



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	1.1.2.2.2
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	Column web-Beam web
Beam Connection	Welded
Column Connection	Bolted
Loading (Factored Load)	
Shear Force (kN)	135
Components	
Column Section	SC 250
Material	Fe 410
Beam Section	LB 300
Material	Fe 410
Hole	STD
Plate Section	180X144X10
Thickness (mm)	10
Width (mm)	144
Depth (mm)	180
Hole	STD
Weld	
Type	Double Fillet
Size (mm)	10
Bolts	
Type	Bearing Bolt
Grade	4.8
Diameter (mm)	12
Bolt Numbers	10
Columns (Vertical Lines)	1
Bolts Per Column	5

Gauge (mm)	0
Pitch (mm)	30
End Distance (mm)	30
Edge Distance (mm)	22
Assembly	
Column-Beam Clearance (mm)	10



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Design Preferences

Bolt

Hole Type	Standard
Hole Clearance (mm)	1.0
Material Grade (MPa) (overwrite)	420.0
Slip factor	N/A

Weld

Type of Weld	Shop weld
Material Grade (MPa) (overwrite)	410.0

Detailing

Type of Edges	Sheared or hand flame cut
Minimum Edge-End Distance	1.7 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)		$V_{dsb} = ((400.0 \times 0.6126 \times 12 \times 12) / (\sqrt{3} \times 1.25 \times 1000)) = 15.612$ [cl. 10.3.3]	
Bolt bearing capacity (kN)		$V_{dpb} = (2.5 \times 0.519 \times 12 \times 10.0 \times 410) / (1.25 \times 1000) = 51.07$ [cl. 10.3.4]	
Bolt capacity (kN)		Min (15.612, 51.07) = 15.612	
Critical bolt shear (kN)	≤ 15.612	14.0	Pass
No. of bolts		10	
No. of column(s) per side of end plate	≤ 2	1	
No. of bolts per column per side of end plate		5	
Bolt pitch (mm)	$\geq 2.5 \times 12 = 30, \leq \text{Min}(32 \times 6.7, 300) = 215$ [cl. 10.2.2]	30	Pass
Bolt gauge (mm)	$\geq 2.5 \times 12 = 30, \leq \text{Min}(32 \times 6.7, 300) = 215$ [cl. 10.2.2]	0	
End distance (mm)	$\geq 1.7 \times 13.0 = 22, \leq 12 \times 6.7 = 80.4$ [cl. 10.2.4]	30	Pass
Edge distance (mm)	$\geq 1.7 \times 13.0 = 22, \leq 12 \times 6.7 = 80.4$ [cl. 10.2.4]	22	Pass
Block shear capacity (kN)	≥ 135	$V_{db} = 97$ [cl. 6.4.1]	Fail
Plate thickness (mm)	≥ 6	10	Pass
Plate height (mm)	$\geq 0.6 \times 300.0 = 180.0, \leq 300.0 - 9.4 - 15.0 - 9.4 - 15.0 - 10 = 241.2$ [cl. 10.2.4, Insdag Detailing]	180	Pass

	Manual, 2002]		
Plate Width (mm)	$\geq 144, \leq 160.0$	144	Pass
Effective weld length on each side(mm)		$180 - 2 \cdot 10 = 160$	
Weld strength (kN/mm)	0.422	$f_v = (0.7 \cdot 10 \cdot 410) / (\sqrt{3} \cdot 1.25 \cdot 1000)$ $= 1.326$ [cl. 10.5.7]	Pass



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Views



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Additional Comments	
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