

Secondary Beams

Beam ID	Start Point	End Point	Span	Mmax	Vmax
4	(6,0,3)	(6,5,3)	5	16.334000000000003	13.0672
3	(4,0,3)	(4,5,3)	5	16.334000000000003	13.0672
2	(2,0,3)	(2,5,3)	5	16.334000000000003	13.0672
1	(0,0,3)	(0,5,3)	5	16.334000000000003	13.0672

Design Limit state:

Combo: 1.2D+1.4L

Md: 16.334000000000003 t.m

Vd: 13.0672 ton

Service Limit State

Combo: LIVE

Span: 5 m

Load: -2 t/m'

Design Checks

1-Check Local Buckling

$dw/tw = 40.24 < 81.97814749472366 \Rightarrow$ Compact Web

$c/tf = 5.35 < 10.908903091817557 \Rightarrow$ Compact Flange

2-Check Lateral Torsional Buckling

$Lu_{act} = 0 \text{ m} < Lu_{max} = 232.379000772445 \text{ m} \Rightarrow$ Supported (No LTB)

3-Check Bending Stress

Section: IPE 400

$fact = 1.4081034482758623 \text{ t/cm}^2 < F_b = 1.536 \text{ t/cm}^2$

4-Check Shear Stress

$q_{act} = 0.3798604651162791 \text{ t/cm}^2 < q_{all} = 0.84 \text{ t/cm}^2$

5-Check Deflection

$d_{act} = 0.33508413453290237 \text{ cm} < d_{all} = 1.6666666666666667 \text{ cm}$

Main Beams

Beam ID	Start Point	End Point	Span	Mmax	Vmax
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2	(0,5,3)	(6,5,3)	6	26.3293400000000002	13.1971600000000002
1	(0,0,3)	(6,0,3)	6	26.3293400000000002	13.1971600000000002

Design Limit state:

Combo: 1.2D+1.4L

Md: 26.3293400000000002 t.m

Vd: 13.1971600000000002 ton

Service Limit State

Combo: LIVE

Span: 6 m

Load: -1.6666666666666667 t/m'

Design Checks

1-Check Local Buckling

$d_w/t_w = 42.75 < 81.97814749472366 \Rightarrow$ Compact Web

$c/t_f = 4.94 < 10.908903091817557 \Rightarrow$ Compact Flange

2-Check Lateral Torsional Buckling

$L_{uact} = 0 \text{ m} < L_{umax} = 258.19888974716116 \text{ m} \Rightarrow$ Supported (No LTB)

3-Check Bending Stress

Section: IPE 500

$f_{act} = 1.364214507772021 \text{ t/cm}^2 < F_b = 1.536 \text{ t/cm}^2$

4-Check Shear Stress

$q_{act} = 0.2587678431372549 \text{ t/cm}^2 < q_{all} = 0.84 \text{ t/cm}^2$

5-Check Deflection

$d_{act} = 0.277860106698281 \text{ cm} < d_{all} = 2 \text{ cm}$
