</b>	Anand	<b>Job Number</b>	1
<b>Date</b>	04 /06 /2016	<b>Method</b>	Limit State Design (No Earthquake Load)


Design Conclusion	
<b>Finplate</b>	Pass
Finplate	
Connection Properties	
Connection	
Connection Title	Single Finplate
Connection Type	Shear Connection
Connection Category	
Connectivity	Column flange-Beam web
Beam Connection	Bolted
Column Connection	Welded
Loading (Factored Load)	
Shear Force (kN)	160
Components	
Column Section	
Material	Fe 410
Beam Section	
Material	Fe 410
Hole	STD
Plate Section	
Thickness (mm)	12
Width (mm)	100
Depth (mm)	300
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)	110
End Distance (mm)	40

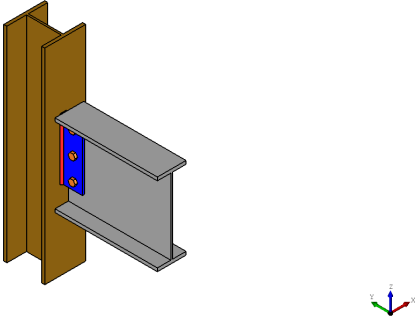
Edge Distance (mm)	40
<b>Assembly</b>	
<b>Column-Beam Clearance (mm)</b>	20


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Design Check			
Check	Required	Provided	Remark
<b>Bolt shear capacity (kN)</b>		$V_{dsb} = (800 \times 0.6126 \times 20 \times 20) / (\sqrt{3} \times 1.25 \times 1000)$ $= 90.529$ [cl. 10.3.3]	
<b>Bolt bearing capacity (kN)</b>		$V_{dps} = (2.5 \times 0.508 \times 20 \times 8.9 \times 410) / (1.25 \times 1000)$ $= 74.148$ [cl. 10.3.4]	
<b>Bolt capacity (kN)</b>		Min (90.529, 74.148) = 74.148	
<b>No. of bolts</b>	160/74.148 = 2.2	3	Pass
<b>No. of column(s)</b>	$\leq 2$	1	
<b>No. of bolts per column</b>		3	
<b>Bolt pitch (mm)</b>	$\geq 2.5 \times 20 = 50, \leq \text{Min}(32 \times 8.9, 300) = 285$ [cl. 10.2.2]	110	Pass
<b>Bolt gauge (mm)</b>	$\geq 2.5 \times 20 = 50, \leq \text{Min}(32 \times 8.9, 300) = 285$ [cl. 10.2.2]	0	
<b>End distance (mm)</b>	$\geq 1.7 \times 22 = 37.4, \leq 12 \times 8.9 = 106.8$ [cl. 10.2.4]	40	Pass
<b>Edge distance (mm)</b>	$\geq 1.7 \times 22 = 37.4, \leq 12 \times 8.9 = 106.8$ [cl. 10.2.4]	40	Pass
<b>Block shear capacity (kN)</b>	$\geq 160$	$V_{db} = 512$	Pass
<b>Plate thickness (mm)</b>	$(5 \times 160 \times 1000) / (300 \times 250) = 10.67$ [Owens and Cheal, 1989]	12	Pass
<b>Plate height (mm)</b>	$\geq 0.6 \times 400 = 240.0, \leq 400 - 16 - 14 - 10 = 330.0$ [cl. 10.2.4, Insdag Detailing Manual, 2002]	300	Pass
<b>Plate width (mm)</b>		100	
<b>Plate moment capacity (kNm)</b>	$(2 \times 90.529 \times 110^2) / (110 \times 1000) = 19.916$	$M_d = (1.2 \times 250 \times Z) / (1000 \times 1.1) = 49.09$ [cl. 8.2.1.2]	Pass
<b>Effective weld length (mm)</b>		$300 - 2 \times 10 = 280$	
<b>Weld strength (kN/mm)</b>	$\sqrt{[(19916 \times 6) / (2 \times 280^2)]^2 + [160 / (2 \times 280)]^2}$ $= 0.814$	$f_w = (0.7 \times 10 \times 410) / (\sqrt{3} \times 1.25)$ $= 1.326$ [cl. 10.5.7]	Pass

<b>Weld thickness (mm)</b>	$\text{Max}((0.814 \cdot 1000 \cdot \sqrt{3} \cdot 1.25) / (0.7 \cdot 410), 12 \cdot 0.8) = 9.6$ [cl. 10.5.7, Insdag Detailing Manual, 2002]	10	<b>Pass</b>
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Views			
			

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<b>Additional Comments</b>			