



Company Name	El Mystico & Janet	Project Title	Twenty-five story blocks
Group/Team Name	Design by Hypnosis	Subtitle	Something completely different
Designer	El Mystico	Job Number	1.1.2.3.2
Date	19 /06 /2017	Client	Mr. Clement Onan

Design Conclusion	
End Plate	Fail
End Plate	
Connection Properties	
Connection	
Connection Title	Flexible End Plate
Connection Type	Shear Connection
Connection Category	
Connectivity	Beam-Beam
Beam Connection	Welded
Column Connection	Bolted
Loading (Factored Load)	
Shear Force (kN)	220
Components	
Column Section	WPB 450x300x99.7
Material	Fe 410
Beam Section	UB 356 x 171 x 67
Material	Fe 410
Hole	STD
Plate Section	217X178X14
Thickness (mm)	14
Width (mm)	178
Depth (mm)	217
Hole	STD
Weld	
Type	Double Fillet
Size (mm)	12
Bolts	
Type	HSFG
Grade	10.9
Diameter (mm)	24
Bolt Numbers	4
Columns (Vertical Lines)	1
Bolts Per Column	2

Gauge (mm)	0
Pitch (mm)	60
End Distance (mm)	78
Edge Distance (mm)	39
Assembly	
Column-Beam Clearance (mm)	14



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Design Preferences**Bolt**

Hole Type	Standard
Hole Clearance (mm)	2.0
Material Grade (MPa) (overwrite)	1040.0
Slip factor	0.48

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
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)		$V_{dsf} = ((0.48 \times 1 \times 1.0 \times 256.984) / (1.25)) = 94.886$ [cl. 10.4.3]	
Bolt bearing capacity (kN)		N/A	
Bolt capacity (kN)		94.886	Pass
Critical bolt shear (kN)	≤ 94.886	55.0	Pass
No. of bolts		4	
No. of column(s) per side of end plate	≤ 2	1	
No. of bolts per column per side of end plate		2	
Bolt pitch (mm)	$\geq 2.5 \times 24 = 60, \leq \text{Min}(32 \times 9.1, 300) = 292$ [cl. 10.2.2]	60	Pass
Bolt gauge (mm)	$\geq 2.5 \times 24 = 60, \leq \text{Min}(32 \times 9.1, 300) = 292$ [cl. 10.2.2]	0	
End distance (mm)	$\geq 1.5 \times 26.0 = 39, \leq 12 \times 9.1 = 109.2$ [cl. 10.2.4]	78	Pass
Edge distance (mm)	$\geq 1.5 \times 26.0 = 39, \leq 12 \times 9.1 = 109.2$ [cl. 10.2.4]	39	Pass
Block shear capacity (kN)	≥ 220	$V_{db} = 175$ [cl. 6.4.1]	Fail
Plate thickness (mm)	≥ 8	14	Pass
Plate height (mm)	$\geq 0.6 \times 363.0 = 217.8, \leq 363.0 - 15.7 - 10.2 - 13.5 - 2.7 - 5 = 315.9$ [cl. 10.2.4, Insdag Detailing Manual, 2002]	217	Pass
Plate Width (mm)	$\geq 178, \leq 296$	178	Pass
Effective weld length on each side (mm)		$217 - 2 \times 12 = 193$	
		$f_v =$	

Weld strength (kN/mm)	0.568	$(0.7 \cdot 12 \cdot 410) / (\sqrt{3} \cdot 1.25 \cdot 1000)$ = 1.591 [cl. 10.5.7]	Pass
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Views



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Additional Comments	
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