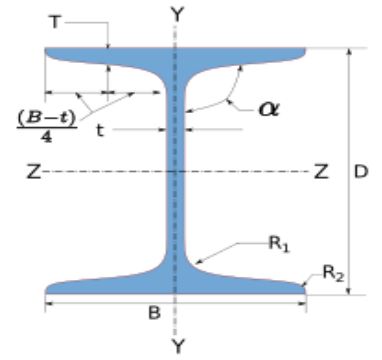
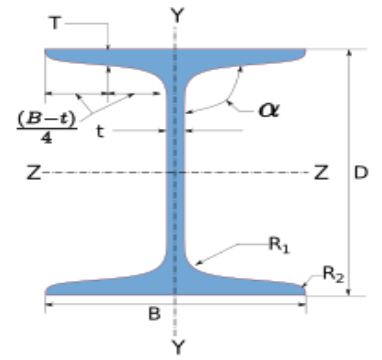
Company Name	LoremIpsum	Project Title	Fossee
Group/Team Name	LoremIpsum	Subtitle	
Designer	LoremIpsum	Job Number	123
Date	18 /05 /2020	Client	LoremIpsum

1 Input Parameters

Module		Fin Plate	
MainModule		Shear Connection	
Connectivity		Column flange-Beam web	
Shear(kN)*		50.0	
Supporting Section			
			
Supporting Section		PBP 260X87.3	
Material *		E 250 (Fe 410 W)A	
Ultimate strength, fu (MPa)		410	
Yield Strength , fy (MPa)		250	
Mass	87.3	Iz(cm4)	125856000.0
Area(cm2) - A	11120.0	Iy(cm4)	44500200.00000001
D(mm)	253.0	rz(cm)	106.4
B(mm)	267.0	ry(cm)	63.3
t(mm)	14.0	Zz(cm3)	994910.0
T(mm)	14	Zy(cm3)	333340.0
FlangeSlope	90	Zpz(cm3)	1123540.0
R1(mm)	2.4	Zpy(cm3)	333340.0
R2(mm)	0.0		
Supported Section			
			
Supported Section		MB 250	
Material *		E 250 (Fe 410 W)A	
Ultimate strength, fu (MPa)		410	
Yield Strength , fy (MPa)		250	
Mass	37.2	Iz(cm4)	51190000.0
Area(cm2) - A	4740.0	Iy(cm4)	3210000.0
D(mm)	250.0	rz(cm)	104.0
B(mm)	125.0	ry(cm)	26.0
t(mm)	6.9	Zz(cm3)	409600.0
T(mm)	12.5	Zy(cm3)	51000.0
FlangeSlope	98	Zpz(cm3)	464500.0
R1(mm)	13.0	Zpy(cm3)	51000.0
R2(mm)	6.5		
Bolt Details			
Diameter (mm)*		[12.0, 16.0, 20.0]	
Grade *		[3.6, 4.6, 4.8, 5.6, 5.8, 6.8, 8.8, 9.8, 10.9, 12.9]	
Type *		Bearing Bolt	
Bolt hole type		Standard	
Slip factor (μ_f)		0.3	
Type of edges		a - Sheared or hand flame cut	

Company Name	LoremIpsum	Project Title	Fossee
Group/Team Name	LoremIpsum	Subtitle	
Designer	LoremIpsum	Job Number	123
Date	18 /05 /2020	Client	LoremIpsum

Gap between beam and support (mm)	10.0
Are the members exposed to corrosive influences	False
Plate Details	
Thickness(mm)*	[3.0, 4.0, 5.0, 6.0, 8.0, 10.0, 12.0, 14.0, 16.0, 18.0, 20.0]
Material *	E 250 (Fe 410 W)A
Ultimate strength, fu (MPa)	410
Yield Strength , fy (MPa)	250
Weld Details	
Weld Type	Fillet
Type of weld fabrication	Shop Weld
Material grade overwrite (MPa) Fu	410.0

Company Name	LoremIpsum	Project Title	Fossee
Group/Team Name	LoremIpsum	Subtitle	
Designer	LoremIpsum	Job Number	123
Date	18 /05 /2020	Client	LoremIpsum

2 Design Checks

2.1 Bolt Design Checks

Check	Required	Provided	Remarks
Diameter (mm)*		16.0	
Grade *		5.8	
Shear Capacity (kN)		$V_{dsb} = \frac{f_u b\ n_n\ A_{nb}}{\sqrt{3}\ \gamma_{mb}}$ $= \frac{500.0 * 1 * 157}{\sqrt{3}\ *\ 1.25}$ $= 36.26$	
Bearing Capacity (kN)		$V_{dpb} = \frac{2.5\ k_b\ d\ t\ f_u}{\gamma_{mb}}$ $= \frac{2.5\ * 0.49 * 16.0 * 6.9 * 410}{1.25}$ $= 44.36$	
Capacity (kN)		$V_{db} = min\ (V_{dsb}, V_{dpb})$ $= min\ (36.26, 44.36)$ $= 36.26$	
No of Bolts	$R_u = \sqrt{V_u^2 + A_u^2}$ $n_{trial} = R_u / V_{bolt}$ $R_u = \frac{\sqrt{50.0^2 + 50.0^2}}{36.26}$ $= 2$	3	
No of Columns		1	
No of Rows		3	
Min. Pitch (mm)	$p/g_{min} = 2.5\ d$ $=2.5 * 16.0 \quad = 40.0$	0.0	N/A
Max. Pitch (mm)	$p/g_{max} = \min(32\ t,\ 300\ mm)$ $= \min(32 *\ 6.9,\ 300\ mm)$ $= 300$	0.0	N/A
Min. Gauge (mm)	$p/g_{min} = 2.5\ d$ $=2.5 * 16.0 \quad = 40.0$	50	Pass
Max. Gauge (mm)	$p/g_{max} = \min(32\ t,\ 300\ mm)$ $= \min(32 *\ 6.9,\ 300\ mm)$ $= 300$	50	Pass
Min. End Distance (mm)	$e/e'_{min} = [1.5\ or\ 1.7] * d_0$ $= 1.7 * 18.0 = 30.6$	35	Pass
Max. End Distance (mm)	$e/e'_{max} = 12\ t\ \varepsilon$ $\varepsilon = \sqrt{\frac{250}{f_y}}$ $e/e'_{max} = 12\ * 8.0 * \sqrt{\frac{250}{250}}$ $= 96.0$	35	Pass

Company Name	LoremIpsum	Project Title	Fossee
Group/Team Name	LoremIpsum	Subtitle	
Designer	LoremIpsum	Job Number	123
Date	18 /05 /2020	Client	LoremIpsum

Check	Required	Provided	Remarks
Min. Edge Distance (mm)	$e/e`_{min} = [1.5\ or\ 1.7] * d_0$ $= 1.7 * 18.0 = 30.6$	35	Pass
Max. Edge Distance (mm)	$e/e`_{max} = 12\ t\ \varepsilon$ $\varepsilon = \sqrt{\frac{250}{f_y}}$ $e/e`_{max} = 12\ * 8.0 * \sqrt{\frac{250}{250}}$ $= 96.0$	35	Pass
Capacity (kN)	42.57	44.36	Pass

Company Name	LoremIpsum	Project Title	Fossee
Group/Team Name	LoremIpsum	Subtitle	
Designer	LoremIpsum	Job Number	123
Date	18 /05 /2020	Client	LoremIpsum

2.2 Plate Design Checks

Check	Required	Provided	Remarks
Min. Plate Height (mm)	$0.6 * d_b = 0.6 * 250.0 = 150.0$	170	Pass
Max. Plate Height (mm)	$d_b - 2(t_{bf} + r_{b1} + gap)$ $= 250.0 - 2 * (12.5 + 13.0 + 10)$ $= 199.0$	170	Pass
Min. Plate Length (mm)	$2 * e_{min} + (n\ c - 1) * p_{min})$ $= 2 * 30.6 + (1 - 1) * 40.0$ $= 71.2$	80.0	Pass
Min.Plate Thickness (mm)	$t_w = 6.9$	8.0	Pass
Shear yielding Capacity (V_dy) (kN)		$V_{dg} = \frac{A_v * f_y}{\sqrt{3} * \gamma_{mo}}$ $= \frac{170 * 8.0 * 250}{\sqrt{3} * 1.1}$ $= 178.45$	
Shear Rupture Capacity (V_dn) (kN)		$V_{dn} = \frac{0.75 * A_{vn} * f_u}{\sqrt{3} * \gamma_{mo}}$ $= 1 * (170 - (3 * 18.0)) * 8.0 * 410$ $= 285.36$	
Block Shear Capacity in Shear (V_db) (kN)		186.35	
Shear Capacity (V_d) (kN)	50.0	$V_d = Min(V_{dy}, V_{dn}, V_{db})$ $= Min(178.45, 285.36, 186.35)$ $= 178.45$	Pass
Tension Yielding Capacity (kN)		$T_{dg} = \frac{l * t_p * f_y}{\gamma_{mo}}$ $= \frac{170 * 8.0 * 250}{1.1}$ $= 309.09$	
Tension Rupture Capacity (kN)		$T_{dn} = \frac{0.9 * A_n * f_u}{\gamma_{m1}}$ $= \frac{0.9 * (170 - 3 * 18.0) * 8.0 * 410}{1.25}$ $= 358.96$	
Block Shear Capacity in Tension (T_db) (kN)		227.78	
Tension Capacity (kN)	50.0	$T_d = Min(T_{dg}, T_{dn}, T_{db})$ $= Min(309.09, 358.96, 227.78)$ $= 227.78$	Pass
Moment Capacity (kN-m)	2.25	13.14	Pass
Interaction Ratio	≤ 1	$\frac{2.25}{13.14} + \frac{50.0}{227.78} = 0.39$	Pass

Company Name	LoremIpsum	Project Title	Fossee
Group/Team Name	LoremIpsum	Subtitle	
Designer	LoremIpsum	Job Number	123
Date	18 /05 /2020	Client	LoremIpsum

2.3 Weld Checks

Check	Required	Provided	Remarks
Min Weld Size (mm)	$Thickness\ of\ Thicker\ part$ $= max(14, 8.0)$ $= 14$ $IS800:2007\ cl.10.5.2.3\ Table21,$ $t_{w_{min}} = 5$	5	Pass
Max Weld Size (mm)	$Thickness\ of\ Thinner\ part$ $= Min(14, 8.0) = 8.0$ $t_{w_{max}} = 8.0$	5	Pass
Weld Strength (kN/mm)	$R_w = \sqrt{(T_{wh} + A_{wh})^2 + (T_{wv} + V_{wv})^2}$ $T_{wh} = \frac{M * y_{max}}{Ipw} = \frac{2250000.0 * 80.0}{682666.67}$ $T_{wv} = \frac{M * x_{max}}{Ipw} = \frac{2250000.0 * 0.0}{682666.67}$ $V_{wv} = \frac{V}{l_w} = \frac{50000.0}{320}$ $A_{wh} = \frac{A}{l_w} = \frac{50000.0}{320}$ $R_w = \sqrt{(263.67 + 156.25)^2 + (0.0 + 156.25)^2}$ $= 448.05$	$f_w = \frac{t_t * f_u}{\sqrt{3} * \gamma_{mw}}$ $= \frac{3.5 * 410}{\sqrt{3} * 1.25}$ $= 662.8$	Pass

Company Name	LoremIpsum	Project Title	Fossee
Group/Team Name	LoremIpsum	Subtitle	
Designer	LoremIpsum	Job Number	123
Date	18 /05 /2020	Client	LoremIpsum

3 3D View

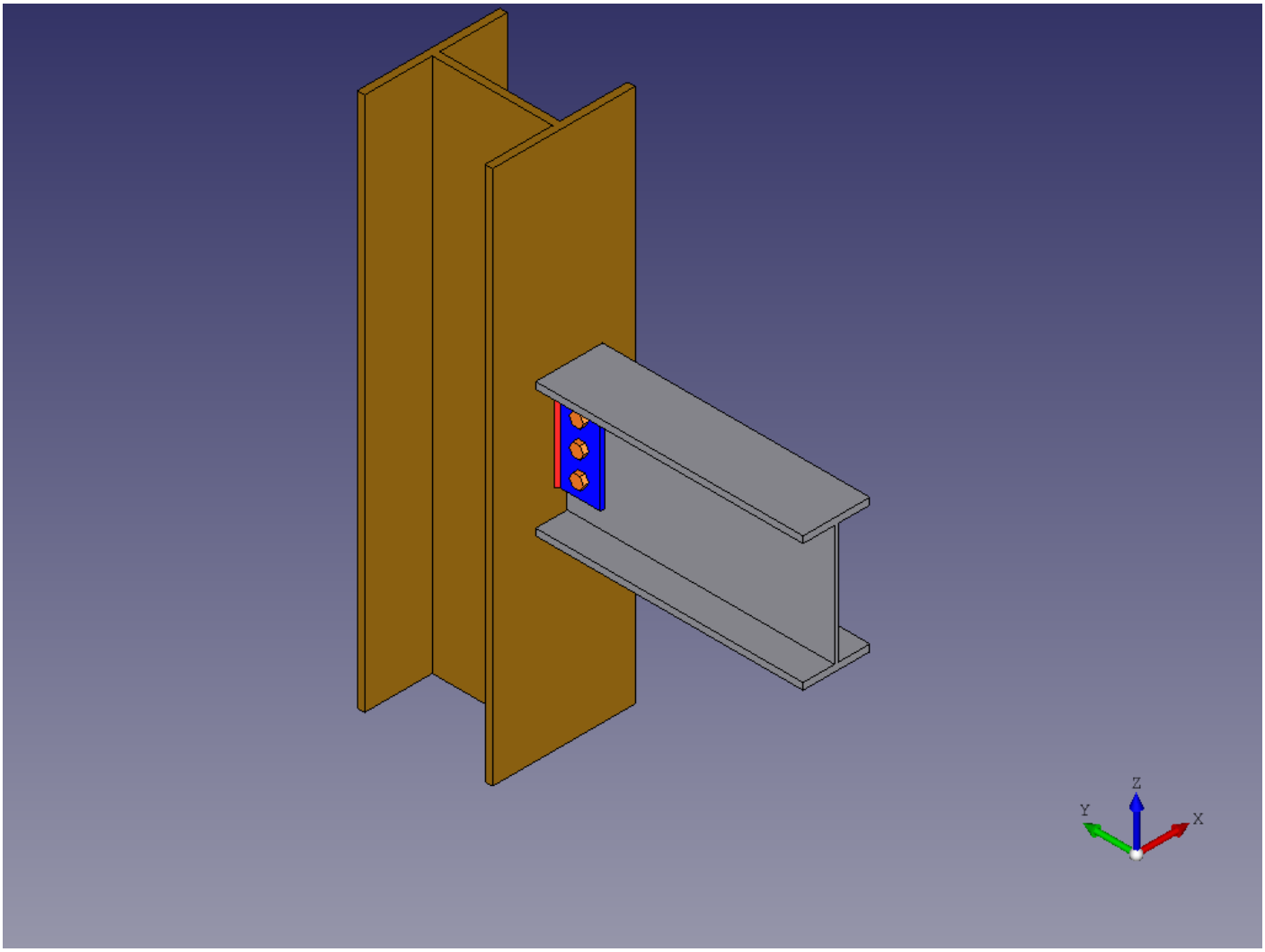


Figure 1: 3D View