


		Created with 	
Company Name	Aker Powergas Pvt Ltd	Project Title	YDP
Group/Team Name	Pune	Subtitle	
Designer	Yogesh Pisal	Job Number	Problem No 4
Date	05 /06 /2016	Method	Limit State Design (No Earthquake Load)


Design Conclusion	
Finplate	Pass
Finplate	
Connection Properties	
Connection	
Connection Title	Single Finplate
Connection Type	Shear Connection
Connection Category	
Connectivity	Column flange-Beam web
Beam Connection	Bolted
Column Connection	Welded
Loading (Factored Load)	
Shear Force (kN)	200
Components	
Column Section	ISSC 200
Material	Fe 410
Beam Section	ISMB 400
Material	Fe 410
Hole	STD
Plate Section	250X80X16
Thickness (mm)	16
Width (mm)	80
Depth (mm)	250
Hole	STD
Weld	
Type	Double Fillet
Size (mm)	13
Bolts	
Type	HSFG
Grade	8.8
Diameter (mm)	16
Bolt Numbers	4
Columns (Vertical Lines)	1
Bolts Per Column	4
Gauge (mm)	0
Pitch (mm)	63
End Distance (mm)	30
Edge Distance (mm)	30
Assembly	
Column-Beam Clearance (mm)	20

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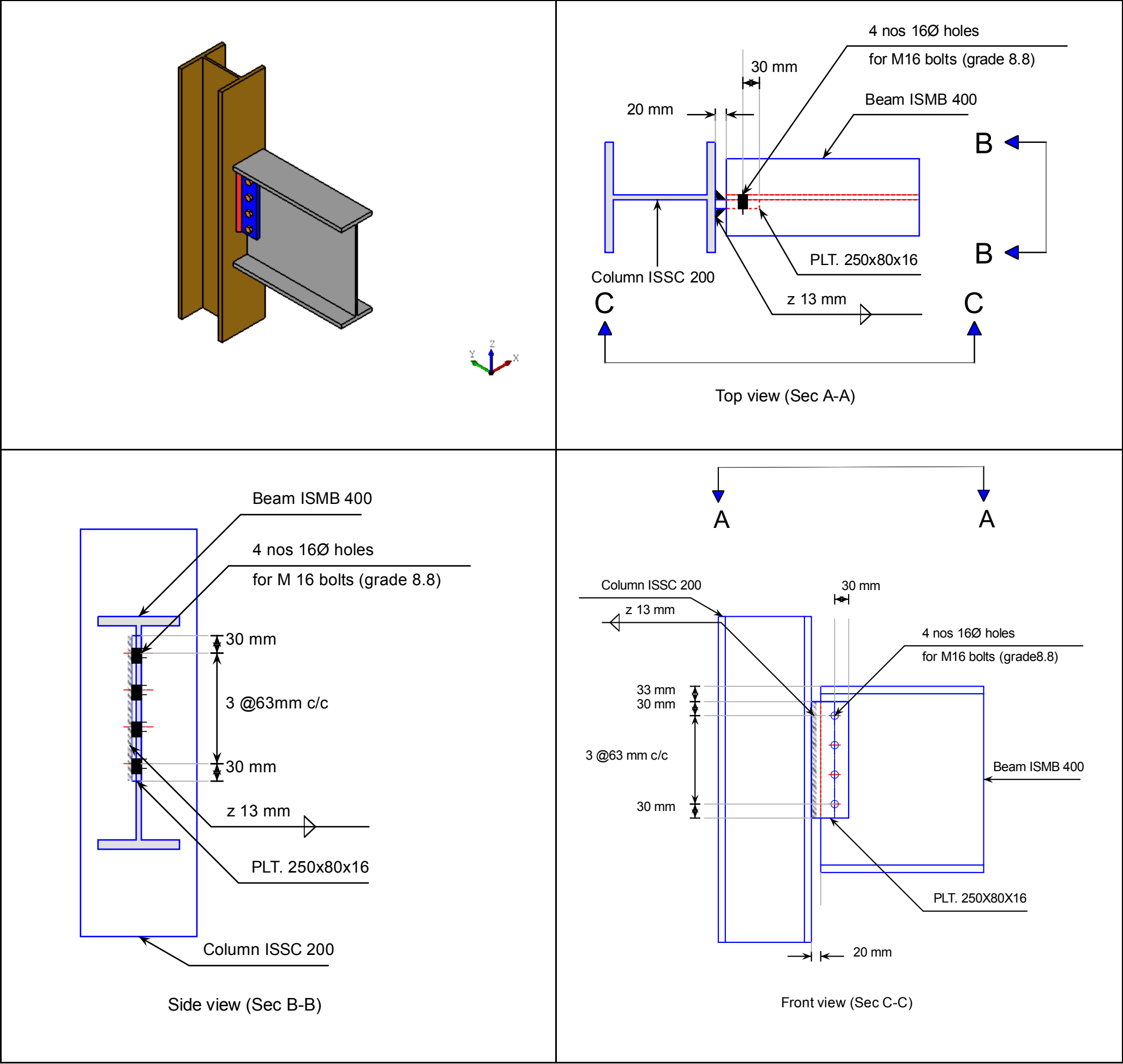
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Design Check			
Check	Required	Provided	Remark
Bolt shear capacity (kN)		$V_{dsb} = (800 \times 0.6126 \times 16 \times 16) / (\sqrt{3} \times 1.25 \times 1000) = 58.012$ [cl. 10.3.3]	
Bolt bearing capacity (kN)		$V_{dpb} = (2.5 \times 0.491 \times 16 \times 8.9 \times 410) / (1.25 \times 1000) = 57.333$ [cl. 10.3.4]	
Bolt capacity (kN)		Min (58.012, 57.333) = 57.333	
No. of bolts	200/57.333 = 3.5	4	Pass
No.of column(s)	$\leq 2$	1	
No. of bolts per column		4	
Bolt pitch (mm)	$\geq 2.5 \times 16 = 40, \leq \text{Min}(32 \times 8.9, 300) = 285$ [cl. 10.2.2]	63	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)	$\geq 1.7 \times 18 = 30.6, \leq 12 \times 8.9 = 106.8$ [cl. 10.2.4]	30	Pass
Edge distance (mm)	$\geq 1.7 \times 18 = 30.6, \leq 12 \times 8.9 = 106.8$ [cl. 10.2.4]	30	Pass
Block shear capacity (kN)	$\geq 200$	$V_{db} = 537$	Pass
Plate thickness (mm)	$(5 \times 200 \times 1000) / (250 \times 250) = 16.0$ [Owens and Cheal, 1989]	16	Pass
Plate height (mm)	$\geq 0.6 \times 400 = 240.0, \leq 400 - 16 - 14 - 10 = 330.0$ [cl. 10.2.4, Insdag Detailing Manual, 2002]	250	Pass
Plate width (mm)		100	
Plate moment capacity (kNm)	$(2 \times 58.012 \times 63^2) / (63 \times 1000) = 13.923$	$M_d = (1.2 \times 250 \times Z) / (1000 \times 1.1) = 45.45$ [cl. 8.2.1.2]	Pass
Effective weld length (mm)		$250 - 2 \times 16 = 218$	
Weld strength (kN/mm)	$\sqrt{[(13923 \times 6) / (2 \times 218^2)]^2 + [200 / (2 \times 218)]^2} = 0.991$	$f_v = (0.7 \times 13 \times 410) / (\sqrt{3} \times 1.25) = 2.121$ [cl. 10.5.7]	Pass
Weld thickness (mm)	$\text{Max}((0.991 \times 1000 \times \sqrt{3} \times 1.25) / (0.7 \times 410), 16 \times 0.8) = 12.8$ [cl. 10.5.7, Insdag Detailing Manual,	13	Pass

	2002]		
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Views



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Additional Comments			