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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**	**1.1.1.3.2**
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	Beam-Beam
Beam Connection	Bolted
Column Connection	Welded
Loading (Factored Load)	
Shear Force (kN)	220
Components	
Column Section	WPB 450x300x99.7
Material	Fe 410.0
Beam Section	UB 356 x 171 x 67
Material	Fe 410.0
Hole	STD
Plate Section	314X90X14
Thickness (mm)	14
Width (mm)	90
Depth (mm)	314
Hole	STD
Weld	
Type	Double Fillet
Size (mm)	10
Bolts	
Type	Friction Grip Bolt
Grade	10.9
Diameter (mm)	24
Bolt Numbers	3
Columns (Vertical Lines)	1
Bolts Per Column	3

Gauge (mm)	0
Pitch (mm)	117
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)	1040.0
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_{dsf} = ((0.48*1*1.0*256.984)/(1.25)) = 94.8864 [cl. 10.4.3]	
Bolt bearing capacity (kN)		N/A	
Bolt capacity (kN)		94.8864	**Pass**
No. of bolts	220/94.8864 = 2.3	3	**Pass**
No.of column(s)	≤ 2	1	
No. of bolts per column		3	
Bolt pitch (mm)	≥ 2.5* 24 = 60, ≤ Min(32*9.1, 300) = 292 [cl. 10.2.2]	117	**Pass**
Bolt gauge (mm)	≥ 2.5*24 = 60, ≤ Min(32*9.1, 300) = 292 [cl. 10.2.2]	0	
End distance (mm)	≥ 1.5*26 = 39, ≤ 12*9.1 = 109.2 [cl. 10.2.4]	40	**Pass**
Edge distance (mm)	≥ 1.5*26 = 39, ≤ 12*9.1 = 109.2 [cl. 10.2.4]	40	**Pass**
Block shear capacity (kN)	≥ 220	V_{db} = 400	**Pass**
Plate thickness (mm)	(5*220*1000)/(314*250.0) = 14 [Owens and Cheal, 1989]	14	**Pass**
Plate height (mm)	≥ 0.6*363=217.8, ≤ 363-15-10-13-3- 5=317.0 [cl. 10.2.4, Insdag Detailing Manual, 2002]	314	**Pass**
Plate width (mm)		100	
Plate moment capacity (kNm)	(2*94.8864*117^2)/(117*1000) = 13.075	M_d = (1.2*250.0*Z)/(1000*1.1) = 62.74 [cl. 8.2.1.2]	**Pass**
Effective weld length on each side (mm)		314-2*10 = 294	

Weld strength (kN/mm)	$\sqrt{[(13075*6)/(2*294^2)]}^2 + [220/(2*294)]^2$ = 0.588	f_v= (0.7*10*410)/(√3*1.25) = 1.326 [cl. 10.5.7]	**Pass**
Weld thickness (mm)	Max((0.588*1000*√3* 1.25)/(0.7 * 410),14* 0.8) = 11.2 [cl. 10.5.7, Insdag Detailing Manual, 2002]	10	**Fail**

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Views

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Additional Comments	A sample design!