Created with

Company Name	Nandadeep Designers and valuers pvt.ltd.	Project Title	Design
Group/Team Name	NDVPL	Subtitle	
Designer	Priyanka	Job Number	1
Date	05 /06 /2016	Method	Limit State Design (No Earthquake Load)

Design Conclusion

    Finplate   Pass

Finplate

Connection Properties

Connection

    Connection Title   Single Finplate

    Connection Type   Shear Connection

Connection Category

    Connectivity   Column flange-Beam web

    Beam Connection   Bolted

    Column Connection   Welded

Loading (Factored Load)

    Shear Force (kN)   200

Components

    Column Section   ISSC 200

      Material   Fe 410

    Beam Section   ISMB 400

      Material   Fe 410

      Hole   STD

    Plate Section   250X200X16

      Thickness (mm)   16

      Width (mm)   200

      Depth (mm)   250

      Hole   STD

    Weld

      Type   Double Fillet

      Size (mm)   16

    Bolts

      Type   HSFG

      Grade   10.8

      Diameter (mm)   20

      Bolt Numbers   3

      Columns (Vertical Lines)   1

      Bolts Per Column   3

      Gauge (mm)   0

      Pitch (mm)   85

      End Distance (mm)   40

      Edge Distance (mm)   40

Assembly

  Column-Beam Clearance (mm) 20

Design Check

Check	Required	Provided	Remark
Bolt shear capacity (kN)		V_{dsb} = (1000*0.6126*20*20)/($\sqrt{3}$*1.25*1000) = 113.161 [cl. 10.3.3]	
Bolt bearing capacity (kN)		V_{dpb} = (2.5*0.508*20*8.9*410)/(1.25*1000) = 74.148 [cl. 10.3.4]	
Bolt capacity (kN)		Min (113.161, 74.148) = 113.161	
No. of bolts	200/113.161 = 1.8	3	**Pass**
No.of column(s)	≤ 2	1	
No. of bolts per column		3	
Bolt pitch (mm)	$\geq$ 2.5* 20 = 50, $\leq$ Min(32*8.9, 300) = 285 [cl. 10.2.2]	85	**Pass**
Bolt gauge (mm)	$\geq$ 2.5*20 = 50, $\leq$ Min(32*8.9, 300) = 285 [cl. 10.2.2]	0	
End distance (mm)	$\geq$ 1.7*22 = 37.4, $\leq$ 12*8.9 = 106.8	40	**Pass**

Edge distance (mm)	[cl. 10.2.4] $\geq 1.7*22 = 37.4, \leq 12*8.9 = 106.8$ [cl. 10.2.4]	40	**Pass**
Block shear capacity (kN)	≥ 200	$V_{db} = 568$	**Pass**
Plate thickness (mm)	$(5*200*1000)/(250*250) = 16.0$ [Owens and Cheal, 1989]	16	**Pass**
Plate height (mm)	$\geq 0.6*400=240.0, \leq 400-16-14-10=330.0$ [cl. 10.2.4, Insdag Detailing Manual, 2002]	250	**Pass**
Plate width (mm)		100	
Plate moment capacity (kNm)	$(2*113.161*85^2)/(85*1000) = 32.0$	$M_d = (1.2*250*Z)/(1000*1.1) = 45.45$ [cl. 8.2.1.2]	**Pass**
Effective weld length (mm)		$250-2*16 = 218$	
Weld strength (kN/mm)	$\sqrt{[(32000*6)/(2*218^2)]^2 + [200/(2*218)]^2}$ $= 2.071$	$f_v = (0.7*16*410)/(\sqrt{3}*1.25)$ $= 2.121$ [cl. 10.5.7]	**Pass**
Weld thickness (mm)	$Max((2.071*1000*\sqrt{3}* 1.25)/(0.7 * 410),16* 0.8) = 15.62$ [cl. 10.5.7, Insdag Detailing Manual, 2002]	16	**Pass**

Created with

Company Name	Nandadeep Designers and valuers pvt.ltd.	Project Title	Design
Group/Team Name	NDVPL	Subtitle	
Designer	Priyanka	Job Number	1
Date	05 /06 /2016	Method	Limit State Design (No Earthquake Load)

Views

Created with

Additional Comments