



<b>Company Name</b>	<b>El Mystico &amp; Janet</b>	<b>Project Title</b>	<b>Twenty-five story blocks</b>
<b>Group/Team Name</b>	<b>Design by Hypnosis</b>	<b>Subtitle</b>	<b>Something completely different</b>
<b>Designer</b>	<b>El Mystico</b>	<b>Job Number</b>	<b>1.1.3.2.1</b>
<b>Date</b>	<b>19 /06 /2017</b>	<b>Client</b>	<b>Mr. Clement Onan</b>

<b>Design Conclusion</b>	
<b>Cleat Angle</b>	<b>Pass</b>
<b>Cleat Angle</b>	
<b>Connection Properties</b>	
<b>Connection</b>	
Connection Title	Double Angle Web Cleat
Connection Type	Shear Connection
<b>Connection Category</b>	
Connectivity	Column web-Beam web
Beam Connection	Bolted
Column Connection	Bolted
<b>Loading (Factored Load)</b>	
Shear Force (kN)	120.5
<b>Components</b>	
<b>Column Section</b>	UC 305 x 305 x 97
Material	Fe 410
<b>Beam Section</b>	MB 350
Material	Fe 410
Hole	STD
<b>Cleat Section</b>	110 110 X 16
Thickness (mm)	16
Cleat Leg Size B (mm)	110
Cleat Leg Size A (mm)	110
Hole	STD
<b>Bolts on Beam</b>	
Type	HSFG
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
<b>Bolts on Column</b>	
Type	HSFG
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
<b>Assembly</b>	
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 diameter
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)		$V_{dsf} = ((0.2 \times 2 \times 1.0 \times 137.2) / (1.25)) = 43.904$ [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)	$\leq 43.904$	30.386	Pass
No. of bolts		4	
No. of column(s)	$\leq 2$	1	
No. of bolts per column		4	
Bolt pitch (mm)	$\geq 2.5 \times 20 = 50, \leq \text{Min}(32 \times 8.1, 300) = 260$ [cl. 10.2.2]	50	Pass
Bolt gauge (mm)	$\geq 2.5 \times 20 = 50, \leq \text{Min}(32 \times 8.1, 300) = 260$ [cl. 10.2.2]	0	
End distance (mm)	$\geq 1.7 \times 22.0 = 37, \leq 12 \times 8.1 = 97.2$ [cl. 10.2.4]	37	Pass
Edge distance (mm)	$\geq 1.7 \times 22.0 = 37, \leq 12 \times 8.1 = 97.2$ [cl. 10.2.4]	62	Pass
Block shear capacity (kN)	$\geq 120.5$	$V_{db} = 200.483$ [cl. 6.4.1]	Pass
Cleat height (mm)	$\geq 0.6 \times 350.0 = 210.0, \leq 350.0 - 14.2 - 14.0 - 14.2 - 14.0 - 10 = 283.6$ [cl. 10.2.4, Insdag Detailing Manual, 2002]	274	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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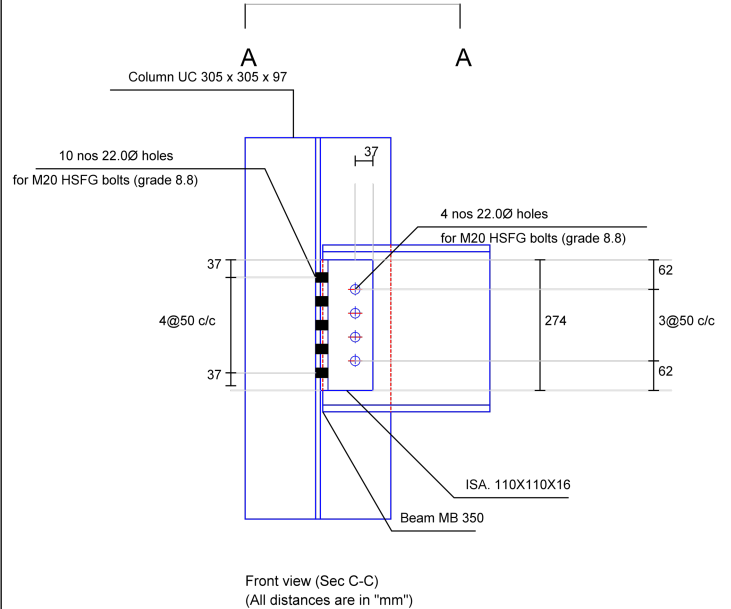
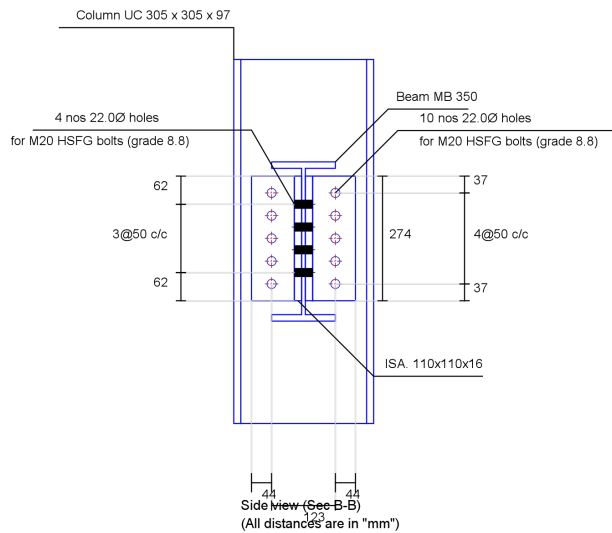
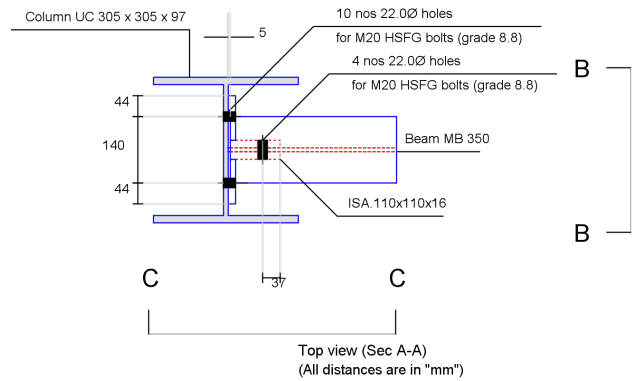
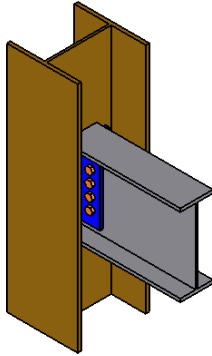
Design Check: Column Connectivity			
Check	Required	Provided	Remark
Bolt shear capacity (kN)		$V_{dsf} = ((0.2 \times 1 \times 1.0 \times 137.2) / (1.25)) = 21.952$ [cl. 10.4.3]	
Bolt bearing capacity (kN)		N/A	
Bolt bearing capacity (kN)		N/A	
Bolt bearing capacity (kN)		N/A	
Bolt bearing capacity (kN)		N/A	
Bolt capacity (kN)		21.952	
Critical bolt shear (kN)	$\leq 21.952$	20.732	Pass
No. of bolts		10	
No. of column(s) per angle	$\leq 2$	1	
No. of bolts per column per angle		5	
Bolt pitch (mm)	$\geq 2.5 \times 20 = 50, \leq \text{Min}(32 \times 9.9, 300) = 300$ [cl. 10.2.2]	50	Pass
Bolt gauge (mm)	$\geq 2.5 \times 20 = 50, \leq \text{Min}(32 \times 9.9, 300) = 300$ [cl. 10.2.2]	0	
End distance (mm)	$\geq 1.7 \times 22.0 = 37, \leq 12 \times 9.9 = 118.8$ [cl. 10.2.4]	44.05	Pass
Edge distance (mm)	$\geq 1.7 \times 22.0 = 37, \leq 12 \times 9.9 = 118.8$ [cl. 10.2.4]	37	Pass
Block shear capacity (kN)	$\geq 120.5$	$V_{db} = 248.583$ [cl. 6.4.1]	Pass
Cleat height (mm)	$\geq 0.6 \times 350.0 = 210.0, \leq 350.02^*$ (14.2+14.0+5)=283.6 [cl. 10.2.4, Insdag Detailing Manual, 2002]	274	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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<b>Additional Comments</b>	
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