

Secondary Beams

Beam ID	Start Point	End Point	Span	Mmax	Vmax
4	(6,0,3)	(6,5,3)	5	3.2089999999999996	2.5671999999999997
1	(0,0,3)	(0,5,3)	5	3.2089999999999996	2.5671999999999997

Design Limit state:

Combo: 1.2D+1.4L

Md: 3.2089999999999996 t.m

Vd: 2.5671999999999997 ton

Service Limit State

Combo: LIVE

Span: 5 m

Load: -0.5 t/m'

Design Checks

1-Check Local Buckling

$dw/tw = 31.06 < 81.97814749472366 \Rightarrow$ Compact Web

$c/tf = 4.66 < 10.908903091817557 \Rightarrow$ Compact Flange

2-Check Lateral Torsional Buckling

$Lu_{act} = 0 \text{ m} < Lu_{max} = 142.00938936093863 \text{ m} \Rightarrow$ Supported (No LTB)

3-Check Bending Stress

Section: IPE220

$f_{act} = 1.2734126984126983 \text{ t/cm}^2 < F_b = 1.536 \text{ t/cm}^2$

4-Check Shear Stress

$q_{act} = 0.19778120184899844 \text{ t/cm}^2 < q_{all} = 0.84 \text{ t/cm}^2$

5-Check Deflection

$d_{act} = 0.6995032519626383 \text{ cm} < d_{all} = 1.6666666666666667 \text{ cm}$

Beam ID	Start Point	End Point	Span	Mmax	Vmax
3	(4,0,3)	(4,5,3)	5	6.334	5.0672
2	(2,0,3)	(2,5,3)	5	6.334	5.0672

Design Limit state:

Combo: 1.2D+1.4L

Md: 6.334 t.m

Vd: 5.0672 ton

Service Limit State

Combo: LIVE

Span: 5 m

Load: -1 t/m'

Design Checks

1-Check Local Buckling

$dw/tw = 34.73 < 81.97814749472366 \Rightarrow$ Compact Web

$c/tf = 5.3 < 10.908903091817557 \Rightarrow$ Compact Flange

2-Check Lateral Torsional Buckling

$Lu_{act} = 0 \text{ m} < Lu_{max} = 174.28425057933376 \text{ m} \Rightarrow$ Supported (No LTB)

3-Check Bending Stress

Section: IPE270

$f_{act} = 1.4764568764568764 \text{ t/cm}^2 < F_b = 1.536 \text{ t/cm}^2$

4-Check Shear Stress

$q_{act} = 0.284354657687991 \text{ t/cm}^2 < q_{all} = 0.84 \text{ t/cm}^2$

5-Check Deflection

$d_{act} = 0.6693001754530252 \text{ cm} < d_{all} = 1.6666666666666667 \text{ cm}$

Main Beams

Beam ID	Start Point	End Point	Span	Mmax	Vmax
2	(0,5,3)	(6,5,3)	6	10.32934	5.19716
1	(0,0,3)	(6,0,3)	6	10.32934	5.19716

Design Limit state:

Combo: 1.2D+1.4L

Md: 10.32934 t.m

Vd: 5.19716 ton

Service Limit State

Combo: LIVE

Span: 6 m

Load: -0.8333333333333334 t/m'

Design Checks

1-Check Local Buckling

$dw/tw = 37.87 < 81.97814749472366 \Rightarrow$ Compact Web

$c/tf = 5.64 < 10.908903091817557 \Rightarrow$ Compact Flange

2-Check Lateral Torsional Buckling

$Lu_{act} = 0 \text{ m} < Lu_{max} = 206.55911179772892 \text{ m} \Rightarrow$ Supported (No LTB)

3-Check Bending Stress

Section: IPE330

$f_{act} = 1.4487152875175315 \text{ t/cm}^2 < F_b = 1.536 \text{ t/cm}^2$

4-Check Shear Stress

$q_{act} = 0.20998626262626263 \text{ t/cm}^2 < q_{all} = 0.84 \text{ t/cm}^2$

5-Check Deflection

$d_{act} = 0.5689404053890035 \text{ cm} < d_{all} = 2 \text{ cm}$
