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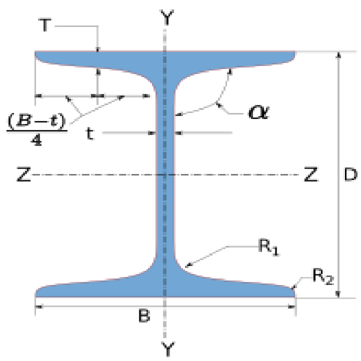
1 Input Parameters

<table>
<tr><td colspan="3">Module</td><td colspan="2">Beam Coverplate Connection</td></tr>
<tr><td colspan="3">MainModule</td><td colspan="2">Moment Connection</td></tr>
<tr><td colspan="3">Moment(kNm)*</td><td colspan="2">1.0</td></tr>
<tr><td colspan="3">Shear (kN)*</td><td colspan="2">89.0</td></tr>
<tr><td colspan="3">Axial (kN) *</td><td colspan="2">32.0</td></tr>
<tr><td colspan="5">Section</td></tr>
<tr><td rowspan="14">
</td><td colspan="2">Beam Section *</td><td colspan="2">WPB 550x300x166.2</td></tr>
<tr><td colspan="2">Preferences</td><td colspan="2">Outside + Inside</td></tr>
<tr><td colspan="2">Material *</td><td colspan="2">E 250 (Fe 410 W)A</td></tr>
<tr><td colspan="2">Ultimate strength, fu (MPa)</td><td colspan="2">410</td></tr>
<tr><td>Yield Strength , fy (MPa)</td><td>240</td><td>R1(mm)</td><td>2.7</td></tr>
<tr><td>Mass</td><td>166.23</td><td>R2(mm)</td><td>0.0</td></tr>
<tr><td>Area(mm2) - A</td><td>21180.0</td><td>Iz(mm4)</td><td>1119322000.0</td></tr>
<tr><td>D(mm)</td><td>540.0</td><td>Iy(mm4)</td><td>108122200.0</td></tr>
<tr><td>B(mm)</td><td>300.0</td><td>rz(mm)</td><td>229.9</td></tr>
<tr><td>t(mm)</td><td>12.5</td><td>ry(mm)</td><td>71.5</td></tr>
<tr><td>T(mm)</td><td>24.0</td><td>Zz(mm3)</td><td>4145640.0</td></tr>
<tr><td>FlangeSlope</td><td>90</td><td>Zy(mm3)</td><td>720810.0</td></tr>
<tr><td colspan="5">Bolt Details</td></tr>
<tr><td colspan="3">Diameter (mm)*</td><td colspan="2">[12.0, 16.0, 20.0, 24.0, 30.0, 36.0]</td></tr>
<tr><td colspan="3">Grade *</td><td colspan="2">[3.6, 4.6, 4.8, 5.6, 5.8, 6.8, 8.8, 9.8, 10.9, 12.9]</td></tr>
<tr><td colspan="3">Type *</td><td colspan="2">Bearing Bolt</td></tr>
<tr><td colspan="3">Bolt hole type</td><td colspan="2">Standard</td></tr>
<tr><td colspan="3">Slip factor (µ_f)</td><td colspan="2">0.3</td></tr>
<tr><td colspan="3">Type of edges</td><td colspan="2">a - Sheared or hand flame cut</td></tr>
<tr><td colspan="3">Gap between beam and
support (mm)</td><td colspan="2">10.0</td></tr>
<tr><td colspan="3">Are the members exposed to
corrosive influences</td><td colspan="2">False</td></tr>
</table>

2 Design Checks

2.1 Member Capacity

Check	Required	Provided	Remarks
Axial Capacity Member Ac (kN)		$A_c = \frac{A * f_y}{\gamma_{m0} * 10^3}$ $= \frac{21180.0 * 240}{1.1 * 10^3}$ $= 4621.09$	
Shear Capacity Member Sc (kN)		$S_c = \frac{A_v * f_y}{\sqrt{3} * \gamma_{mo} * 10^3}$ $= \frac{492.0 * 12.5 * 240}{\sqrt{3} * 1.1 * 10^3}$ $= 774.7$	
Plastic Moment Capacity Pmc (kNm)		$Pmc = \frac{\beta_b * Z_p * fy}{\gamma_{mo} * 10^6}$ $= \frac{1 * 756450.0 * 240}{1.1 * 10^6}$ $= 165.04$	
Moment Deformation Criteria Mdc (kNm)		$Mdc = \frac{1.5 * Z_e * fy}{1.1 * 10^6}$ $= \frac{1.5 * 4145640.0 * 240}{1.1 * 10^6}$ $= 1356.75$	
Moment Capacity Member Mc (kNm)		$M_c = min(Pmc, Mdc)$ $= min(165.04, 1356.75)$ $= 165.04$	

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2.2 Load Consideration

Check	Required	Provided	Remarks
Applied Axial Load Au (kN)	$Ac_{min} = 0.3 * A_c$ $= 0.3 * 4621.09$ $= 1386.33$ $Ac_{max} = Ac$ $= 4621.09$	$A_u = 1386.33$	Pass
Applied Shear Load Vu (kN)	$Vc_{min} = 0.6 * S_c$ $= 0.6 * 774.7$ $= 464.82$ $Vc_{max} = Sc$ $= 774.7$	$V_u = 464.82$	Pass
Applied Moment Load Mu (kNm)	$Mc_{min} = 0.5 * M_c$ $= 0.5 * 165.04$ $= 82.52$ $Mc_{max} = Mc$ $= 165.04$	$M_u = 82.52$	Pass
Forces Carried by Web		$A_w = Axial\ force\ in\ web$ $= \frac{(D - 2 * T) * t * Au}{A}$ $= \frac{(540.0 - 2 * 24.0) * 12.5 * 1386.33}{21180.0}$ $= 402.55\ kN$ $M_w = Moment\ in\ web$ $= \frac{Z_w * Mu}{Z}$ $= \frac{756450.0 * 82.52}{4621820.0}$ $= 13.51\ kNm$	
Forces Carried by Flange		$A_f = Axial\ force\ in\ flange$ $= \frac{Au * B * T}{A}$ $= \frac{1386.33 * 300.0 * 24.0}{21180.0}$ $= 471.27\ kN$ $M_f = Moment\ in\ flange$ $= Mu - M_w$ $= 82.52 - 13.51$ $= 69.02\ kNm$ $F_f = flange\ force$ $= \frac{M_f * 10^3}{D - T} + A_f$ $= \frac{69.02 * 10^3}{540.0 - 24.0} + 471.27$ $= 605.02\ kN$	

2.3 Initial Member Check

Check	Required	Provided	Remarks
Flange Tension Yielding Capacity (kN)	$F_f = 605.02$	$T_{dg} = \frac{l * t * f_y}{\gamma_{mo}}$ $= \frac{1 * 300.0 * 24.0 * 240}{1.1}$ $= 1636.36$	Pass
Web Tension Yielding Capacity (kN)	$A_w = 402.55$	$T_{dg} = \frac{l * t * f_y}{\gamma_{mo}}$ $= \frac{1 * 492.0 * 12.5 * 240}{1.1}$ $= 1398$	Pass

2.4 Initial flange plate height check

Check	Required	Provided	Remarks
flange_plate.Height	Outer.b >= 50	$Outer.b = 300.0$	Pass
flange_plate.InnerHeight	Inner.b >= 50	$inner.b = \frac{B - t - (2 * r_1)}{2}$ $= \frac{300.0 - 12.5 - (2 * 2.7)}{2}$ $= 141.05$	Pass

2.5 Flange plate thickness

Check	Required	Provided	Remarks
Thickness (mm)*	$T = 12.0$	$t_f = 14.0$	Pass
Plate Area check (mm2)	$pt.area >=$ $connected\ member\ area * 1.05$ $= 7560.0$	$outer.b = B$ $= 300.0$ $inner.b = \frac{B - t - (2 * r_1)}{2}$ $= \frac{300.0 - 12.5 - (2 * 2.7)}{2}$ $= 141.05$ $pt.area = (300.0 + (2 * 141.05)) * 14.0$ $= 8149.4$	Pass

2.6 Web plate thickness

Check	Required	Provided	Remarks
Thickness (mm)*	$t = 6.25$	$t_w = 20.0$	Pass
Plate Area check (mm2)	$pt.area >=$ $connected\ member\ area * 1.05$ $= 5827.5$	$web\ b = D - (2*T) - (2*r_1)$ $= 540.0 - (2*24.0) - (2*2.7)$ $= 444.0$ $pt.area = 20.0*2*444.0$ $= 17760.0$	Pass

2.7 Web Spacing Checks

Check	Required	Provided	Remarks
Min.Diameter (mm)		$d = 12.0$	
Min. Gauge (mm)	$p/g_{min} = 2.5\ d$ $=2.5 * 12.0 \quad = 30.0$	$g = 90$ $(Row\ Limit\ (r_l) = 2)$	
Min. Edge Distance (mm)	$e/e`_{min} = [1.5\ or\ 1.7] * d_0$ $= 1.7 * 13.0 = 22.1$	70	
Spacing Check	$depth = 2 * e + (r_l - 1) * g$ $= 2 * 70 + (2.0 - 1) * 90$ $= 230.0$	444.0	Pass

2.8 Flange Spacing Checks

Check	Required	Provided	Remarks
Min.Diameter (mm)		$d = 12.0$	
Min. Gauge (mm)	$p/g_{min} = 2.5\ d$ $=2.5 * 12.0 \quad = 30.0$	$g = 0.0\ (Row\ Limit\ (r_l) = 1)$	
Min. Edge Distance (mm)	$e/e`_{min} = [1.5\ or\ 1.7] * d_0$ $= 1.7 * 13.0 = 22.1$	70	
Spacing Check	$depth = 2 * e + (r_l - 1) * g$ $= 2 * 70 + (1.0 - 1) * 90$ $= 140.0$	141.05	Pass

2.9 Flange Bolt Checks

Check	Required	Provided	Remarks
Diameter (mm)	Bolt Quantity Optimisation	$d = 36.0$	
Grade	Bolt Grade Optimisation	3.6	
Bolt.fu		300.0	
Bolt.fy		180.0	
Hole Diameter (mm)		$d_0 = 39.0$	
Shear Capacity (kN)		$V_{dsb} = \frac{f_{ub}\ n_n\ A_{nb}}{\sqrt{3}\ \gamma_{mb}}$ $= \frac{300.0 * 2 * 817}{\sqrt{3}\ *\ 1.25}$ $= 226.41$	
Bearing Capacity (kN)		$V_{dpb} = \frac{2.5\ k_b\ d\ t\ f_u}{\gamma_{mb}}$ $= \frac{2.5\ * 0.52 * 36.0 * 24.0 * 410}{1.25}$ $= 368.41$	
Bolt Capacity (kN)		$V_{db} = min\ (V_{dsb}, V_{dpb})$ $= min\ (226.41, 368.41)$ $= 226.41$	
No of Bolts	$R_u = \sqrt{V_u^2 + A_u^2}$ $n_{trial} = R_u/V_{bolt}$ $R_u = \frac{\sqrt{0.0^2 + 605.02^2}}{226.41}$ $= 6$	8	
No of Columns		$n_c = 4$	
No of Rows		$n_r = 2$	
Min. Pitch (mm)	$p/g_{min} = 2.5\ d$ $= 2.5 * 36.0 \quad = 90.0$	90	Pass
Max. Pitch (mm)	$p/g_{max} = \min(32\ t,\ 300\ mm)$ $= \min(32 *\ 14.0,\ 300\ mm)$ $= 300$	90	Pass
Min. Gauge (mm)	$p/g_{min} = 2.5\ d$ $= 2.5 * 36.0 \quad = 90.0$	0.0	N/A
Max. Gauge (mm)	$p/g_{max} = \min(32\ t,\ 300\ mm)$ $= \min(32 *\ 14.0,\ 300\ mm)$ $= 300$	0.0	N/A
Min. End Distance (mm)	$e/e`_{min} = [1.5\ or\ 1.7] * d_0$ $= 1.7 * 39.0 = 66.3$	70	Pass

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Check	Required	Provided	Remarks
Max. End Distance (mm)	$e/e`_{max} = 12\ t\ \varepsilon$ $\varepsilon = \sqrt{\frac{250}{f_y}}$ $e/e`_{max} = 12\ * 14.0 * \sqrt{\frac{250}{250}}$ $= 168.0$	70	Pass
Min. Edge Distance (mm)	$e/e`_{min} = [1.5\ or\ 1.7] * d_0$ $= 1.7 * 39.0 = 66.3$	70.525	Pass
Max. Edge Distance (mm)	$e/e`_{max} = 12\ t\ \varepsilon$ $\varepsilon = \sqrt{\frac{250}{f_y}}$ $e/e`_{max} = 12\ * 14.0 * \sqrt{\frac{250}{250}}$ $= 168.0$	70.525	Pass
Bolt Capacity post Long Joint (kN)	$if\ l \geq 15 * d\ then\ V_{rd} = \beta_{ij} * V_{db}$ $if\ l < 15 * d\ then\ V_{rd} = V_{db}$ $where,$ $l = ((nc\ or\ nr) - 1) * (p\ or\ g)$ $\beta_{ij} = 1.075 - l/(200 * d)$ $but\ 0.75 \leq \beta_{ij} \leq 1.0$	$l\ = ((nc\ or\ nr) - 1) * (p\ or\ g)$ $lc = 2 * ((\frac{4}{2} - 1) * 90 + 70) + 10.0$ $= 330.0$ $lr = 2 * ((\frac{2}{2} - 1) * 0.0 + 70.525$ $+ 2.7) + 12.5 = 158.95000000000002$ $l\ = 330.0$ $15 * d = 15 * 36.0 = 540.0$ $since,\ l < 15 * d$ $then\ V_{rd} = V_{db}$ $V_{rd} = 226.41$	
Capacity (kN)	151.26	226.41	Pass

2.10 Web Bolt Checks

Check	Required	Provided	Remarks
Shear Capacity (kN)		$V_{dsb} = \frac{f_{ub}\ n_n\ A_{nb}}{\sqrt{3}\ \gamma_{mb}}$ $= \frac{300.0 * 2 * 817}{\sqrt{3}\ *\ 1.25}$ $= 226.41$	
Bearing Capacity (kN)		$V_{dpb} = \frac{2.5\ k_b\ d\ t\ f_u}{\gamma_{mb}}$ $= \frac{2.5\ * 0.52 * 36.0 * 12.5 * 410}{1.25}$ $= 191.88$	
Bolt Capacity (kN)		$V_{db} = min\ (V_{dsb}, V_{dpb})$ $= min\ (226.41, 191.88)$ $= 191.88$	
No of Bolts	$R_u = \sqrt{V_u^2 + A_u^2}$ $n_{trial} = R_u/V_{bolt}$ $R_u = \frac{\sqrt{464.82^2 + 402.55^2}}{191.88}$ $= 8$	16	
No of Columns		$n_c = 4$	
No of Rows		$n_r = 4$	
Min. Pitch (mm)	$p/g_{min} = 2.5\ d$ $= 2.5 * 36.0 \quad = 90.0$	90	Pass
Max. Pitch (mm)	$p/g_{max} = \min(32\ t,\ 300\ mm)$ $= \min(32 *\ 12.5,\ 300\ mm)$ $= 300$	90	Pass
Min. Gauge (mm)	$p/g_{min} = 2.5\ d$ $= 2.5 * 36.0 \quad = 90.0$	90	Pass
Max. Gauge (mm)	$p/g_{max} = \min(32\ t,\ 300\ mm)$ $= \min(32 *\ 12.5,\ 300\ mm)$ $= 300$	90	Pass
Min. End Distance (mm)	$e/e`_{min} = [1.5\ or\ 1.7] * d_0$ $= 1.7 * 39.0 = 66.3$	70	Pass
Max. End Distance (mm)	$e/e`_{max} = 12\ t\ \varepsilon$ $\varepsilon = \sqrt{\frac{250}{f_y}}$ $e/e`_{max} = 12\ * 20.0 * \sqrt{\frac{250}{250}}$ $= 240.0$	70	Pass
Min. Edge Distance (mm)	$e/e`_{min} = [1.5\ or\ 1.7] * d_0$ $= 1.7 * 39.0 = 66.3$	70	Pass

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Check	Required	Provided	Remarks
Max. Edge Distance (mm)	$e/e`_{max} = 12\ t\ \varepsilon$   $\varepsilon = \sqrt{\frac{250}{f_y}}$   $e/e`_{max} = 12\ * 20.0 * \sqrt{\frac{250}{250}}$ $= 240.0$	70	Pass
Parameters required for bolt force (mm)		$l_n = length\ available$ $l_n = (n_r - 1) * g$ $= (4 - 1) * 90$ $= 270$ $y_{max} = l_n/2$ $= 270/2$ $= 135.0$ $x_{max} = p * (\frac{n_c}{2} - 1)/2$ $= 90 * (\frac{4}{2} + -1)/2$ $= 45.0$	
Moment Demand (kNm		$M_d = (V_u * ecc + M_w)$ $= \frac{(464.82 * 10^3 * 120.0 + 13.51 * 10^6)}{10^6}$ $= 69.28$	
Bolt.Force		$vbv = V_u/(n_r * n_c)$ $= \frac{464.82}{(4 * 4)}$ $= 58.1$ $tmh = \frac{M_d * y_{max}}{\Sigma r_i^2}$ $= \frac{69.28 * 135.0}{97.2}$ $= 96.23$ $tmv = \frac{M_d * x_{max}}{\Sigma r_i^2}$ $= \frac{69.28 * 45.0}{97.2}$ $= 32.08$ $abh = \frac{A_u}{(n_r * n_c)}$ $= \frac{402.55}{(4 * 4)}$ $= 50.32$ $vres = \sqrt{(vbv + tmv)^2 + (tmh + abh)^2}$ $= \sqrt{(58.1 + 32.08)^2 + (96.23 + 50.32)^2}$ $= 172.07$	

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Check	Required	Provided	Remarks
Bolt Capacity post Long Joint (kN)	$if\ l \geq 15 * d\ then\ V_{rd} = \beta_{ij} * V_{db}$ $if\ l < 15 * d\ then\ V_{rd} = V_{db}$ $where,$ $l = ((nc\ or\ nr) - 1) * (p\ or\ g)$ $\beta_{ij} = 1.075 - l/(200 * d)$ $but\ 0.75 \leq \beta_{ij} \leq 1.0$	$l = ((nc\ or\ nr) - 1) * (p\ or\ g)$ $lc = 2 * ((\frac{4}{2} - 1) * 90 + 70) + 10.0$ $= 330.0$ $lr = (4 - 1) * 90 = 270$ $l = 330.0$ $15 * d = 15 * 36.0 = 540.0$ $since,\ l < 15 * d$ $then\ V_{rd} = V_{db}$ $V_{rd} = 191.88$	
Capacity (kN)	172.07	191.88	Pass

2.11 Inner and Outer flange plate Checks

Check	Required	Provided	Remarks
Min. Plate Height (mm)	$min\ flange\ plate\ ht = beam\ width$ $= 300.0$	300.0	Pass
Min. Plate Length (mm)	$2[2 * e_{min} + (\frac{bolt\ lines}{2} - 1) * p_{min})]$ $+ \frac{gap}{2}]$ $= 2 * [(2 * 66.3 + (\frac{4}{2} - 1) * 90.0$ $= + \frac{10.0}{2}]$ $= 455.2$	470.0	Pass
Min. Inner Plate Height (mm)	$= \frac{B - t - (2 * R1)}{2}$ $= \frac{300.0 - 12.5 - 2 * 2.7}{2}$ $= 141.05$	141.05	Pass
Max. Inner Plate Height (mm)	$= \frac{B - t - (2 * R1)}{2}$ $= \frac{300.0 - 12.5 - 2 * 2.7}{2}$ $= 141.05$	141.05	Pass
Min. Inner Plate Length (mm)	$2[2 * e_{min} + (\frac{bolt\ lines}{2} - 1) * p_{min})]$ $+ \frac{gap}{2}]$ $= 2 * [(2 * 66.3 + (\frac{4}{2} - 1) * 90.0$ $= + \frac{10.0}{2}]$ $= 455.2$	470.0	Pass
Min.Plate Thickness (mm)	$t_w = 12.0$	14.0	Pass

2.12 Member Checks

Check	Required	Provided	Remarks
Flange Tension Yielding Capacity (kN)		$T_{dg} = \frac{l * t * f_y}{\gamma_{mo}}$ $= \frac{1 * 300.0 * 24.0 * 240}{1.1}$ $= 1636.36$	
Flange Tension Rupture Capacity (kN)		$T_{dn} = \frac{0.9 * A_n * f_u}{\gamma_{m1}}$ $= \frac{0.9 * (300.0 - 2 * 39.0) * 24.0 * 410}{1.25}$ $= 1572.83$	
Flange Block Shear Capacity (kN)		$T_{db1} = \frac{A_{vg} f_y}{\sqrt{3}\gamma_{m0}} + \frac{0.9 A_{tn} f_u}{\gamma_{m1}}$ $T_{db2} = \frac{0.9 * A_{vn} f_u}{\sqrt{3}\gamma_{m1}} + \frac{A_{tg} f_y}{\gamma_{m0}}$ $T_{db} = min(T_{db1}, T_{db2}) = 1599.72$	
Flange Tension Capacity (kN)	$f_f = 605.02$	$T_d = min(T_{dg}, T_{dn}, T_{db})$ $= min(1636.36, 1572.83, 1599.72)$ $= 1572.83$	Pass
Web Tension Yielding Capacity (kN)		$T_{dg} = \frac{l * t * f_y}{\gamma_{mo}}$ $= \frac{1 * 492.0 * 12.5 * 240}{1.1}$ $= 1397.73$	
Web Tension Rupture Capacity (kN)		$T_{dn} = \frac{0.9 * A_n * f_u}{\gamma_{m1}}$ $= \frac{0.9 * (492.0 - 4 * 39.0) * 12.5 * 410}{1.25}$ $= 1239.84$	
Web Block Shear Capacity (kN)		$T_{db1} = \frac{A_{vg} f_y}{\sqrt{3}\gamma_{m0}} + \frac{0.9 A_{tn} f_u}{\gamma_{m1}}$ $T_{db2} = \frac{0.9 * A_{vn} f_u}{\sqrt{3}\gamma_{m1}} + \frac{A_{tg} f_y}{\gamma_{m0}}$ $T_{db} = min(T_{db1}, T_{db2}) = 1347.73$	
Web Tension Capacity (kN)	$A_w = 402.55$	$T_d = min(T_{dg}, T_{dn}, T_{db})$ $= min(1397.73, 1239.84, 1347.73)$ $= 1239.84$	Pass

2.13 Flange Plate Capacity Checks in axial-Outside/Inside

Check	Required	Provided	Remarks
Tension Yielding Capacity (kN)		$T_{dg} = \frac{l * t * f_y}{\gamma_{mo}} = \frac{1 * 582.1 * 14.0 * 250}{1.1} = 1852.14$	
Tension Rupture Capacity (kN)		$T_{dn} = \frac{0.9 * A_n * f_u}{\gamma_{m1}} = \frac{0.9 * (582.1 - 2 * 39.0) * 14.0 * 410}{1.25} = 2083.34$	
Block Shear Capacity (kN)		$T_{db1} = \frac{A_{vg} f_y}{\sqrt{3}\gamma_{m0}} + \frac{0.9 A_{tn} f_u}{\gamma_{m1}}$ $T_{db2} = \frac{0.9 * A_{vn} f_u}{\sqrt{3}\gamma_{m1}} + \frac{A_{tg} f_y}{\gamma_{m0}}$ $T_{db} = min(T_{db1}, T_{db2}) = 1923.29$	
Plate Tension Capacity (kN)	$f_f = 605.02$	$T_d = min(T_{dg}, T_{dn}, T_{db}) = min(1852.14, 2083.34, 1923.29) = 1852.14$	Pass

2.14 Web Plate Capacity Checks in Axial

Check	Required	Provided	Remarks
Tension Yielding Capacity (kN)		$T_{dg} = \frac{l * t * f_y}{\gamma_{mo}}$ $= \frac{1 * 410 * 20.0 * 250}{1.1}$ $= 2151.94$	
Tension Rupture Capacity (kN)		$T_{dn} = \frac{0.9 * A_n * f_u}{\gamma_{m1}}$ $= \frac{0.9 * (410 - 4 * 39.0) * 20.0 * 300.0}{1.25}$ $= 2999.23$	
Block Shear Capacity (kN)		$T_{db1} = \frac{A_{vg} f_y}{\sqrt{3}\gamma_{m0}} + \frac{0.9 A_{tn} f_u}{\gamma_{m1}}$ $T_{db2} = \frac{0.9 * A_{vn} f_u}{\sqrt{3}\gamma_{m1}} + \frac{A_{tg} f_y}{\gamma_{m0}}$ $T_{db} = min(T_{db1}, T_{db2}) = 4312.75$	
Plate Tension Capacity (kN)	$A_w = 402.55$	$T_d = min(T_{dg}, T_{dn}, T_{db})$ $= min(3727.27, 2999.23, 4312.75)$ $= 2999.23$	Pass

2.15 Web Plate Capacity Checks in Shear

Check	Required	Provided	Remarks
Shear yielding Capacity (V_dy) (kN)		$V_{dy} = \frac{A_v * f_y}{\sqrt{3} * \gamma_{mo}}$ $= \frac{1 * 410 * 20.0 * 250}{\sqrt{3} * 1.1}$ $= 2151.94$	
Shear Rupture Capacity (V_dn) (kN)		$V_{dn} = \frac{0.9 * A_{vn} * f_u}{\sqrt{3} * \gamma_{m1}}$ $= \frac{0.9 * (410 - (2.0 * 39.0)) * 20.0 * 410}{\sqrt{3} * 1.25}$ $= 1731.61$	
Block Shear Capacity in Shear (V_db) (kN)		$T_{db1} = \frac{A_{vg} f_y}{\sqrt{3}\gamma_{m0}} + \frac{0.9 A_{tn} f_u}{\gamma_{m1}}$ $T_{db2} = \frac{0.9 * A_{vn} f_u}{\sqrt{3}\gamma_{m1}} + \frac{A_{tg} f_y}{\gamma_{m0}}$ $T_{db} = min(T_{db1}, T_{db2}) = 2841.88$	
Plate Shear Capacity (kN)	$V_u = 464.82$	$V_d = min(V_{dy}, V_{dn}, V_{db})$ $= min(2151.94, 1731.61, 4312.75)$ $= 1731.61$	Pass

Company Name	LoremIpsum	Project Title	Fossee
Group/Team Name	LoremIpsum	Subtitle	
Designer	LoremIpsum	Job Number	123
Date	26 /05 /2020	Client	LoremIpsum

3 3D View

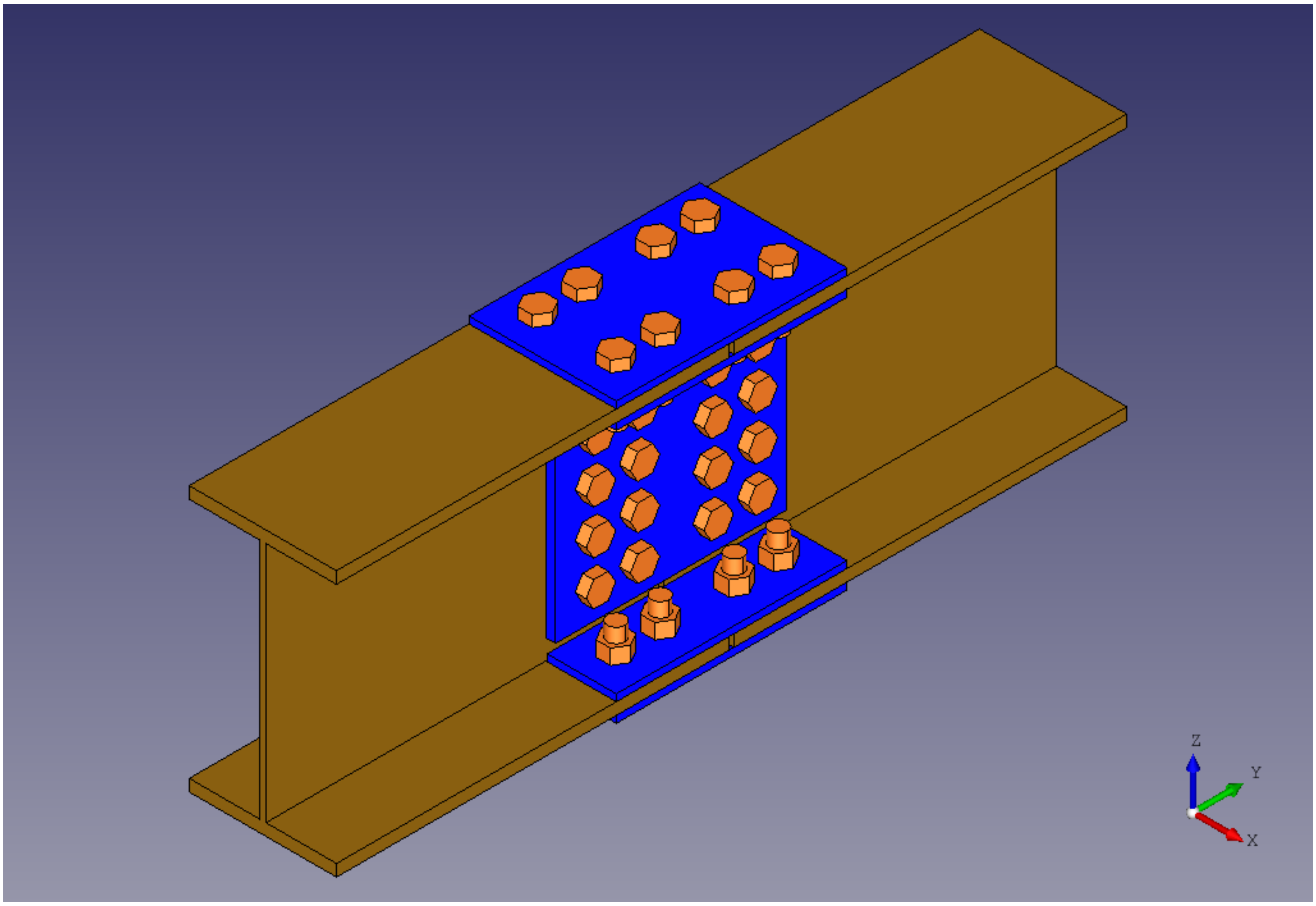

Figure 1: 3D View