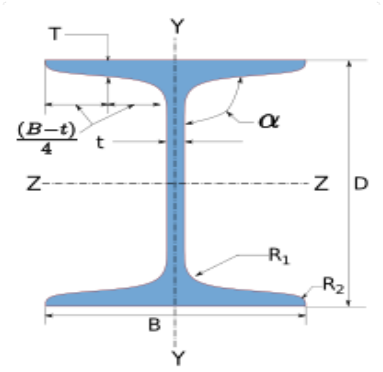
Company Name		Project Title	
Group/Team Name		Subtitle	
Designer		Job Number	
Date	04 /05 /2020	Client	

1 Input Parameters

Module	Beam Coverplate Weld Connection
MainModule	Moment Connection
Moment(kNm)*	9.0
Shear(kN)*	9.0
Axial (kN) *	9.0

Section



Beam Section *		UB 305 x 165 x 46	
Material *		E 250 (Fe 410 W)A	
Ultimate strength, fu (MPa)		410	
Yield Strength , fy (MPa)		230	
Mass	46.1	Iz(mm4)	98990000.0
Area(mm2) - A	5870.0	Iy(mm4)	8960000.0
D(mm)	307.0	rz(mm)	130.0
B(mm)	165.7	ry(mm)	39.0
t(mm)	6.7	Zz(mm3)	646000.0
T(mm)	11.8	Zy(mm3)	108000.0
FlangeSlope	90	Zpz(mm3)	720000.0
R1(mm)	8.9	Zpy(mm3)	108000.0
R2(mm)	0.0		

Weld Details

Weld Type	Fillet
Type of weld fabrication	Shop Weld
Material grade overwrite (MPa) Fu	410.0

2 Design Checks

2.1 Member Capacity

Check	Required	Provided	Remarks
Axial Capacity Member Ac (kN)		$Ac = \frac{A * f_y}{\gamma_{m0} * 1000} = \frac{5870.0 * 230}{1.1 * 1000} = 1227.36$	

2.2 Member Capacity

Check	Required	Provided	Remarks

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Check	Required	Provided	Remarks
Axial Capacity Member Ac (kN)		$Ac = \frac{A * f_y}{\gamma_{m0} * 1000}$ $= \frac{5870.0 * 230}{1.1 * 1000}$ $= 1227.36$	
Shear Capacity Member Sc (kN)		$S_c = \frac{A_v * f_y}{\sqrt{3} * \gamma_{mo} * 1000}$ $= \frac{283.4 * 6.7 * 230}{\sqrt{3} * 1.1 * 1000}$ $= 229.21823999999998$	
Plastic Moment Capacity Pmc (kNm)		$Pmc = \frac{\beta_b * Z_p * fy}{\gamma_{mo} * 1000000}$ $= \frac{1 * 134529 * 230}{1.1 * 1000000}$ $= 28.13$	
Moment Deformation Criteria Mdc (kNm)		$Mdc = \frac{1.5 * Z_e * fy}{1.1}$ $= \frac{1.5 * 646000.0 * 230}{1.1}$ $= 202.61$	
Moment Capacity Member Mc (kNm)		$M_c = min(Pmc, Mdc)$ $= min(28.13, 202.61)$ $= 28.13$	

2.3 Load Considered

Check	Required	Provided	Remarks
Applied Axial Load Au (kN)	$Ac_{min} = 0.3 * A_c$ $= 0.3 * 1227.36$ $= 368.21$	$Au = max(A, Ac_{min})$ $= max(9.0, 368.21)$ $= 368.21$	Pass
Applied Shear Load Vu (kN)	$Sc_{min} = 0.6 * A_c$ $= 0.6 * 229.22$ $= 137.53$	$Vu = max(V, Vc_{min})$ $= max(9.0, 137.53)$ $= 137.53$	Pass
Applied Moment Load Mu (kNm)	$Mc_{min} = 0.5 * M_c$ $= 0.5 * 28.13$ $= 14.06$	$Mu = max(M, Mc_{min})$ $= max(9.0, 14.06)$ $= 14.06$	Pass

Company Name		Project Title	
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Check	Required	Provided	Remarks
Forces Carried by Web		$A_w = Axial\ force\ in\ web$ $= \frac{(D - 2 * T) * t * Au}{A}$ $= \frac{(307.0 - 2 * 11.8) * 6.7 * 368.21}{5870.0}$ $= 119.11$ $M_w = Moment\ in\ web$ $= \frac{Z_w * Mu}{Z}$ $= \frac{134529 * 14.06}{720000.0}$ $= 2.63$	
Forces Carried by Flange		$A_f = Axial\ force\ in\ flange$ $= \frac{Au * B * T}{A}$ $= \frac{368.21 * 165.7 * 11.8}{5870.0}$ $= 122.65$ $M_f = Moment\ in\ flange$ $= Mu - M_w$ $= 14.06 - 2.63$ $= 11.44$ $f_f = flange\ force$ $= \frac{M_f * 1000}{D - T} + A_f$ $= \frac{11.44}{307.0 - 11.8} + 122.65$ $= 161.39$	
Shear Capacity Member Sc (kN)		$S_c = \frac{A_v * f_y}{\sqrt{3} * \gamma_{mo} * 1000}$ $= \frac{283.4 * 6.7 * 230}{\sqrt{3} * 1.1 * 1000}$ $= 229.21823999999998$	
Plastic Moment Capacity Pmc (kNm)		$Pmc = \frac{\beta_b * Z_p * fy}{\gamma_{mo} * 1000000}$ $= \frac{1 * 134529 * 230}{1.1 * 1000000}$ $= 28.13$	
Moment Deformation Criteria Mdc (kNm)		$Mdc = \frac{1.5 * Z_e * fy}{1.1}$ $= \frac{1.5 * 646000.0 * 230}{1.1}$ $= 202.61$	
Moment Capacity Member Mc (kNm)		$M_c = min(Pmc, Mdc)$ $= min(28.13, 202.61)$ $= 28.13$	

Company Name		Project Title	
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Designer		Job Number	
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2.4 Load Considered

Check	Required	Provided	Remarks
Applied Axial Load Au (kN)	$Ac_{min} = 0.3 * A_c$ $= 0.3 * 1227.36$ $= 368.21$	$Au = max(A, Ac_{min})$ $= max(9.0, 368.21)$ $= 368.21$	Pass
Applied Shear Load Vu (kN)	$Sc_{min} = 0.6 * A_c$ $= 0.6 * 229.22$ $= 137.53$	$Vu = max(V, Vc_{min})$ $= max(9.0, 137.53)$ $= 137.53$	Pass
Applied Moment Load Mu (kNm)	$Mc_{min} = 0.5 * M_c$ $= 0.5 * 28.13$ $= 14.06$	$Mu = max(M, Mc_{min})$ $= max(9.0, 14.06)$ $= 14.06$	Pass
Forces Carried by Web		$A_w = Axial\ force\ in\ web$ $= \frac{(D - 2 * T) * t * Au}{A}$ $= \frac{(307.0 - 2 * 11.8) * 6.7 * 368.21}{5870.0}$ $= 119.11$ $M_w = Moment\ in\ web$ $= \frac{Z_w * Mu}{Z}$ $= \frac{134529 * 14.06}{720000.0}$ $= 2.63$	
Forces Carried by Flange		$A_f = Axial\ force\ in\ flange$ $= \frac{Au * B * T}{A}$ $= \frac{368.21 * 165.7 * 11.8}{5870.0}$ $= 122.65$ $M_f = Moment\ in\ flange$ $= Mu - M_w$ $= 14.06 - 2.63$ $= 11.44$ $f_f = flange\ force$ $= \frac{M_f * 1000}{D - T} + A_f$ $= \frac{11.44}{307.0 - 11.8} + 122.65$ $= 161.39$	

2.5 Flange Weld Design Check

Check	Required	Provided	Remarks

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Date	04 /05 /2020	Client	

Check	Required	Provided	Remarks
Min Weld Size (mm)	$Thickness\ of\ Thicker\ part$ $= max(11.8, 11.8)$ $= 18.0$ $IS800:2007\ cl.10.5.2.3\ Table21,$ $t_{w_{min}} = 5$	10	Pass
Max Weld Size (mm)	$Thickness\ of\ Thinner\ part$ $= Min(11.8, 11.8) = 11.8$ $t_{w_{max}} = 11.8$	10	Pass

2.6 Outer Flange plate Check

Check	Required	Provided	Remarks
Min. Plate Height (mm)	$b_{fp} = \{B - 2 * sp$ $= \{165.7 - 2 * 15 \quad = 135$	115	Fail
Min. Plate Length (mm)	$l_{fp} = [2 * (l_w l + 2 * s) + g]$ $= + \frac{10.0}{]}$ $= 420$	185	Fail

2.7 Inner and Outer flange plate Checks

Check	Required	Provided	Remarks
Min. Plate Height (mm)	$b_{fp} = \{B - 2 * sp$ $= \{165.7 - 2 * 15 \quad = 135$	115	Fail
Min. Plate Length (mm)	$l_{fp} = [2 * (l_w l + 2 * s) + g]$ $= + \frac{10.0}{]}$ $= 420$	185	Fail

2.8 Web Weld Design Check

Check	Required	Provided	Remarks
Min Weld Size (mm)	$Thickness\ of\ Thicker\ part$ $= max(6.7, 6.7)$ $= 6.7$ $IS800:2007\ cl.10.5.2.3\ Table21,$ $t_{w_{min}} = 3$	10	Pass
Max Weld Size (mm)	$Thickness\ of\ Thinner\ part$ $= Min(6.7, 6.7) = 6.0$ $t_{w_{max}} = 6.0$	10	Fail

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3 3D View

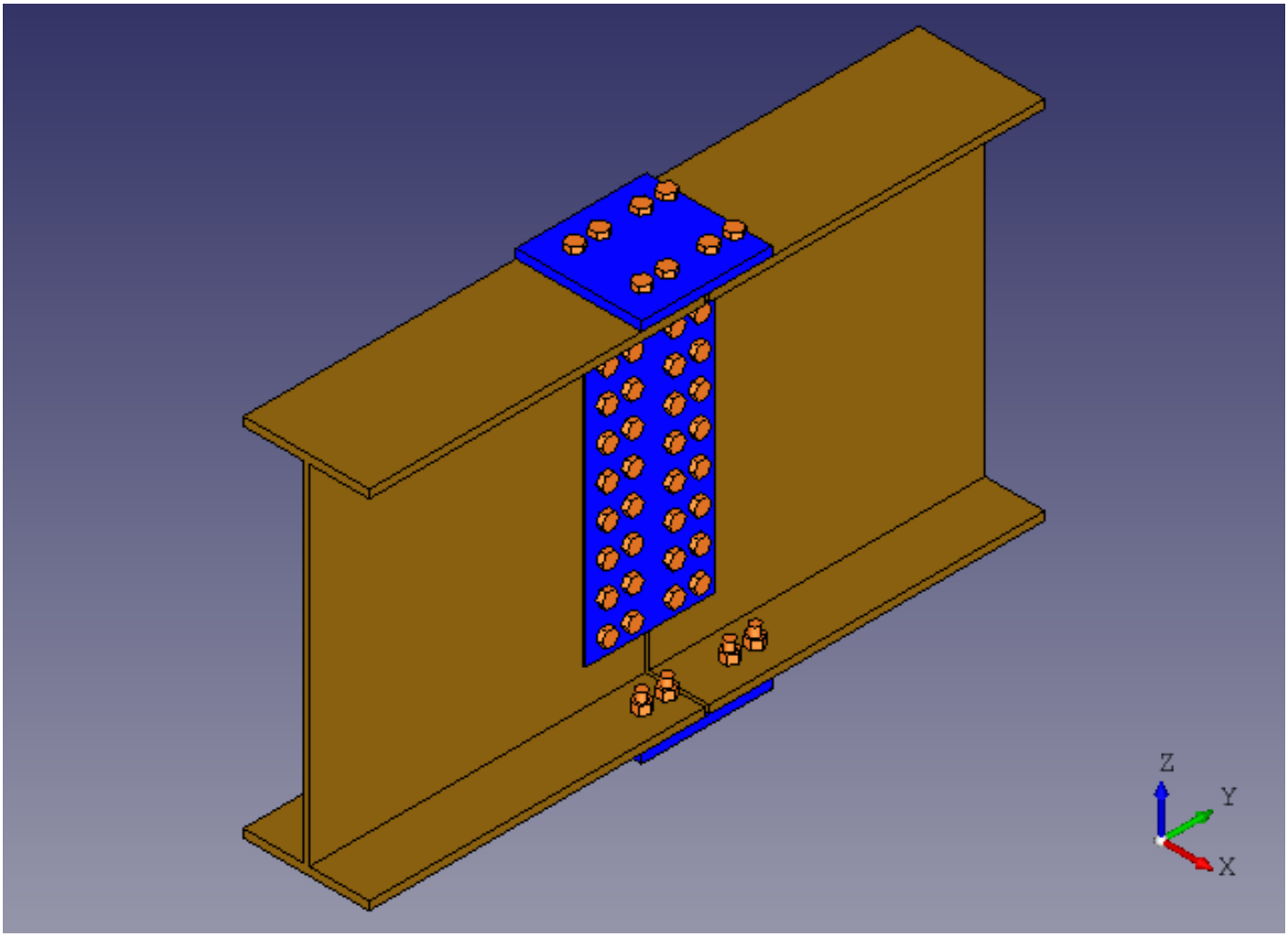

Figure 1: 3D View