

<b>Company Name</b>	Vasudev Raghunath Upadhye	<b>Project Title</b>	<b>End Plate</b>
<b>Group/Team Name</b>	MIT	<b>Subtitle</b>	
<b>Designer</b>	VRU	<b>Job Number</b>	Numerical 2
<b>Date</b>	04 /06 /2016	<b>Method</b>	Limit State Design (No Earthquake Load)

<b>Design Conclusion</b>	
<b>Endplate</b>	Pass
<b>Endplate</b>	
<b>Connection Properties</b>	
<b>Connection</b>	
Connection Title	Flexible Endplate
Connection Type	Shear Connection
<b>Connection Category</b>	
Connectivity	Column flange-Beam web
Beam Connection	Welded
Column Connection	Bolted
<b>Loading (Factored Load)</b>	
Shear Force (kN)	160
<b>Components</b>	
<b>Column Section</b>	ISSC 250
Material	Fe 410
<b>Beam Section</b>	ISMB 400
Material	Fe 410
Hole	STD
<b>Plate Section</b>	240X160X10
Thickness (mm)	10
Width (mm)	160
Depth (mm)	240
Hole	STD
<b>Weld</b>	
Type	Double Fillet

Size (mm)	5
<b>Bolts</b>	
Type	HSFG
Grade	8.8
Diameter (mm)	16
Bolt Numbers	10
Columns (Vertical Lines)	2
Bolts Per Column	5
Gauge (mm)	0
Pitch (mm)	40
End Distance (mm)	40
Edge Distance (mm)	30
<b>Assembly</b>	
Column-Beam Clearance (mm)	10

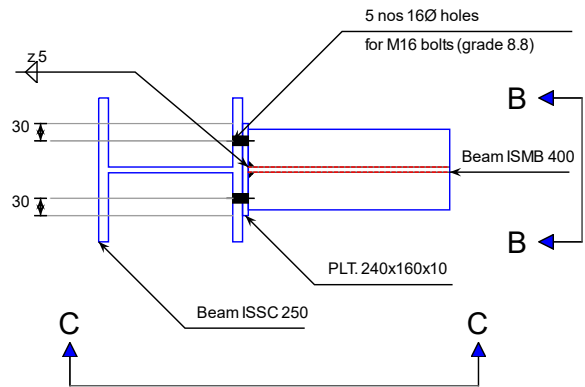
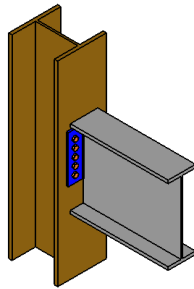
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Design Check			
Check	Required	Provided	Remark
Bolt shear capacity (kN)		$V_{dsb} = ((800.0 \times 0.6126 \times 16 \times 16) / (\sqrt{3} \times 1.25 \times 1000)) = 33.724$ [cl. 10.3.3]	
Bolt bearing capacity (kN)		$V_{dpb} = (2.5 \times 0.491 \times 16 \times 10.0 \times 410) / (1.25 \times 1000) = 64.419$ [cl. 10.3.4]	
Bolt capacity (kN)		Min (33.724, 64.419) = 33.724	Pass
Critical bolt shear (kN)	$\leq 33.724$	25.612	Pass
No. of bolts		10	
No. of column(s)	$\leq 2$	2	
No. of bolts per column per side of end plate		5	
Bolt pitch (mm)	$\geq 2.5 \times 16 = 40, \leq \text{Min}(32 \times 8.9, 300) = 285$ [cl. 10.2.2]	40	Pass
Bolt gauge (mm)	$\geq 2.5 \times 16 = 40, \leq \text{Min}(32 \times 8.9, 300) = 285$ [cl. 10.2.2]	0	
End distance (mm)	$\geq 1.7 \times 18.0 = 30.6, \leq 12 \times 8.9 = 106.8$ [cl. 10.2.4]	40	Pass
Edge distance	$\geq 1.7 \times 18.0 = 30.6, \leq$		

(mm)	$12 \times 8.9 = 106.8$ [cl. 10.2.4]	30	Pass
Block shear capacity (kN)	$\geq 160$	$V_{db} = 191$ [cl. 6.4.1]	
Plate thickness (mm)	$\geq 8$	10	Pass
Plate height (mm)	$\geq 0.6 \times 400.0 = 240.0, \leq 400.0 - 16.0 - 14.0 - 16.0 - 14.0 - 10 = 330.0$ [cl. 10.2.4, Insdag Detailing Manual, 2002]	240	Pass
Plate Width (mm)	$\geq 160, \leq 250.0$	160	Pass
Effective weld length (mm)		$240 - 2 \times 5 = 230$	
Weld strength (kN/mm)	0.348	$f_v = (0.7 \times 5 \times 410) / (\sqrt{3} \times 1.25 \times 1000)$ $= 0.663$ [cl. 10.5.7]	Pass

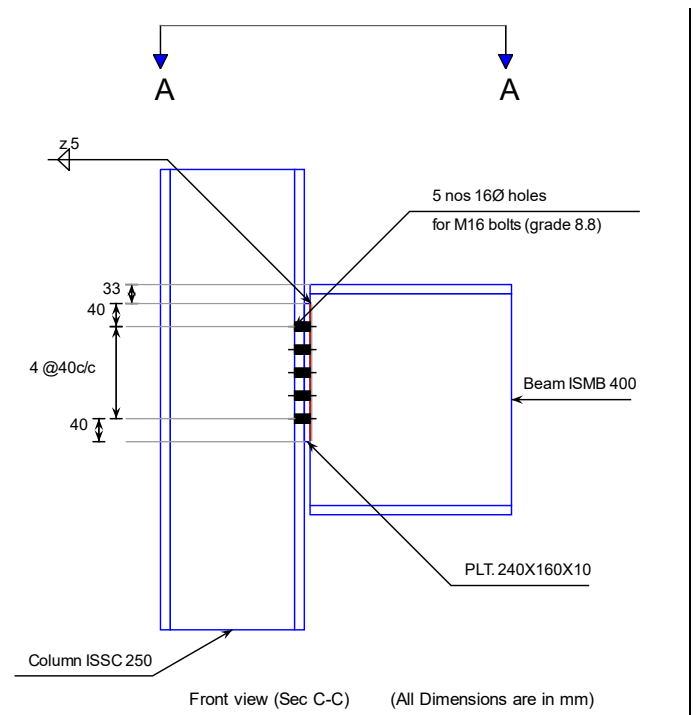
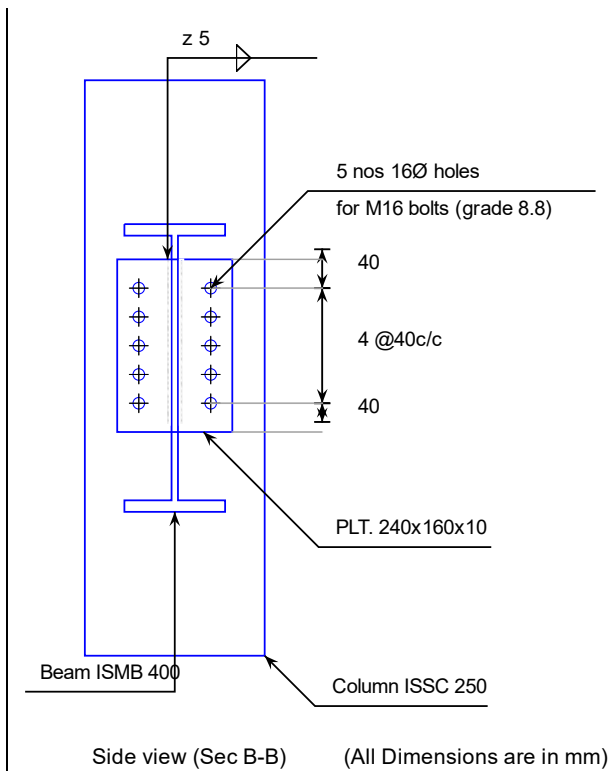
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## Views



Top view (Sec A-A)

(All Dimensions are in mm)



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<b>Additional Comments</b>	Ok
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