



Company Name	SANGAM UNIVERSITY	Project Title	PROJECT2
Group/Team Name	OSDAG	Subtitle	
Designer	ENGINEER	Job Number	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)	100
Components	
Column Section	ISSC 250
Material	Fe 410
Beam Section	ISMB 400
Material	Fe 410
Hole	STD
Plate Section	240X144X10
Thickness (mm)	10
Width (mm)	144
Depth (mm)	240
Hole	STD
Weld	
Type	Double Fillet
Size (mm)	8
Bolts	
Type	HSFG
Grade	8.8
Diameter (mm)	12
Bolt Numbers	12
Columns (Vertical Lines)	2
Bolts Per Column	6
Gauge (mm)	0
Pitch (mm)	30
End Distance (mm)	45
Edge Distance (mm)	22
Assembly	
Column-Beam Clearance (mm)	10

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Design Check			
Check	Required	Provided	Remark
Bolt shear capacity (kN)		$V_{dsb} = ((800.0 \times 0.6126 \times 12 \times 12) / (\sqrt{3} \times 1.25 \times 1000)) = 18.97$ [cl. 10.3.3]	
Bolt bearing capacity (kN)		$V_{dpb} = (2.5 \times 0.519 \times 12 \times 10.0 \times 410) / (1.25 \times 1000) = 51.07$ [cl. 10.3.4]	
Bolt capacity (kN)		Min (18.97, 51.07) = 18.97	Pass
Critical bolt shear (kN)	≤ 18.97	14.532	Pass
No. of bolts		12	
No.of column(s)	≤ 2	2	
No. of bolts per column per side of end plate		6	
Bolt pitch (mm)	$\geq 2.5 \times 12 = 30, \leq \text{Min}(32 \times 8.9, 300) = 285$ [cl. 10.2.2]	30	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)	$\geq 1.7 \times 13.0 = 22.1, \leq 12 \times 8.9 = 106.8$ [cl. 10.2.4]	45	Pass
Edge distance (mm)	$\geq 1.7 \times 13.0 = 22.1, \leq 12 \times 8.9 = 106.8$ [cl. 10.2.4]	22	Pass
Block shear capacity (kN)	≥ 100	$V_{db} = 178$ [cl. 6.4.1]	
Plate thickness (mm)	≥ 6	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)	$\geq 144, \leq 250.0$	144	Pass
Effective weld length (mm)		$240 - 2 \times 8 = 224$	
Weld strength (kN/mm)	0.223	$f_v = (0.7 \times 8 \times 410) / (\sqrt{3} \times 1.25 \times 1000) = 1.06$ [cl. 10.5.7]	Pass

Views

The figure presents a technical drawing of a beam-column joint, detailing its geometry and dimensions across four distinct views.

- 3D Isometric View:** Located in the top-left quadrant, this view illustrates the assembly of a Beam ISMB 400, a Column ISSC 250, and a PLT. 240x144x10 plate. A small 3D coordinate system (x, y, z) is positioned to the right of the assembly.
- Top view (Sec A-A):** Situated in the top-right quadrant, this view shows the joint from above. It identifies the Beam ISMB 400, the Column ISSC 250, and the PLT. 240x144x10 plate. Key features include 6 nos 12Ø holes for M12 bolts (grade 8.8) and dimensions of 22 and 22. Section lines A-A and C-C are indicated with arrows.
- Side view (Sec B-B):** Located in the bottom-left quadrant, this view shows the joint from the side. It details the 6 nos 12Ø holes for M12 bolts (grade 8.8), the PLT. 240x144x10 plate, and the Beam ISMB 400. Dimensions include 45, 5 @ 30c/c, and 45. A section line B-B is indicated with an arrow.
- Front view (Sec C-C):** Situated in the bottom-right quadrant, this view shows the joint from the front. It details the 6 nos 12Ø holes for M12 bolts (grade 8.8), the PLT. 240x144x10 plate, and the Column ISSC 250. Dimensions include 33, 45, 5 @ 30c/c, and 45. Section lines A-A and C-C are indicated with arrows.

(All Dimensions are in mm)

		 Created with	
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Additional Comments		The connection was designed to demonstrate the functionality of Osdag	