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Company Name	**Pythons & Co**	**Project Title**	**A simple block of flats**
Group/Team Name	**Flying Circus**	**Subtitle**	**Abattoir**
Designer	**Mr. Wiggin**	**Job Number**	**1.1.1.1.2**
Date	**20 /06 /2018**	**Client**	**Mr. Tid**

Design Conclusion	
Fin Plate	**Fail**
Fin Plate	
Connection Properties	
Connection	
Connection Title	Single Fin Plate
Connection Type	Shear Connection
Connection Category	
Connectivity	Column flange-Beam web
Beam Connection	Bolted
Column Connection	Welded
Loading (Factored Load)	
Shear Force (kN)	150
Components	
Column Section	SC 200
Material	Fe 410.0
Beam Section	MB 350
Material	Fe 410.0
Hole	STD
Plate Section	250X90X12
Thickness (mm)	12
Width (mm)	90
Depth (mm)	250
Hole	STD
Weld	
Type	Double Fillet
Size (mm)	8
Bolts	
Type	Bearing Bolt
Grade	4.6
Diameter (mm)	20
Bolt Numbers	4
Columns (Vertical Lines)	1
Bolts Per Column	4

Gauge (mm)	0
Pitch (mm)	56
End Distance (mm)	40
Edge Distance (mm)	40
Assembly	
Column-Beam Clearance (mm)	10.0

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Design Preferences	
Bolt	
Hole Type	Standard
Hole Clearance (mm)	2.0
Material Grade (MPa) (overwrite)	400.0
Slip factor	N/A
Weld	
Type of Weld	Shop weld
Material Grade (MPa) (overwrite)	410.0
Detailing	
Type of Edges	Rolled, machine-flame cut, sawn and planed
Minimum Edge-End Distance	1.5 times the hole diameter
Gap between Beam and Column (mm)	10.0
Are members exposed to corrosive influences?	No
Design	
Design Method	Limit State Design

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Design Check			
Check	**Required**	**Provided**	**Remark**
Bolt shear capacity (kN)		V_{dsb} = (400*0.6126*20*20)/(√3*1.25*1000) = 45.264 [cl. 10.3.3]	
Bolt bearing capacity (kN)		V_{dpb} = (2.5*0.5*20*8.1*410.0)/(1.25*1000) = 66.42 [cl. 10.3.4]	
Bolt capacity (kN)		Min (45.264, 66.42) = 45.264	
No. of bolts	150/45.264 = 3.3	4	**Pass**
No.of column(s)	≤ 2	1	
No. of bolts per column		4	
Bolt pitch (mm)	≥ 2.5* 20 = 50, ≤ Min(32*8.1, 300) = 260 [cl. 10.2.2]	56	**Pass**
Bolt gauge (mm)	≥ 2.5*20 = 50, ≤ Min(32*8.1, 300) = 260 [cl. 10.2.2]	0	
End distance (mm)	≥ 1.5*22 = 33, ≤ 12*8.1 = 97.2 [cl. 10.2.4]	40	**Pass**
Edge distance (mm)	≥ 1.5*22 = 33, ≤ 12*8.1 = 97.2 [cl. 10.2.4]	40	**Pass**
Block shear capacity (kN)	≥ 150	V_{db} = 257	**Pass**
Plate thickness (mm)	(5*150*1000)/(250*250.0) = 12 [Owens and Cheal, 1989]	12	**Pass**
Plate height (mm)	≥ 0.6*350=210.0, ≤ 350-14-14-10=284.0 [cl. 10.2.4, Insdag Detailing Manual, 2002]	250	**Pass**
Plate width (mm)		100	
Plate moment capacity (kNm)	$(2*45.264*56^2)/(56*1000)$ = 9.053	M_d = (1.2*250.0*Z)/(1000*1.1) = 34.09 [cl. 8.2.1.2]	**Pass**
Effective weld			

length on each side (mm)		250-2*8 = 234	
Weld strength (kN/mm)	$\sqrt{[(9053*6)/(2*234^2)]^2}$ + $[150/(2*234)]^2$ = 0.591	f_v= (0.7*8*410)/(√3*1.25) = 1.06 [cl. 10.5.7]	**Pass**
Weld thickness (mm)	Max((0.591*1000*√3* 1.25)/(0.7 * 410),12* 0.8) = 9.6 [cl. 10.5.7, Insdag Detailing Manual, 2002]	8	**Fail**

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Views

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Additional Comments	A Sample Design!