



<b>Company Name</b>	<b>Wymer &amp; Dibble</b>	<b>Project Title</b>	<b>A simple block of flats</b>
<b>Group/Team Name</b>	<b>Flying Circus</b>	<b>Subtitle</b>	<b>Cantilever floors</b>
<b>Designer</b>	<b>Mr. Wymer</b>	<b>Job Number</b>	<b>1.1.1.2.1</b>
<b>Date</b>	<b>20 /06 /2018</b>	<b>Client</b>	<b>Mr. Tid</b>

**Design Conclusion**

<b>Fin Plate</b>	<b>Pass</b>
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**Fin Plate**

**Connection Properties**

**Connection**

Connection Title	Single Fin Plate
Connection Type	Shear Connection

**Connection Category**

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

**Loading (Factored Load)**

Shear Force (kN)	120
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**Components**

**Column Section**

Material	Fe 410.0
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**Beam Section**

Material	Fe 410.0
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Hole	STD
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**Plate Section**

Thickness (mm)	8
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Width (mm)	70
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Depth (mm)	300
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Hole	STD
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**Weld**

Type	Double Fillet
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Size (mm)	8
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**Bolts**

Type	Friction Grip Bolt
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Grade	8.8
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Diameter (mm)	16
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Bolt Numbers	7
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Columns (Vertical Lines)	1
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Bolts Per Column	7
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Gauge (mm)	0
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Pitch (mm)	40
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End Distance (mm)	30
Edge Distance (mm)	30
<b>Assembly</b>	
<b>Column-Beam Clearance (mm)</b>	10.0



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**Design Preferences**

<b>Bolt</b>	
Hole Type	Standard
Hole Clearance (mm)	2.0
Material Grade (MPa) (overwrite)	800.0
Slip factor	N/A

<b>Weld</b>	
Type of Weld	Field weld
Material Grade (MPa) (overwrite)	410.0

<b>Detailing</b>	
Type of Edges	Sheared or hand flame cut
Minimum Edge-End Distance	1.7 times the hole diameter
Gap between Beam and Column (mm)	10.0
Are members exposed to corrosive influences?	No

<b>Design</b>	
Design Method	Limit State Design



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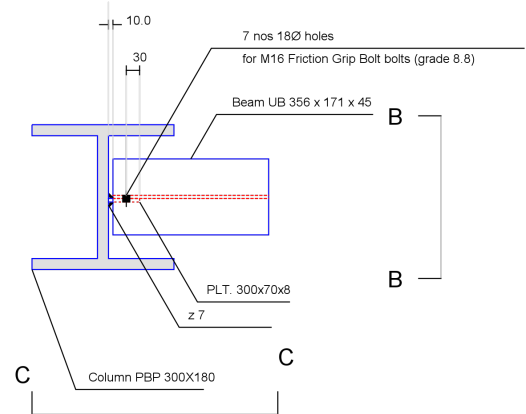
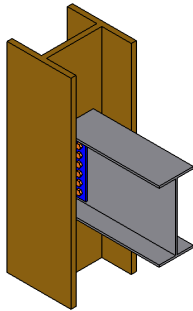
<b>Design Check</b>			
<b>Check</b>	<b>Required</b>	<b>Provided</b>	<b>Remark</b>
<b>Bolt shear capacity (kN)</b>		$V_{dsf} = ((0.25 \times 1 \times 1.0 \times 87.92) / (1.25)) = 17.584$ [cl. 10.4.3]	
<b>Bolt bearing capacity (kN)</b>		N/A	
<b>Bolt capacity (kN)</b>		17.584	<b>Pass</b>
<b>No. of bolts</b>	$120 / 17.584 = 6.8$	7	<b>Pass</b>
<b>No. of column(s)</b>	$\leq 2$	1	
<b>No. of bolts per column</b>		7	
<b>Bolt pitch (mm)</b>	$\geq 2.5 \times 16 = 40, \leq \text{Min}(32 \times 7.0, 300) = 224$ [cl. 10.2.2]	40	<b>Pass</b>
<b>Bolt gauge (mm)</b>	$\geq 2.5 \times 16 = 40, \leq \text{Min}(32 \times 7.0, 300) = 224$ [cl. 10.2.2]	0	
<b>End distance (mm)</b>	$\geq 1.7 \times 18 = 30, \leq 12 \times 7.0 = 84.0$ [cl. 10.2.4]	30	<b>Pass</b>
<b>Edge distance (mm)</b>	$\geq 1.7 \times 18 = 30, \leq 12 \times 7.0 = 84.0$ [cl. 10.2.4]	30	<b>Pass</b>
<b>Block shear capacity (kN)</b>	$\geq 120$	$V_{db} = 230$	<b>Pass</b>
<b>Plate thickness (mm)</b>	$(5 \times 120 \times 1000) / (300 \times 250.0) = 8$ [Owens and Cheal, 1989]	8	<b>Pass</b>
<b>Plate height (mm)</b>	$\geq 0.6 \times 351 = 210.6, \leq 351 - 9 - 10 - 10 = 303.0$ [cl. 10.2.4, Insdag Detailing Manual, 2002]	300	<b>Pass</b>
<b>Plate width (mm)</b>		100	
<b>Plate moment capacity (kNm)</b>	$(2 \times 17.584 \times 40^2) / (40 \times 1000) = 8.44$	$M_d = (1.2 \times 250.0 \times Z) / (1000 \times 1.1) = 32.73$ [cl. 8.2.1.2]	<b>Pass</b>
<b>Effective weld length on each side (mm)</b>		$300 - 2 \times 8 = 284$	
<b>Weld strength (kN/mm)</b>	$\sqrt{[(8440 \times 6) / (2 \times 284^2)]^2 + [120 / (2 \times 284)]^2} = 0.378$	$f_v = (0.7 \times 8 \times 410) / (\sqrt{3} \times 1.25) = 0.884$ [cl. 10.5.7]	<b>Pass</b>

<b>Weld thickness (mm)</b>	$\text{Max}((0.378 \cdot 1000 \cdot \sqrt{3} \cdot 1.25) / (0.7 \cdot 410), 8 \cdot 0.8) = 6.4$ [cl. 10.5.7, Insdag Detailing Manual, 2002]	8	<b>Pass</b>
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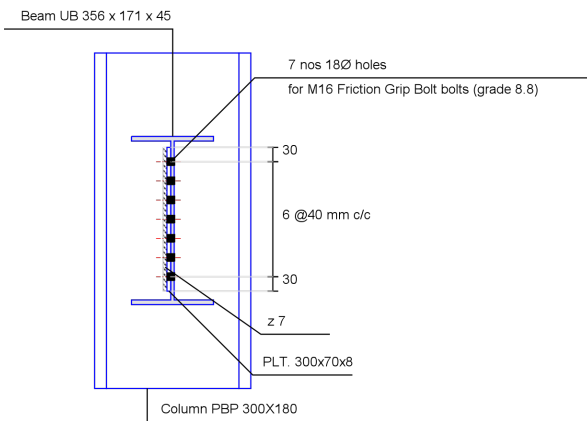


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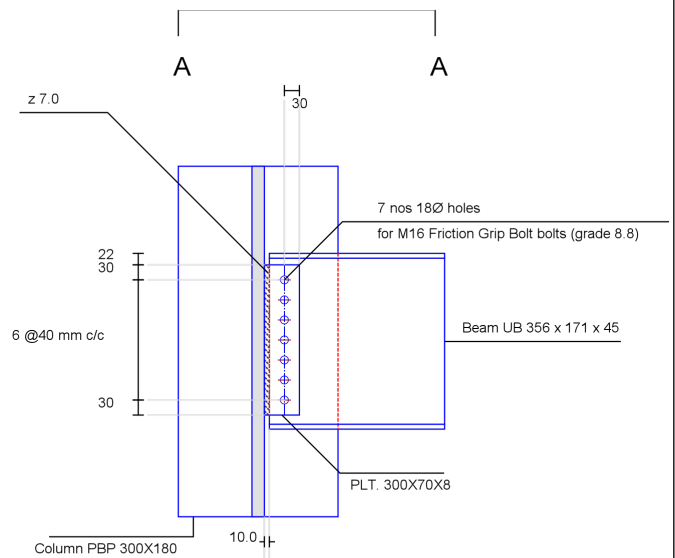
## Views



Top view (Sec A-A)  
(All dimensions are in "mm")



Side view (Sec B-B)  
(All dimensions are in "mm")



Front view (Sec C-C)  
(All dimensions are in "mm")



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<b>Additional Comments</b>	A sample design
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