 <small>Created with</small>	
<b>Company Name</b>	<b>Indian Register of Shipping</b>	<b>Project Title</b>	<b>Endplate-IRS</b>
<b>Group/Team Name</b>	<b>Engineering Division</b>	<b>Subtitle</b>	<b>Column flange - Beam web</b>
<b>Designer</b>	<b>Jai Ram S</b>	<b>Job Number</b>	<b>1</b>
<b>Date</b>	<b>04 /06 /2016</b>	<b>Method</b>	<b>Limit State Design (No Earthquake Load)</b>


<b>Design Conclusion</b>	
<b>Endplate</b>	<b>Pass</b>
<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>	269X144X10
Thickness (mm)	10
Width (mm)	144
Depth (mm)	269
Hole	STD
<b>Weld</b>	
Type	Double Fillet
Size (mm)	4
<b>Bolts</b>	
Type	HSFG
Grade	8.8
Diameter (mm)	10

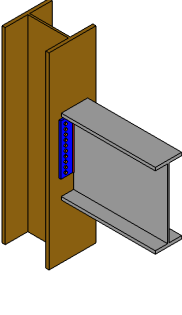
Bolt Numbers	20
Columns (Vertical Lines)	2
Bolts Per Column	10
Gauge (mm)	0
Pitch (mm)	25
End Distance (mm)	22
Edge Distance (mm)	22
<b>Assembly</b>	
<b>Column-Beam Clearance (mm)</b>	10


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<b>Design Check</b>			
<b>Check</b>	<b>Required</b>	<b>Provided</b>	<b>Remark</b>
<b>Bolt shear capacity (kN)</b>		$V_{dsb} = ((800.0 \times 0.6126 \times 10 \times 10) / (\sqrt{3} \times 1.25 \times 1000))$ $= 13.174$ [cl. 10.3.3]	
<b>Bolt bearing capacity (kN)</b>		$V_{dpb} = (2.5 \times 0.391 \times 10 \times 10.0 \times 410) / (1.25 \times 1000)$ $= 32.062$ [cl. 10.3.4]	
<b>Bolt capacity (kN)</b>		Min (13.174, 32.062) = 13.174	<b>Pass</b>
<b>Critical bolt shear (kN)</b>	$\leq 13.174$	11.839	<b>Pass</b>
<b>No. of bolts</b>		20	
<b>No. of column(s)</b>	$\leq 2$	2	
<b>No. of bolts per column per side of end plate</b>		10	
<b>Bolt pitch (mm)</b>	$\geq 2.5 \times 10 = 25, \leq$ Min(32*8.9, 300) = 285 [cl. 10.2.2]	25	<b>Pass</b>
<b>Bolt gauge (mm)</b>	$\geq 2.5 \times 10 = 25, \leq$ Min(32*8.9, 300) = 285 [cl. 10.2.2]	0	
<b>End distance (mm)</b>	$\geq 1.7 \times 13.0 = 22.1, \leq 12 \times 8.9$ $= 106.8$ [cl. 10.2.4]	22	<b>Pass</b>
<b>Edge distance (mm)</b>	$\geq 1.7 \times 13.0 = 22.1, \leq 12 \times 8.9$ $= 106.8$ [cl. 10.2.4]	22	<b>Pass</b>
<b>Block shear capacity (kN)</b>	$\geq 160$	$V_{db} = 178$ [cl. 6.4.1]	
<b>Plate thickness (mm)</b>	$\geq 5$	10	<b>Pass</b>
	$\geq 0.6 \times 400.0 = 240.0, \leq$		

<b>Plate height (mm)</b>	400.0-16.0-14.0-16.0-14.0-10=330.0 [cl. 10.2.4, Insdag Detailing Manual, 2002]	269	<b>Pass</b>
<b>Plate Width (mm)</b>	$\geq 144, \leq 250.0$	144	<b>Pass</b>
<b>Effective weld length (mm)</b>		$269 - 2 \cdot 4 = 261$	
<b>Weld strength (kN/mm)</b>	0.307	$f_v = (0.7 \cdot 4 \cdot 410) / (\sqrt{3} \cdot 1.25 \cdot 1000)$ $= 0.53$ [cl. 10.5.7]	<b>Pass</b>

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<b>Designer</b>	<b>Jai Ram S</b>	<b>Job Number</b>	<b>1</b>
<b>Date</b>	<b>04 /06 /2016</b>	<b>Method</b>	<b>Limit State Design (No Earthquake Load)</b>

<b>Views</b>	
	

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<b>Date</b>	<b>04 /06 /2016</b>	<b>Metdod</b>	<b>Limit State Design (No Earthquake Load)</b>
<b>Additional Comments</b>			