



Company Name	El Mystico & Janet	Project Title	Twenty-five story blocks
Group/Team Name	Design by Hypnosis	Subtitle	Something competey different
Designer	El Mystico	Job Number	1.1.3.2.1
Date	20 /06 /2018	Client	Mr. Clement Onan

Design Conclusion

Cleat Angle	Pass
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Cleat Angle

Connection Properties

Connection

Connection Title	Double Angle Web Cleat
Connection Type	Shear Connection

Connection Category

Connectivity	Column web-Beam web
Beam Connection	Bolted
Column Connection	Bolted

Loading (Factored Load)

Shear Force (kN)	120.5
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Components

Column Section	UC 305 x 305 x 97
Material	Fe 410
Beam Section	MB 350
Material	Fe 410
Hole	STD
Cleat Section	110 110 X 16
Thickness (mm)	16
Cleat Leg Size B (mm)	110
Cleat Leg Size A (mm)	110
Hole	STD

Bolts on Beam

Type	Friction Grip Bolt
Grade	8.8
Diameter (mm)	20
Bolt Numbers	4
Columns (Vertical Lines)	1
Bolts Per Column	4
Gauge (mm)	0
Pitch (mm)	50
End Distance (mm)	37

Edge Distance (mm)	62
Bolts on Column	
Type	Friction Grip Bolt
Grade	8.8
Diameter (mm)	20
Bolt Numbers	10
Columns (Vertical Lines)	1
Bolts Per Column	5
Gauge (mm)	0
Pitch (mm)	50
End Distance (mm)	44.05
Edge Distance (mm)	37
Assembly	
Column-Beam Clearance (mm)	5.0



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Design Preferences

Bolt	
Hole Type	Standard
Material Grade (MPa) (overwrite)	800.0
Slip factor	0.2

Detailing	
Type of Edges	Sheared or hand flame cut
Minimum Edge-End Distance	1.7 times the hole diamter
Gap between beam & support (mm)	5.0
Are members exposed to corrosive influences?	No

Design	
Design Method	Limit State Design



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Design Check: Beam Connectivity

Check	Required	Provided	Remark
Bolt shear capacity (kN)		$V_{dsf} = ((0.2*2*1.0*137.2)/(1.25)) = 43.904$ [cl. 10.4.3]	
Bolt bearing capacity (kN)		N/A	
Bearing capacity of beam web (kN)		N/A	
Bearing capacity of cleat (kN)		N/A	
Bearing capacity (kN)		N/A	
Bolt capacity (kN)		43.904	
Critical bolt shear (kN)	≤ 43.904	30.386	Pass
No. of bolts		4	
No.of column(s)	≤ 2	1	
No. of bolts per column		4	
Bolt pitch (mm)	$\geq 2.5*20 = 50, \leq \text{Min}(32*8.1, 300) = 260$ [cl. 10.2.2]	50	Pass
Bolt gauge (mm)	$\geq 2.5*20 = 50, \leq \text{Min}(32*8.1, 300) = 260$ [cl. 10.2.2]	0	
End distance (mm)	$\geq 1.7*22.0 = 37, \leq 12*8.1 = 97.2$ [cl. 10.2.4]	37	Pass
Edge distance (mm)	$\geq 1.7*22.0 = 37, \leq 12*8.1 = 97.2$ [cl. 10.2.4]	62	Pass
Block shear capacity (kN)	≥ 120.5	$V_{db} = 200.483$ [cl. 6.4.1]	Pass
Cleat height (mm)	$\geq 0.6*350.0=210.0, \leq 350.0-14.2-14.0-14.2-14.0-10=283.6$ [cl. 10.2.4, Insdag Detailing Manual, 2002]	274.0	Pass
		$M_d =$	

Cleat moment capacity (kNm)	$(2 \cdot 43.904 \cdot 50^2) / (50 \cdot 1000) = 4.398$	$(1.2 \cdot 250 \cdot Z) / (1000 \cdot 1.1) = 360.365$ [cl. 8.2.1.2]	Pass
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Design Check: Column Connectivity

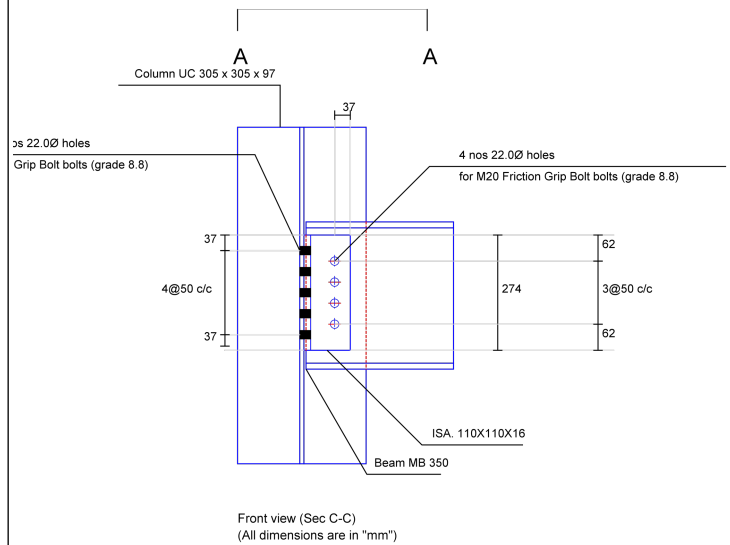
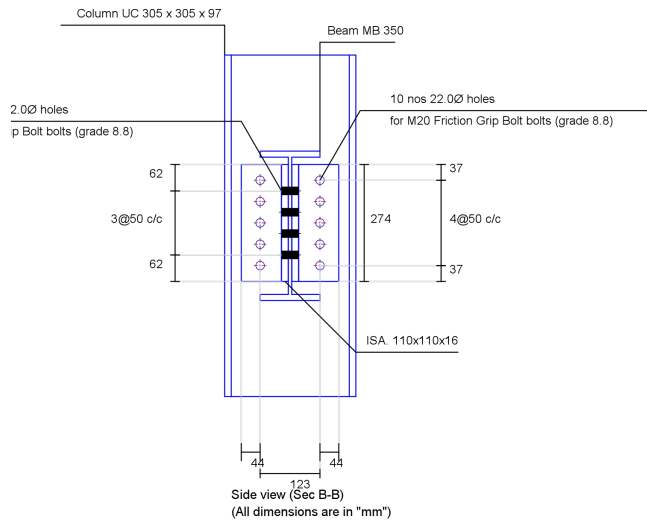
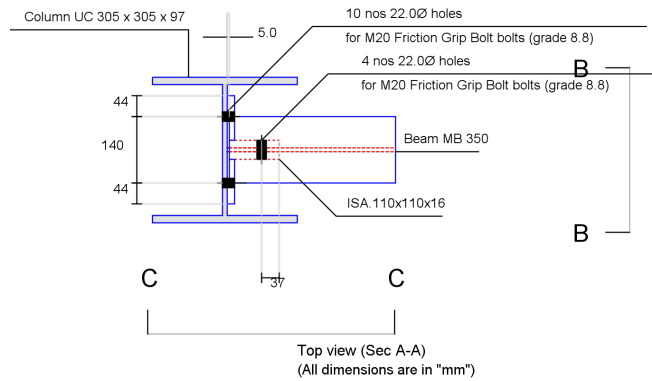
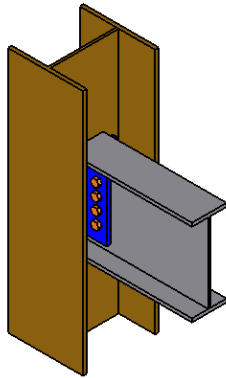
Check	Required	Provided	Remark
Bolt shear capacity (kN)		$V_{dsf} = ((0.2 \cdot 1 \cdot 1.0 \cdot 137.2) / (1.25)) = 21.952$ [cl. 10.4.3]	
Bolt bearing capacity (kN)		N/A	
Bolt bearing capacity (kN)		N/A	
Bolt bearing capacity (kN)		N/A	
Bolt bearing capacity (kN)		N/A	
Bolt capacity (kN)		21.952	
Critical bolt shear (kN)	≤ 21.952	20.732	Pass
No. of bolts		10	
No. of column(s) per angle	≤ 2	1	
No. of bolts per column per angle		5	
Bolt pitch (mm)	$\geq 2.5 \cdot 20 = 50, \leq \text{Min}(32 \cdot 9.9, 300) = 300$ [cl. 10.2.2]	50	Pass
Bolt gauge (mm)	$\geq 2.5 \cdot 20 = 50, \leq \text{Min}(32 \cdot 9.9, 300) = 300$ [cl. 10.2.2]	0	
End distance (mm)	$\geq 1.7 \cdot 22.0 = 37, \leq 12 \cdot 9.9 = 118.8$ [cl. 10.2.4]	44.05	Pass
Edge distance (mm)	$\geq 1.7 \cdot 22.0 = 37, \leq 12 \cdot 9.9 = 118.8$ [cl. 10.2.4]	37	Pass
Block shear capacity (kN)	≥ 120.5	$V_{db} = 248.583$ [cl. 6.4.1]	Pass
Cleat height (mm)	$\geq 0.6 \cdot 350.0 = 210.0, \leq 350.02 \cdot (14.2 + 14.0 + 5) = 283.6$ [cl. 10.2.4, Insdag Detailing Manual, 2002]	274.0	Pass

Cleat moment capacity (kNm)	$(2 \cdot 21.952 \cdot 50^2) / (50 \cdot 1000) = 4.218$	$M_d = (1.2 \cdot 250 \cdot Z) / (1000 \cdot 1.1)$ $= 360.365$ [cl. 8.2.1.2]	Pass
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Views





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Additional Comments	
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