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Company Name	**Dr BR Ambedkar Institute of Technology**	**Project Title**	**End Plate Connection**
Group/Team Name	**Pre Launch W/Shop Team**	**Subtitle**	
Designer	**Jenson Daniel**	**Job Number**	**Ques2**
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)	3
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**
Plate height (mm)	≥ 0.6*400.0=240.0, ≤ 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*3 = 234	
Weld strength (kN/mm)	0.342	f_v =(0.7*3*410)/(√3*1.25*1000) = 0.398 [cl. 10.5.7]	**Pass**

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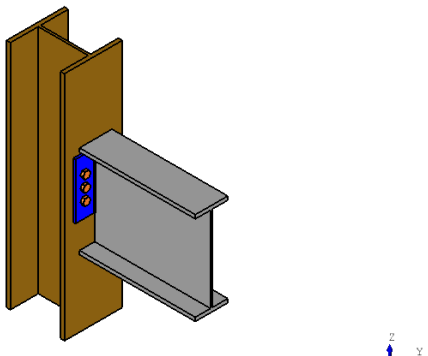
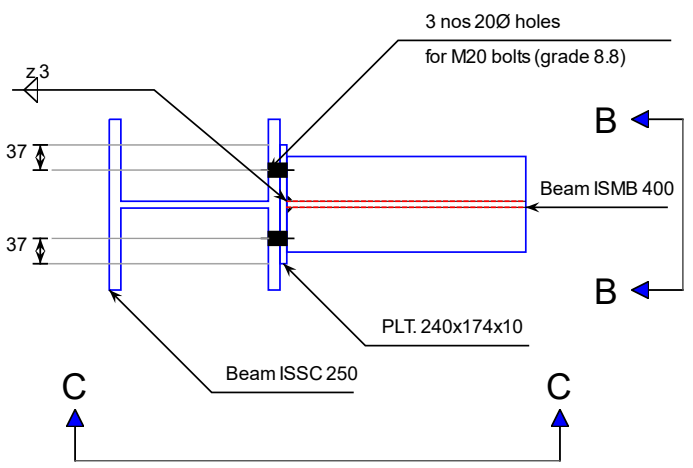
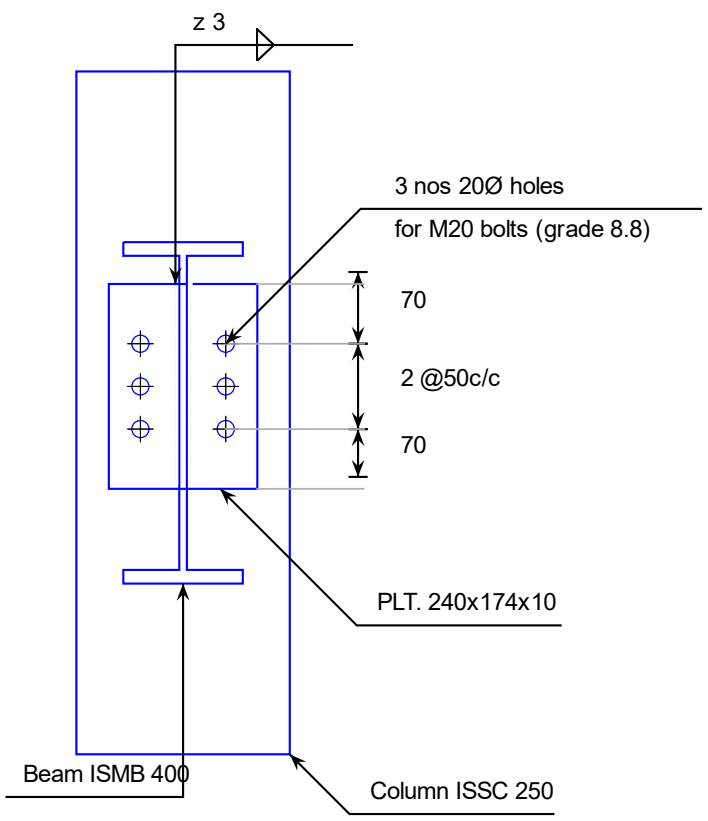
Date	**04 /06 /2016**	**Method**	**Limit State Design (No Earthquake Load)**

Views

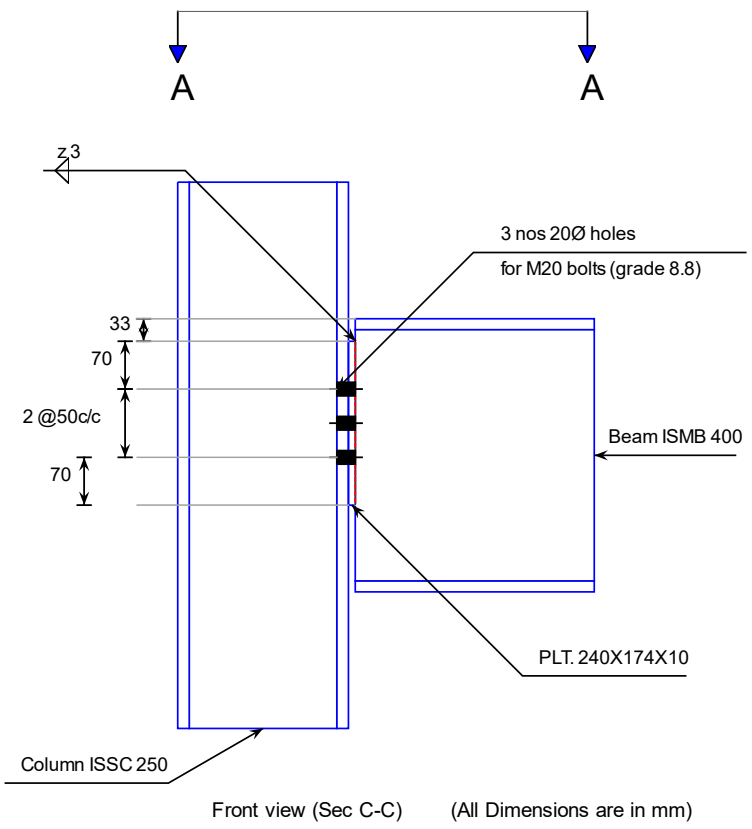




Top view (Sec A-A) (All Dimensions are in mm)



Side view (Sec B-B) (All Dimensions are in mm)



Front view (Sec C-C) (All Dimensions are in mm)

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Designer	**Jenson Daniel**	**Job Number**	**Ques2**
Date	**04 /06 /2016**	**Metdod**	**Limit State Design (No Earthquake Load)**

Additional Comments	