

CROSS SECTION: KINDMANN 190

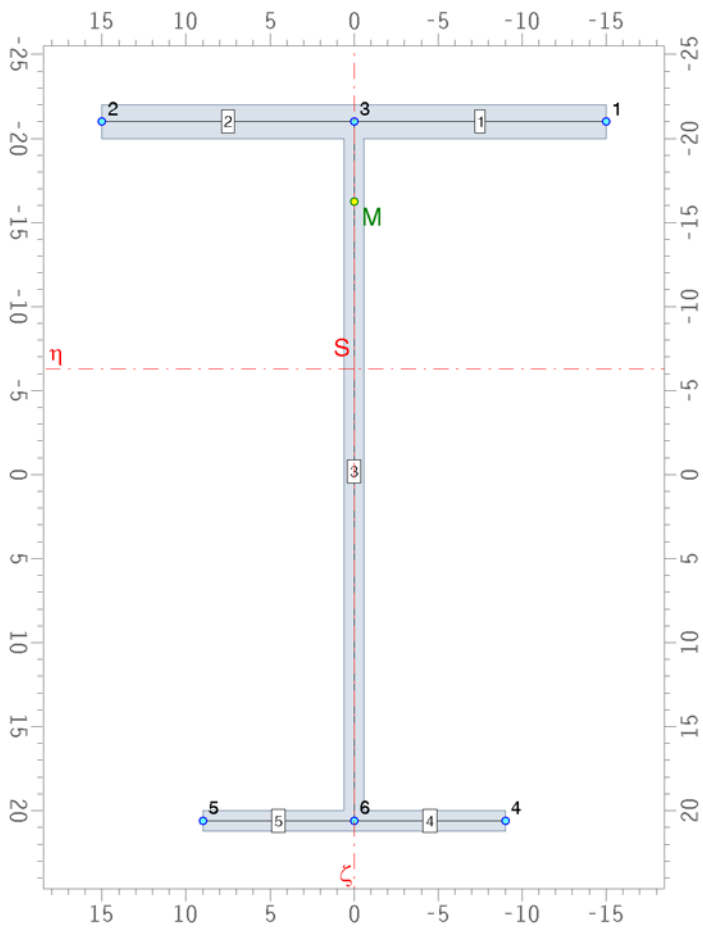
nodes

nodes	y	z	nodes	y	z
-	cm	cm	-	cm	cm
1	-15.00	-21.00	4	-9.00	20.60
2	15.00	-21.00	5	9.00	20.60
3	0.00	-21.00	6	0.00	20.60

lines

line	from	to	thickn.A	thickn.E	arch rise	r _{ar}	r _{al}	r _{er}	r _{e1}	Φ _a	Φ _e
-	-	-	cm	cm	cm	cm	cm	cm	cm	°	°
1	1	3	2.00	2.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00
2	2	3	2.00	2.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00
3	3	6	1.20	1.20	0.000	0.00	0.00	0.00	0.00	0.00	0.00
4	4	6	1.20	1.20	0.000	0.00	0.00	0.00	0.00	0.00	0.00
5	5	6	1.20	1.20	0.000	0.00	0.00	0.00	0.00	0.00	0.00

plotting



characteristic values

area, centroid and angle of principal axis

A =	129.60 cm ²	e _y =	0.00 cm	e _z =	-6.29 cm	α =	0.00 °
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spread

y _{max} =	15.00 cm	y _{min} =	-15.00 cm	b =	30.00 cm	U =	180.00 cm
Z _{max} =	21.20 cm	Z _{min} =	-22.00 cm	h =	43.20 cm		

Imn-system: moments of inertia and section moduli, clearances and radii of gyration

(I_{mn} = ξηζ)

I _m =	36923.07 cm ⁴	W _{m+} =	1343.20 cm ³	h _{m+} =	15.00 cm	i _m =	16.88 cm
I _n =	5088.96 cm ⁴	W _{m-} =	2350.12 cm ³	h _{m-} =	-15.00 cm	i _n =	6.27 cm
I _p =	42012.03 cm ⁴	W _{n+} =	339.26 cm ³	h _{n+} =	27.49 cm	i _p =	18.00 cm
		W _{n-} =	339.26 cm ³	h _{n-} =	-15.71 cm		

shear centre

y _M =	0.00 cm	y _{SM} =	0.00 cm	η _M =	0.00 cm		
Z _M =	-16.23 cm	Z _{SM} =	-9.94 cm	ζ _M =	-9.94 cm		

shear area coefficient

κ _m =	2.16 -	A _m =	60.07 cm ²	κ _η =	2.16 -	A _η =	60.07 cm ²
κ _n =	2.81 -	A _n =	46.15 cm ²	κ _ζ =	2.81 -	A _ζ =	46.15 cm ²

torsion + warping

I _T =	114.33 cm ⁴	I _W =	893469.01 cm ⁶	R _{Sy} =	0.00 cm ⁵	R _{Sz} =	50599.20 cm ⁵
C _s =	1397143.74 cm ⁶	I _{pM} =	54812.62 cm ⁴	i _{ωM} =	4.04 cm		
ω _{M+} =	331.44 cm ²	ω _{M-} =	-331.44 cm ²	W _{ω+} =	2695.68 cm ⁴	W _{ω-} =	2695.68 cm ⁴

section lines

i _M =	20.57 cm	r _η =	0.00 cm	r _ζ =	28.28 cm	r _ω =	0.00 cm
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plastic characteristic values

W _{ply,max} =	1877.18 cm ³	W _{plz,max} =	561.22 cm ³	W _{plη,max} =	1877.18 cm ³	W _{plζ,max} =	561.22 cm ³
W _{ply,red} =	1877.18 cm ³	W _{plz,red} =	561.22 cm ³	W _{plη,red} =	1877.18 cm ³	W _{plζ,red} =	561.22 cm ³