Company Name	D.Y.Patil College of Engineering Akurdi Pune 44	Project Title	Problem Two 4 June 2016
Group/Team Name	DYPCOE	Subtitle	
Designer	Mr.S.J.Payghan	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)	160

Components

Column Section	ISSC 250
Material	Fe 410
Beam Section	ISMB 400
Material	Fe 410
Hole	STD
Plate Section	240X174X10
Thickness (mm)	10
Width (mm)	174
Depth (mm)	240
Hole	STD
Weld	
Type	Double Fillet
Size (mm)	8
Bolts	
Type	HSFG
Grade	8.8
Diameter (mm)	20
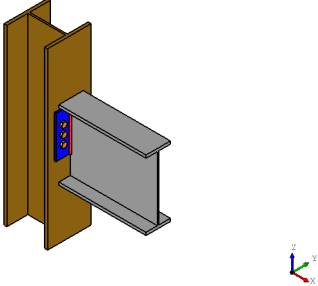
Bolt Numbers	6
Columns (Vertical Lines)	2
Bolts Per Column	3
Gauge (mm)	0
Pitch (mm)	50
End Distance (mm)	70
Edge Distance (mm)	37
Assembly	
Column-Beam Clearance (mm)	10

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Design Check			
Check	**Required**	**Provided**	**Remark**
Bolt shear capacity (kN)		V_{dsb} = ((800.0*0.6126*20*20)/(√3*1.25*1000)) = 52.694 [cl. 10.3.3]	
Bolt bearing capacity (kN)		V_{dpb} = (2.5*0.508*20*10.0*410)/(1.25*1000) = 83.312 [cl. 10.3.4]	
Bolt capacity (kN)		Min (52.694, 83.312) = 52.694	**Pass**
Critical bolt shear (kN)	≤ 52.694	48.074	**Pass**
No. of bolts		6	
No.of column(s)	≤ 2	2	
No. of bolts per column per side of end plate		3	
Bolt pitch (mm)	≥ 2.5*20 = 50, ≤ Min(32*8.9, 300) = 285 [cl. 10.2.2]	50	**Pass**
Bolt gauge (mm)	≥ 2.5*20 = 50, ≤ Min(32*8.9, 300) = 285 [cl. 10.2.2]	0	
End distance (mm)	≥ 1.7*22.0 = 37.4, ≤ 12*8.9 = 106.8 [cl. 10.2.4]	70	**Pass**
Edge distance (mm)	≥ 1.7*22.0 = 37.4, ≤ 12*8.9 = 106.8 [cl. 10.2.4]	37	**Pass**
Block shear capacity (kN)	≥ 160	V_{db} = 203 [cl. 6.4.1]	
Plate thickness (mm)	≥ 8	10	**Pass**
	≥ 0.6*400.0=240.0, ≤		

Plate height (mm)	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)	≥ 174, ≤ 250.0	174	**Pass**
Effective weld length (mm)		240-2*8 = 224	
Weld strength (kN/mm)	0.357	f_v =(0.7*8*410)/(√3*1.25*1000) = 1.06 [cl. 10.5.7]	**Pass**

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Views

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Additional Comments	