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Company Name	Aker Powergas Pvt Ltd	Project Title	YDP
Group/Team Name	Pune	Subtitle	
Designer	Yogesh Pisal	Job Number	Problem No 2
Date	04 /06 /2016	Method	Limit State Design (No Earthquake Load)

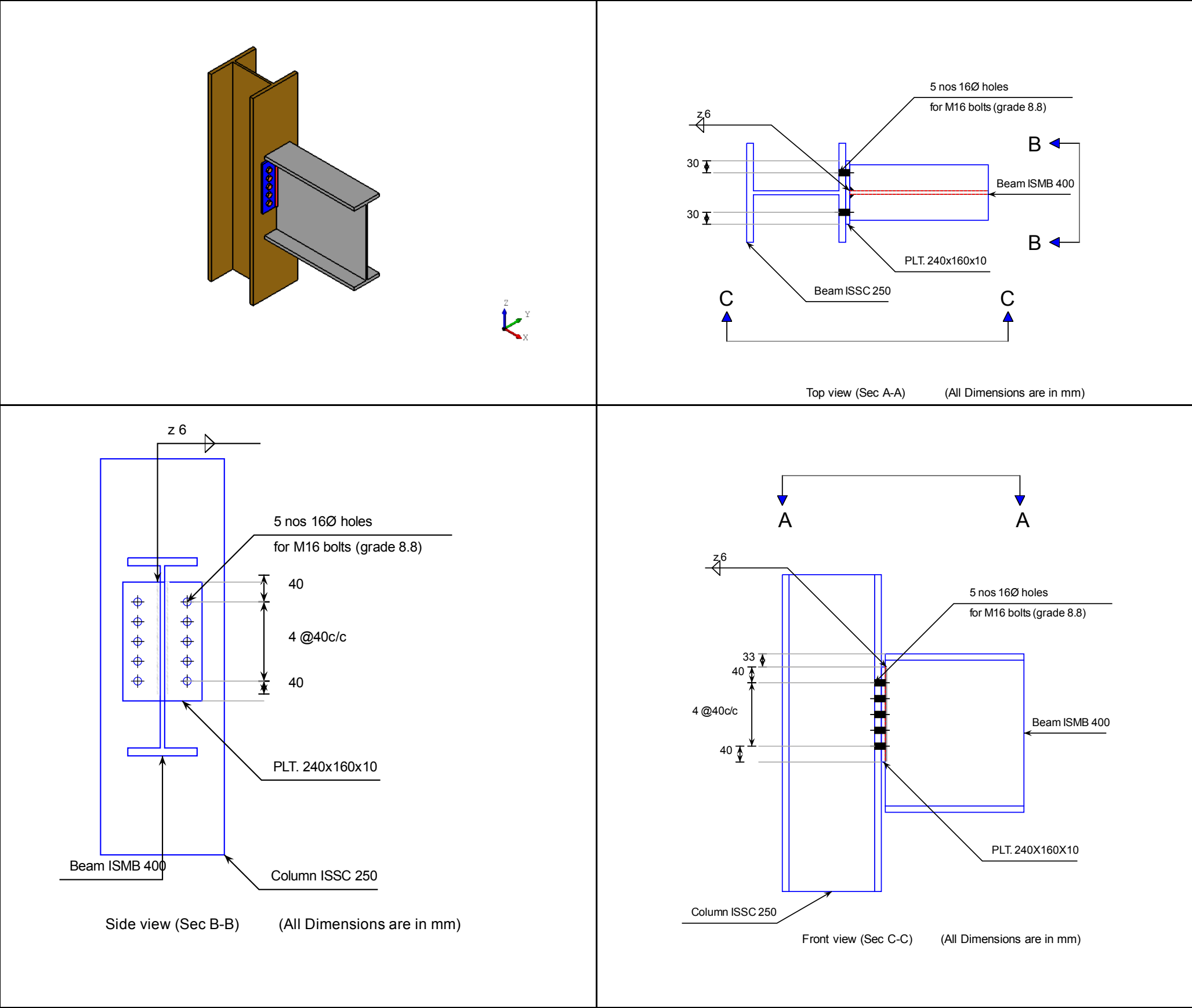
Design Conclusion	
Endplate	Pass
Endplate	
Connection Properties	
Connection	
Connection Title	Flexible Endplate
Connection Type	Shear Connection
Connection Category	
Connectivity	Column flange-Beam web
Beam Connection	Welded
Column Connection	Bolted
Loading (Factored Load)	
Shear Force (kN)	160
Components	
Column Section	ISSC 250
Material	Fe 410
Beam Section	ISMB 400
Material	Fe 410
Hole	STD
Plate Section	240X160X10
Thickness (mm)	10
Width (mm)	160
Depth (mm)	240
Hole	STD
Weld	
Type	Double Fillet
Size (mm)	6
Bolts	
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
Assembly	
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)	≤ 33.724	25.612	Pass
No. of bolts		10	
No.of column(s)	≤ 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 (mm)	$\geq 1.7 \times 18.0 = 30.6, \leq 12 \times 8.9 = 106.8$ [cl. 10.2.4]	30	Pass
Block shear capacity (kN)	≥ 160	$V_{db} = 191$ [cl. 6.4.1]	
Plate thickness (mm)	≥ 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)		$240 - 2 \times 6 = 228$	
Weld strength (kN/mm)	0.351	$f_v = (0.7 \times 6 \times 410) / (\sqrt{3} \times 1.25 \times 1000) = 0.795$ [cl. 10.5.7]	Pass

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Additional Comments	
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