


		Created with 	
Company Name	NGD	Project Title	PROBLEM4
Group/Team Name	MIT	Subtitle	
Designer	NGD	Job Number	
Date	06 /06 /2016	Method	Limit State Design (No Earthquake Load)

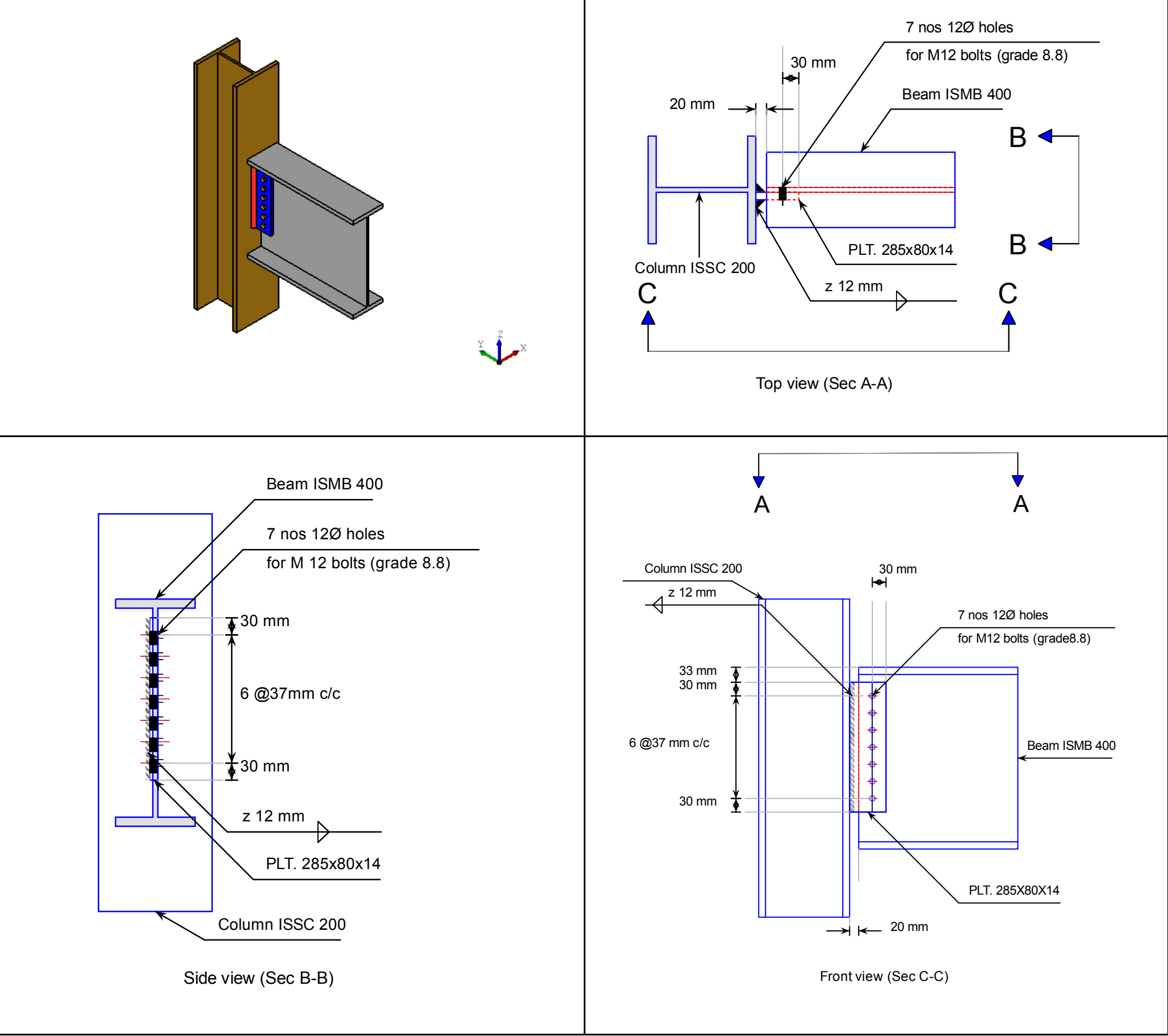
Design Conclusion	
Finplate	Pass
Finplate	
Connection Properties	
Connection	
Connection Title	Single Finplate
Connection Type	Shear Connection
Connection Category	
Connectivity	Column flange-Beam web
Beam Connection	Bolted
Column Connection	Welded
Loading (Factored Load)	
Shear Force (kN)	200
Components	
Column Section	ISSC 200
Material	Fe 410
Beam Section	ISMB 400
Material	Fe 410
Hole	STD
Plate Section	285X80X14
Thickness (mm)	14
Width (mm)	80
Depth (mm)	285
Hole	STD
Weld	
Type	Double Fillet
Size (mm)	12
Bolts	
Type	HSFG
Grade	8.8
Diameter (mm)	12
Bolt Numbers	7
Columns (Vertical Lines)	1
Bolts Per Column	7
Gauge (mm)	0
Pitch (mm)	37
End Distance (mm)	30
Edge Distance (mm)	30
Assembly	
Column-Beam Clearance (mm)	20


Company Name	NGD	Project Title	PROBLEM4
Group/Team Name	MIT	Subtitle	
Designer	NGD	Job Number	
Date	06 /06 /2016	Method	Limit State Design (No Earthquake Load)

Design Check			
Check	Required	Provided	Remark
Bolt shear capacity (kN)		$V_{dsb} = (800 \times 0.6126 \times 12 \times 12) / (\sqrt{3} \times 1.25 \times 1000) = 31.223$ [cl. 10.3.3]	
Bolt bearing capacity (kN)		$V_{dpb} = (2.5 \times 0.519 \times 12 \times 8.9 \times 410) / (1.25 \times 1000) = 45.452$ [cl. 10.3.4]	
Bolt capacity (kN)		Min (31.223, 45.452) = 31.223	
No. of bolts	200/31.223 = 6.4	7	Pass
No.of column(s)	≤ 2	1	
No. of bolts per column		7	
Bolt pitch (mm)	$\geq 2.5 \times 12 = 30, \leq \text{Min}(32 \times 8.9, 300) = 285$ [cl. 10.2.2]	37	Pass
Bolt gauge (mm)	$\geq 2.5 \times 12 = 30, \leq \text{Min}(32 \times 8.9, 300) = 285$ [cl. 10.2.2]	0	
End distance (mm)	$\geq 1.7 \times 13 = 22.1, \leq 12 \times 8.9 = 106.8$ [cl. 10.2.4]	30	Pass
Edge distance (mm)	$\geq 1.7 \times 13 = 22.1, \leq 12 \times 8.9 = 106.8$ [cl. 10.2.4]	30	Pass
Block shear capacity (kN)	≥ 200	$V_{db} = 504$	Pass
Plate thickness (mm)	$(5 \times 200 \times 1000) / (285 \times 250) = 14.04$ [Owens and Cheal, 1989]	14	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]	285	Pass
Plate width (mm)		100	
Plate moment capacity (kNm)	$(2 \times 31.223 \times 37^2) / (37 \times 1000) = 11.24$	$M_d = (1.2 \times 250 \times Z) / (1000 \times 1.1) = 51.69$ [cl. 8.2.1.2]	Pass
Effective weld length (mm)		$285 - 2 \times 12 = 261$	
Weld strength (kN/mm)	$\sqrt{[(11240 \times 6) / (2 \times 261^2)]^2 + [200 / (2 \times 261)]^2} = 0.626$	$f_v = (0.7 \times 12 \times 410) / (\sqrt{3} \times 1.25) = 1.591$ [cl. 10.5.7]	Pass
Weld thickness (mm)	$\text{Max}((0.626 \times 1000 \times \sqrt{3} \times 1.25) / (0.7 \times 410), 14 \times 0.8) = 11.2$ [cl. 10.5.7, Insdag Detailing Manual, 2002]	12	Pass

Company Name	NGD	Project Title	PROBLEM4
Group/Team Name	MIT	Subtitle	
Designer	NGD	Job Number	
Date	06 /06 /2016	Method	Limit State Design (No Earthquake Load)

Views



		Created with  Osdag	
Company Name	NGD	Project Title	PROBLEM4
Group/Team Name	MIT	Subtitle	
Designer	NGD	Job Number	
Date	06 /06 /2016	Method	Limit State Design (No Earthquake Load)
Additional Comments			