	Project Title	Created with	heightCompany Name
Group/Team Name	Osdag FOSSEE	Subtitle	
Designer	Parth K	Job Number	
Date	18 /09 /2024	Client	

1 Design Checks

Design Status	Fail

1.1 Selected Member Data

Member Properties	Section Size*		('40 x 40 x 5', 'Angles')	
	Material		E 250 (Fe 410 W)A	
	Mass, m (kg/m)		2.99	
	Area, A (cm^2)		3.81	
	A (mm)	40.0	I_v(cm^4)	2.33
	B (mm)	40.0	r_z (cm)	1.21
	t (mm)	5.0	r_y (cm)	1.21
	R_1 (mm)	5.5	r_u (cm)	1.52
	R_2 (mm)	0.0	r_v (cm)	0.78
	C_y (mm)	11.7	Z_z (cm^3)	1.97
	C_z (mm)	11.7	Z_y (cm^3)	1.97
	I_z (cm^4)	5.58	Z_{pz} (cm^3)	3.55
	I_y(cm^4)	5.58	Z_{py} (cm^3)	3.57
	I_u (cm^4)	8.83	Radius of gyration, r (cm)	7.8

1.2 Spacing Check

Check	Required	Provided	Remarks
Min. Diameter (mm)		$d = 8$	
Hole Diameter (mm)		$d_0 = 8$	
Minimum Bolts (nos)		$r_l = 1$	
Min. Gauge Distance (mm)	$p/g_{\min} = 2.5d$ $= 2.5 \times 8.0$ $= 20.0$ [Ref. IS 800:2007, Cl.10.2.2]	0.0	

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Check	Required	Provided	Remarks
Min. Edge Distance (mm)	$e_{\min} = 1.5d_0$ $= 1.5 \times 8$ $= 12.0$ [Ref. IS 800:2007, Cl.10.2.4.2]	15	
Spacing Check	depth $= 2\ e + (r_l - 1)\ g$ $= 2 \times 15 + (1 - 1) \times 20$ $= 30$	29.5	**Fail**

1.3 Member Check

Check	Required	Provided	Remarks
Tension Yielding Capacity (kN)		$T_{\text{dg}} = \frac{A_g f_y}{\gamma_{m0}}$ $= \frac{3.81 \times 250}{1.1 \times 10^3}$ $= 86.59$ [Ref. IS 800:2007, Cl.6.2]	
Slenderness	$\frac{KL}{r} \leq 400$	$\frac{KL}{r} = \frac{1 \times 1250.0}{7.8}$ $= 160.26$ [Ref. IS 800:2007, Cl.7.1.2]	**Pass**