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Company Name	**LERA**	**Project Title**	**Set-1**
Group/Team Name	**LERA**	**Subtitle**	**Question-2**
Designer	**charugalla J P Sreeram**	**Job Number**	
Date	**05 /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	240X160X10
Thickness (mm)	10
Width (mm)	160
Depth (mm)	240
Hole	STD
Weld	
Type	Double Fillet
Size (mm)	6
Bolts	
Type	HSFG

Grade	8.8
Diameter (mm)	16
Bolt Numbers	10
Columns (Vertical Lines)	2
Bolts Per Column	5
Gauge (mm)	0
Pitch (mm)	40
End Distance (mm)	40
Edge Distance (mm)	30
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*16*16)/(√3*1.25*1000) = 33.724 [cl. 10.3.3]	
Bolt bearing capacity (kN)		V_{dpb} = (2.5*0.491*16*10.0*410)/(1.25*1000) = 64.419 [cl. 10.3.4]	
Bolt capacity (kN)		Min (33.724, 64.419) = 33.724	**Pass**
Critical bolt shear (kN)	≤ 33.724	25.612	**Pass**
No. of bolts		10	
No.of column(s)	≤ 2	2	
No. of bolts per column per side of end plate		5	
Bolt pitch (mm)	≥ 2.5*16 = 40, ≤ Min(32*8.9, 300) = 285 [cl. 10.2.2]	40	**Pass**
Bolt gauge (mm)	≥ 2.5*16 = 40, ≤ Min(32*8.9, 300) = 285 [cl. 10.2.2]	0	
End distance (mm)	≥ 1.7*18.0 = 30.6, ≤ 12*8.9 = 106.8 [cl. 10.2.4]	40	**Pass**
Edge distance (mm)	≥ 1.7*18.0 = 30.6, ≤ 12*8.9 = 106.8 [cl. 10.2.4]	30	**Pass**
Block shear capacity (kN)	≥ 160	V_{db} = 191 [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)	≥ 160, ≤ 250.0	160	**Pass**
Effective weld length (mm)		240-2*6 = 228	
Weld strength (kN/mm)	0.351	f_v =(0.7*6*410)/(√3*1.25*1000) = 0.795 [cl. 10.5.7]	**Pass**

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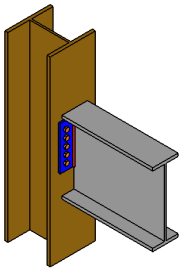
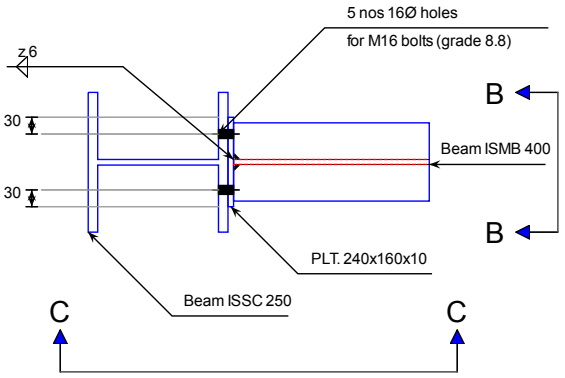
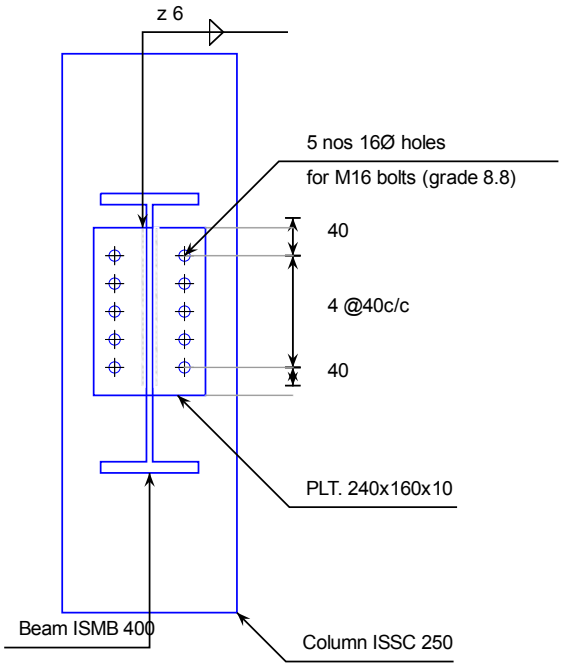
Date	**05 /06 /2016**	**Method**	**Limit State Design (No Earthquake Load)**

Views

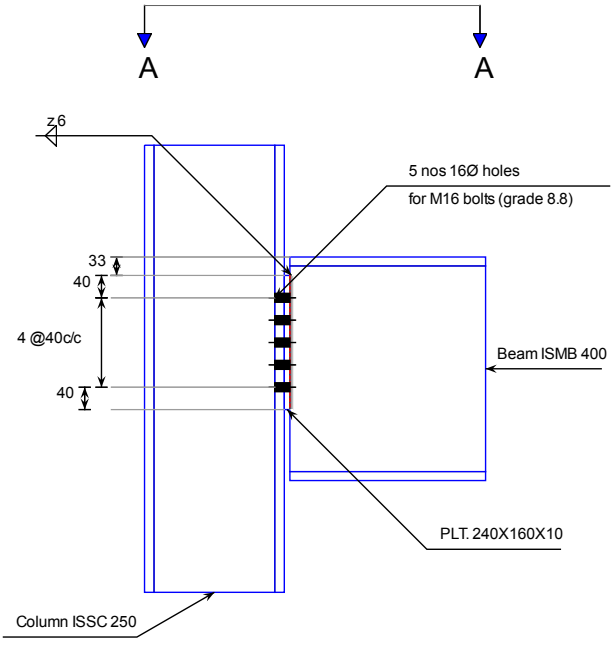




Top view (Sec A-A) (All Dimensions are in mm)



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	**charugalla J P Sreeram**	**Job Number**	
Date	**05 /06 /2016**	**Metdod**	**Limit State Design (No Earthquake Load)**

Additional Comments	