Company Name	**fsgfdg**	**Project Title**	
Group/Team Name	**gfdg**	**Subtitle**	
Designer	**bgdfg**	**Job Number**	
Date	**04 /04 /2016**	**Method**	**Limit State Design**

Design Conclusion	
Cleat Angle	**Pass**
Cleat Angle	
Connection Properties	
Connection	
Connection Title	Double Angle Web Cleat
Connection Type	Shear Connection
Connection Category	
Connectivity	Beam-Beam
Beam Connection	Bolted
Column Connection	Bolted
Loading (Factored Load)	
Shear Force (kN)	200.0
Components	
Column Section	ISMB 500
Material	Fe 410
Beam Section	ISMB 300
Material	Fe 410
Hole	STD
Cleat Section	ISA 130X130X12
Thickness (mm)	12
Cleat Leg Size B (mm)	130
Cleat Leg Size A (mm)	130
Hole	STD
Bolts on Beam	
Type	Black Bolt
Grade	4.8
Diameter (mm)	16
Bolt Numbers	10
Columns (Vertical Lines)	2
Bolts Per Column	5
Gauge (mm)	40
Pitch (mm)	40
End Distance (mm)	30
Edge Distance (mm)	30
Bolts on Column	
Type	Black Bolt
Grade	4.8
Diameter (mm)	16
Bolt Numbers	20
Columns (Vertical Lines)	2
Bolts Per Column	5
Gauge (mm)	40
Pitch (mm)	40
End Distance (mm)	30
Edge Distance (mm)	30

Assembly	
Column-Beam Clearance (mm)	20

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Design Check: Beam Connectivity			
Check	**Required**	**Provided**	**Remark**
Bolt shear capacity (kN)		V_{dsb} = ((2*400*0.6126*16*16)/(√3*1.25*1000) = 57.949 [cl. 10.3.3]	
Bolt bearing capacity (kN)		V_{dsb} = (2.5*0.5*16*7.7*400)/(1.25*1000) = 49.28 [cl. 10.3.4]	
Bearing capacity of beam web (kN)		V_{dsb} = (2.5*0.5*18.0*7.7*410)/(1.25*1000) = 50.512 [cl. 10.3.4]	
Bearing capacity of cleat (kN)		V_{dsb} = (2.5*0.5*18.0*12*410)/(1.25*1000) = 50.512 [cl. 10.3.4]	
Bearing capacity (kN)		Min (49.28, 50.512, 157.44) = 49.28	**Pass**
Bolt capacity (kN)		Min (57.949, 49.28) = 49.28	**Pass**
Critical Bolt Shear (kN)	≤49.28	24.107	**Pass**
No. of bolts	200.0/49.28 = 4.1	10	**Pass**
No.of column(s)	≤2	2	
No. of bolts per column		5	
Bolt pitch (mm)	≥2.5* 16 = 40, ≤Min(32*7.7, 300) = 247 [cl. 10.2.2]	40	
Bolt gauge (mm)	≥2.5*16 = 40, ≤Min(32*7.7, 300) = 247 [cl. 10.2.2]	40	
End distance (mm)	≥1.7*18.0 = 30.6, ≤12*7.7 = 92.4 [cl. 10.2.4]	30	
Edge distance (mm)	≥1.7*18.0 = 30.6, ≤12*7.7 = 92.4 [cl. 10.2.4]	30	**Pass**
Block shear	200.0	V_{db} = 413.837	

capacity (kN)	200.0	[cl. 6.4.1]	
Cleat height (mm)	≥0.6*300.0=180.0, ≤300.0-13.1-14.0-17.2-17.0- 5=233.7 [cl. 10.2.4, Insdag Detailing Manual, 2002]	0.0	**Pass**
Cleat moment capacity (kNm)	$(2*57.949*40^2)/(40*1000)$ = 8.0	M_d = (1.2*250*Z)/(1000*1.1) = 174.24 [cl. 8.2.1.2]	**Pass**

Design Check: Column Connectivity			
Check	**Required**	**Provided**	**Remark**
Bolt shear capacity (kN)		V_{dsb} = ((400*0.6126*16*16)/(√3*1.25*1000) = 28.974 [cl. 10.3.3]	
Bolt bearing capacity (kN)		V_{dsb} = (2.5*0.5*16*12.0*400)/(1.25*1000) = 76.8 [cl. 10.3.4]	
Bearing capacity of Primary beam web (kN)		V_{dsb} = (2.5*0.5*18.0*10.2*410)/(1.25*1000) = 126.936 [cl. 10.3.4]	
Bearing capacity of cleat leg (kN)		V_{dsb} = (2.5*0.5*18.0*12*410)/(1.25*1000) = 88.56 [cl. 10.3.4]	
Bearing capacity (kN)		Min (76.8, 126.936, 88.56) = 76.8	**Pass**
Bolt capacity (kN)		Min (28.974, 76.8) = 28.974	**Pass**
No. of bolts	200.0/49.28 = 2897.4	20	**Pass**
No.of column(s)	≤2	2	
No. of bolts per column		5	
Bolt pitch (mm)	≥2.5* 16 = 40, ≤Min(32*12.0, 300) = 300 [cl. 10.2.2]	40	
Bolt gauge (mm)	≥2.5*16 = 40, ≤Min(32*12.0, 300) = 300 [cl. 10.2.2]	40	
End distance (mm)	≥1.7*18.0 = 30.6, ≤12*12.0 = 144.0 [cl. 10.2.4]	30	
Edge distance (mm)	≥1.7*18.0 = 30.6, ≤12*12.0 = 144.0 [cl. 10.2.4]	30	**Pass**
Block shear capacity (kN)	200.0	V_{db} = 413.837 [cl.]	
Cleat height (mm)	≥0.6*300.0=180.0, ≤300.0-13.1-14.0-17.2-17.0- 5=233.7 [cl. 10.2.4, Insdag Detailing Manual, 2002]	30	**Pass**
Moment capacity	(2*98.274*40^2)/(40*1000)	M_d = (1.2*250*Z)/(1000*1.1) =	

capacity of cleat leg (kNm)	(2 28.974 40²)/(40 1000) = 8.385	174.24 [cl. 8.2.1.2]	**Pass**

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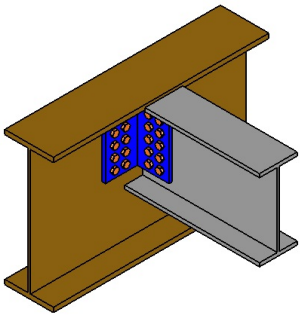
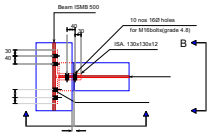
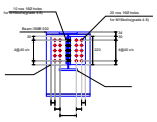
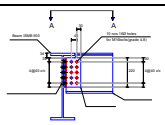
Views









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Additional Comments	khukuil