Company Name		Project Title	
Group/Team Name		Subtitle	
Designer		Job Number	
Date	19 /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)	100
Components	
Column Section	ISMB 500
Material	Fe 410
Beam Section	ISMB 300
Material	Fe 410
Hole	STD
Plate Section	200X100X10
Thickness (mm)	10
Width (mm)	100
Depth (mm)	200
Hole	STD
Weld	
Type	Double Fillet

Size (mm)	8
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)	60
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*0.6126*20*20)/(√3*1.25*1000) = 90.529 [cl. 10.3.3]	
Bolt bearing capacity (kN)		V_{dsb} = (2.5*0.508*20*7.7*410)/(1.25*1000) = 64.15 [cl. 10.3.4]	
Bolt capacity (kN)		Min (90.529, 64.15) = 64.15	**Pass**
No. of bolts	100/64.15 = 1.6	3	**Pass**
No.of column(s)	≤2	1	
No. of bolts per column		3	
Bolt pitch (mm)	≥2.5* 20 = 50, ≤Min(32*7.7, 300) = 247 [cl. 10.2.2]	60	
Bolt gauge (mm)	≥2.5*20 = 50, ≤Min(32*7.7, 300) = 247 [cl. 10.2.2]	0	
End distance	≥1.7*22 = 37.4, ≤12*7.7 = 92.4	40	

(mm)	[cl. 10.2.4]		
Edge distance (mm)	≥1.7*22 = 37.4, ≤12*7.7 = 92.4 [cl. 10.2.4]	40	**Pass**
Block shear capacity (kN)	100	V_{db} = 269	
Plate thickness (mm)	(5*100*1000)/(200*250) = 10.0 [Owens and Cheal, 1989]	10	
Plate height (mm)	≥0.6*300=180.0, ≤300-13-14-17-17- 5=234.0 [cl. 10.2.4, Insdag Detailing Manual, 2002]	200	**Pass**
Plate width (mm)		100	
Plate moment capacity (kNm)	$(2*90.529*60^2)/(60*1000)$ = 9.053	M_d = (1.2*250*Z)/(1000*1.1) = 18.18 [cl. 8.2.1.2]	**Pass**
Effective weld length (mm)		200-2*8 = 184	
Weld strength (kN/mm)	$\sqrt{[(9053*6)/(2*184^2)]^2 + [100/(2*184)]^2}$ = 0.847	f_v= (0.7*8*410)/(√3*1.25) = 1.06 [cl. 10.5.7]	**Pass**
Weld thickness (mm)	Max((0.847*1000*√3* 1.25)/(0.7 * 410),10* 0.8) = 8.0 [cl. 10.5.7, Insdag Detailing Manual, 2002]	8	**Pass**

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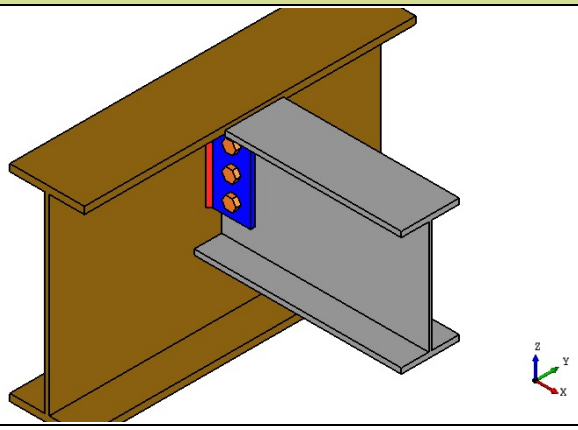
Views



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Additional Comments	